PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT

Initial Study/Notice of Intent to Adopt a Mitigated Negative Declaration

Prepared for
San Mateo County Harbor District

July 2020

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CHAPTER 1
Introduction

As lead agency under the California Environmental Quality Act (CEQA), the San Mateo County Harbor District (Harbor District) has prepared this Draft Initial Study (IS) and Notice of Intent (NOI) to adopt a Mitigated Negative Declaration (MND) to address the environmental consequences of the proposed Pillar Point West Trail Living Shoreline Project (proposed project).

The proposed project would include the construction of a living shoreline to protect and restore the severely eroded segment of the Pillar Point Harbor's (PPH) West Trail. The proposed project would also address drainage issues in the vicinity of the project by constructing a new stormwater system that would divert stormwater through a more natural system and eliminate the direct discharge into the harbor. The overall purpose is to provide multiple ecological and community benefits by implementing a nature-based shoreline solution that increases the resilience of the West Trail to coastal erosion, extreme storms, and sea level rise.

This document includes the:

- IS with completed Environmental Checklist (consistent with Appendix G of the CEQA Guidelines); and,
- Proposed Notice of Intent (NOI) to adopt a MND to satisfy CEQA requirements.

This document will be available for public comment from July XX, 2020 to August XX, 2020 at the PPH Harbormaster Office at One Johnson Pier Rd, El Granada, CA 94016 seven days a week from 9 a.m. to 5 p.m. Following completion of the required public comment period, and before taking action on the proposed project, the Harbor District will consider the MND together with any comments provided during the public comment period and will adopt the MND if, based on the whole of the record: (1) there is no substantial evidence that the proposed project will have a significant effect on the environment; and (2) that it represents the Harbor District's independent judgement and analysis. The Harbor District will also prepare and adopt a Mitigation Monitoring Reporting Program (MMRP) as part of the approval process as required under Public Resources Code Section 21081.6(c) for mitigation measures identified in the MND.

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CHAPTER 2
Project Description

2.1 Project Location

The proposed project is located along the western edge of Pillar Point Harbor (Harbor) in western San Mateo County, California. The Pillar Point West Trail (West Trail or trail) varies in width from 8 to 18 feet and connects a pedestrian pathway from the West Point Avenue access and parking area to the Pillar Point outer harbor and Mavericks Beach. Pillar Point is a peninsula, just north of the communities of Half Moon Bay and El Granada. The majority of the proposed project area is managed by and publicly owned by the San Mateo County Harbor District (District), though some of the construction activities would require access through parcels publicly owned by San Mateo County and the federal government (Pillar Point Air Force Station [AFS]). All of the ocean water and submerged land west of the project area beyond the Harbor are within Monterey Bay National Marine Sanctuary. The town of Princeton-by-the-Sea is located east of the site, and the AFS is located west of the site. Construction staging for West Point Avenue Parking Lot. A temporary stockpile area would be placed on the beach adjacent to the trail on its eastern side. **Figure 1a** shows the project's general vicinity, the project area, and its immediate surroundings. **Figure 1b** shows the project's area of potential effect.

2.2 Project History and Background

2.2.1 Project History

The existing Pillar Point Harbor West Trail was constructed as an equipment access way as part of the Outer Breakwaters project, designed and constructed by the U.S. Army Corps of Engineers (USACE) from 1959-1961, to reduce wave exposure in the Harbor. Following the construction of the Outer Breakwaters project, the shoreline dynamics in the project area have been altered, resulting in sediment transport away from some areas and deposition in other areas. A historical photograph from 1972, only 10 years after construction of the breakwater and thus somewhat representative of previous conditions, shows that the beach adjacent to and protecting the West Trail was much wider than it is today (**Figure 2**). Other locations within the harbor however, are accumulating rather than losing sand, because it's being trapped and redistributed within the harbor. Prior studies have concluded that sand is transported into the harbor by three tributary streams as well as transmission through and over the outer breakwaters (USACE 2015).

SOURCE: ESA, 2020; ESRI, 2020

Pillar Point West Trail Living Shoreline Project

Figure 1a
Project Location

SOURCE: ESA, 2020; ESRI, 2020

Pillar Point West Trail Living Shoreline Project

Figure 1b
Area of Potential Effect

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Pillar Point Harbor West Trail Living Shoreline Project

Figure 2
Photograph of Project Site in 1972

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Figure 3 shows how the wave patterns in Half Moon Bay and Pillar Point Harbor have changed due to construction of the Outer Breakwater in the early 1960s. One of the major changes affecting the project site includes a reversal of the predominant sediment transport direction to the west in the western half of the Harbor. This implies that sediment was historically driven toward the project site, which could explain the wide, sandy beach shown in Figure 2.

2.3 Project Area

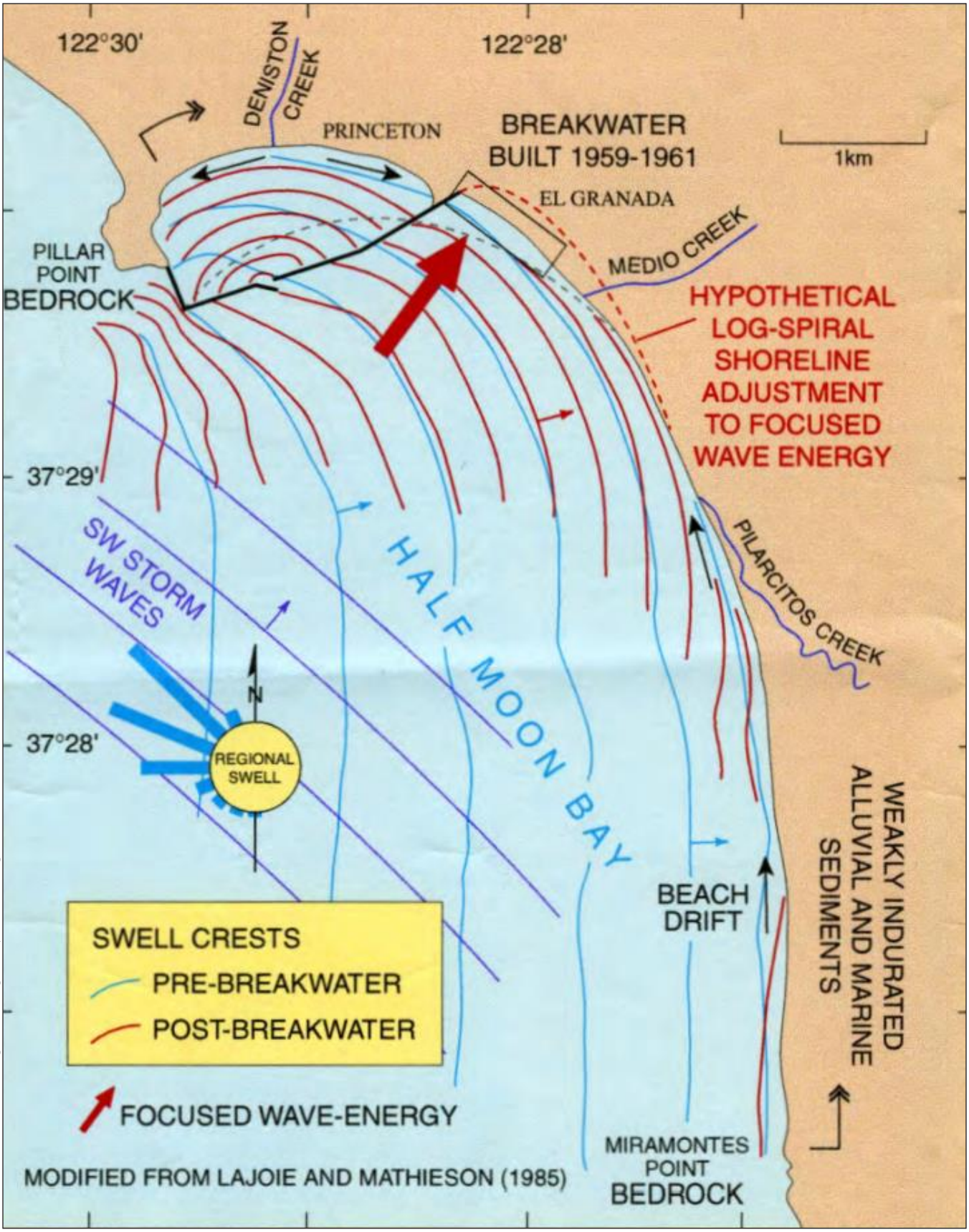
2.3.1 Site Use, Access, and Maintenance

The Harbor includes and is adjacent to valuable coastal resources, including beaches, reefs, vegetated wetlands, intertidal flats, and wooded and open bluffs. The project area and vicinity are used on a daily basis by pedestrians, dog owners, surfers and other recreationists. The West Trail provides for public access from the West Point Avenue access and parking area, to the shore including the Maverick's surf break and nearby reefs. The trail is both an important public pedestrian amenity as well as access for emergency and maintenance vehicles and equipment.

2.3.2 Trail Conditions and Erosion

The unpaved, unvegetated, and densely compacted dirt trail is approximately 2,300 feet (ft.) in length (from the parking lot to the southern terminus at Mavericks Beach) with a width varying from 8 to 18 ft. The trail provides access from the public parking lot to several beaches, an intertidal reef, and the shoreline to observe and surf at Mavericks surfing reef. The edges of the trail are generally well-defined and bounded by rock, sand beach, and vegetated dune to the east/southeast of the trail. The west/northwest land-side of the trail abuts a bluff and steep hillside, with a dense stand of cypress trees but little to no low growing vegetation; the hillside is subject to erosion.

The project site is an approximately 300-foot-long segment of the trail (shown in **Figure 4**) that has been subject to erosion and emergency repairs since 1994. **Figures 5 and 6** show the eroded trail conditions. The most recent repairs occurred in January 2016 at the corrugated metal pipe (CMP) outfall (stormwater discharge point). At that time, the District replaced the previous drainage basin and associated dual drainage pipes at the toe of the hillside along the western edge of the trail with a larger 36- inch diameter reinforced concrete pipe that discharges into Pillar Point Harbor (see **Figure 7**). Based on the conditions of the Emergency Coastal Development Permit issued by the California Coastal Commission (Coastal Commission) authorizing the culvert repair, the repair was meant to be temporary.



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SOURCE: Lajoie and Mathieson (Poster; taken from USACE 2009)

Pillar Point Harbor West Trail Living Shoreline Project

Figure 3
Conceptual Schematic of Wave Pattern Changes Due to Construction of Outer Breakwater

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Pillar Point Harbor West Trail Living Shoreline Project

Figure 4
Aerial View of Existing Project Area

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SOURCE: ESA

Pillar Point Harbor West Trail Living Shoreline Project

Figure 5
Photograph of Project Site at Low Tide, Showing Trail Erosion, June 6, 2019

ESA

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SOURCE: ESA

Pillar Point Harbor West Trail Living Shoreline Project

Figure 6
Photograph of Project Site,
Looking South Towards Mavericks Beach, June 6 2019

ESA

Existing Gunite Swale

Existing Corrugated Metal Pipe

Existing Outfall

SOURCE: GHD

Pillar Point Harbor West Trail Living Shoreline Project

Figure 7
Existing Conditions of Swale, Pipe, and Outfall

ESA

2.3.3 On-site Stormwater Drainage

An open concrete swale carries stormwater downhill from the US Air Force Property, collecting stormwater as it traverses the hillside above the trail. The concrete swale is damaged in places and has vegetation growing down its center (see Figure 7). This swale connects to an existing above-ground 24-inch CMP and an inlet that was built as part of the emergency culvert repair in January 2016. This connects to an underground 36-inch diameter reinforced concrete pipe (RCP) with a 36-inch RCP outfall (See other photographs on Figure 7). An abandoned 12-inch Asbestos-Cement (AC) Pipe runs along the eastern edge of the trail. A segment of this pipe has been exposed by coastal erosion at the project site.

2.4 Project Objectives

The project area has experienced chronic coastal erosion, resulting in degradation of the existing Pillar Point Harbor West Trail and creating hazardous conditions for trail users. The erosion threatens the structural integrity of the trail for public and emergency vehicle use. In addition, because the trail is the only access point to Mavericks Beach and is a popular trail for visitors, permanent closure of the trail is not favored. The primary objectives of the proposed project are to:

1. Stabilize the trail to protect and maintain access for recreationists and emergency vehicles for at least 25 years.
2. Upgrade the existing stormwater system so it functions adequately for a 50-year storm event.
3. Incorporate natural design features, including living shoreline design techniques to the maximum extent possible and minimize the use of hardscape armoring.
4. Enhance the long-term durability of the surrounding ecological systems through planting of native vegetation and water quality enhancements that require minimal maintenance.
5. Conform with the natural aesthetics of the landscape.

2.5 Project Elements and Design

The proposed project would include the stabilization of the West Trail and stormwater system improvements. To protect and stabilize the trail, the proposed project would include the construction of a nourished beach with an elevated dune adjacent to, and east of, 300 feet of the trail. Buried beneath the surface of the shoreline and dune would be a cobble berm (otherwise known as a dynamic revetment) and two rock fingers extending perpendicular from the trail. The stormwater improvements would address the aesthetics, function, and maintenance needs of the existing storm drain system as well as provide water quality improvements to the harbor.

The proposed project would be designed with considerations for the local hydrology and future sea level rise. Sea levels are expected to rise at an accelerating pace based on best available science. Projects that are located in coastal hazard areas must consider sea level rise in the design per the California Coastal Commission's (CCC) updated 2018 Sea-Level Rise Policy Guidance and the Ocean Protection Council's 2018 State of California Sea-Level Rise Guidance (CCC

2018; Ocean Protection Council 2018). **Figures 8**, **9** and **10** show the locations of these new elements. The following sections describe the project elements in more detail.

2.5.1 West Trail Stabilization

In order to stabilize the trail, an approximately 300-foot long cobble berm would be constructed on the trail's eastern side, using a combination of existing rock and cobble imported from a quarry. The cobble berm would vary in width from 10 to 30 feet and would have an approximate seaward facing slope of 6 to 1, horizontal to vertical (6 horizontal (H):1 vertical (V)) and would be buried beneath the sand dune (see Section 2.5.2).

Two rock fingers would be constructed approximately perpendicular to the shore to retain cobbles in the berm from moving in the longshore direction. The fingers would be based on similar bedrock outcrops in the project area (see Figure 10). The rock fingers would be approximately 8- to 10-feet wide, and the length would extend 10 feet past the eastern limit of the cobble berm (see Figure 8).

These elements would support the trail itself, which would be constructed to be a minimum of 15-feet wide and 13 feet high (North American Vertical Datum 88) to accommodate SLR. Decomposed granite is proposed as the finished surfaces along the improved trail length. The trail would be ADA compliant with a maximum cross slope of 2% and less than 5% slope in the longitudinal direction. The trail design includes requirements of the San Mateo County Harbor District Ordinance Code and design characteristics described in the 2019 Edition of the California State Parks Trails Handbook to restore safe public access along the trail.

2.5.2 Living Shoreline Design Features and Plantings

The sandy beach and dune design was based on the results of a site-specific numerical model developed for the proposed project. Multiple design options were evaluated in the model against varying water levels (current water levels and sea level rise) and extreme wave conditions (e.g., 50 and 100-year wave heights). The proposed project design was selected based on performance in comparison to other considered designs. The 300 foot-long and 30-foot-wide dune would be constructed with sand from within the Harbor and imported sand and formed into natural-shaped dune hummocks. Figure 8 shows the cross-sectional view of the dune design and Figure 9 shows the dune, foredune, and beach plan view. Dune slopes would vary along the length of the beach. Imported sand for the beach and dune would come from the Boat Launch Ramp Maintenance Dredging Project sand stockpile site on Half Moon Bay Airport property. The dune would be planted with native vegetation once constructed. The planted zone would be the landward most 30 feet in width along the entire dune reach. Sand would be used to bury the cobble berm and rock fingers (see Section 2.5.1) with a minimum of two feet of cover such that dune habitat could establish.

2.5.3 Stormwater System Improvements

The existing stormwater system, including the damaged concrete swale, the existing 24-inch corrugated metal pipe, and the existing 36-inch reinforced concrete pipe outfall that currently discharges into the Harbor, would be removed and disposed of at the Corinda Los Trancos

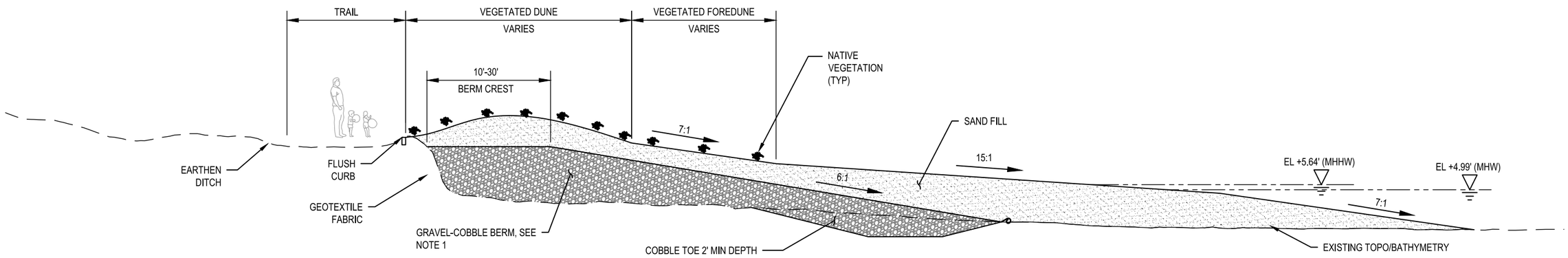
Landfill (formerly Ox Mountain Landfill). The proposed project would construct new storm water improvements needed to address the function and maintenance needs of the existing stormwater drainage system while also providing water quality improvements. Construction of the proposed drainage system would convey stormwater into both a new earthen ditch along the landward side of the new trail and a new rock-lined concrete channel to convey storm water to a new bioretention basin that would be planted with native vegetation. An existing overflow discharge pipe would be improved so that stormwater from the bioretention basin would discharge into upland portions of the Pillar Point Marsh northeast of the bioretention basin and restore a broken freshwater connection to the marsh. **Figure 11** shows the new storm water system improvements.

2.6 Project Construction

Construction activities would generally include:

- equipment and materials staging and laydown;
- site preparation, consisting of existing swale and pipeline demolition and removal;
- excavation and grading for stormwater improvements, including:
  - new concrete swale,
  - new underground pipe to replace the hillside CMP,
  - new bioretention basin,
  - improved culvert from the bioretention basin to the marsh,
  - new pedestrian trail with appurtenances (DG, concrete beach, beach access way);
- restoration of the shoreline including:
  - cobble toe berm,
  - rock fingers,
  - sand dune with native dune plantings, and
  - nourished beach.

The anticipated area of total ground disturbance would be approximately 4 acres, of which 1.6 acres would be considered temporary disturbance. Hauling would be required for materials deliveries (including cobble and sand), and off-haul of construction debris and excavated materials.



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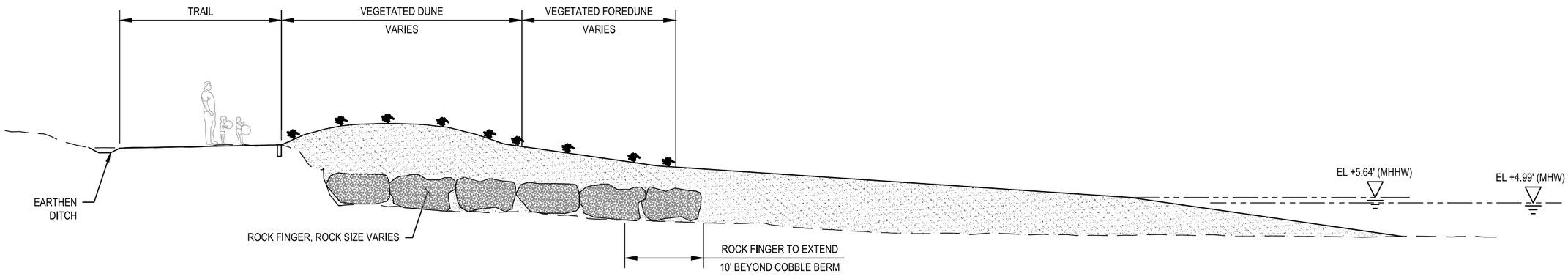

NOT TO SCALE

SOURCE: GHD, Inc., 2020

Pillar Point Harbor West Trail Living Shoreline Project

Figure 8
Beach Cross Sections

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EXISTING CONC SWALE

EXTEND COBBLE BERM
TO EDGE OF TRAIL

PILLAR POINT MARSH

BERM CREST

15' TRAIL

DUNE

FOREDUNE

7:1

COBBLE BERM LIMITS

BEACH

15:1

COBBLE BERM

ROCK FINGER

ROCK FINGER

7:1

LIMIT OF BEACH FILL

PILLAR POINT HARBOR

N

7+50

15' TRAIL

NATIVE
VEGETATION

BEACH ACCESS

ENLARGED BEACH ACCESS PLAN

D190124.01 - Pillar Point West Trail Living Shoreline Design\05 Graphics-GIS-Modeling\Illustrator

SOURCE: GHD, Inc., 2020

Pillar Point Harbor West Trail Living Shoreline Project

Figure 9
Beach Project Elements

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SOURCE: GHD, Inc., 2019

Pillar Point Harbor West Trail Living Shoreline Project

Figure 10
Natural Examples of Existing Rock Finger Design Element

ESA

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BEGIN EX DRAINAGE DITCH REMOVAL AND REPLACE WITH ROCK LINED CHANNEL
INV: 106.0'
N: 2010259.96
E: 5982404.10

A&B - C-110

15%

CONNECT DRAINAGE DITCH TO INLET STRUCTURE
INV: 39.10'
1 C-110

INLET STRUCTURE
BEG 24" HDPE
INV: 35.41'
RIM: (39.4')
N: 2010654.21
E: 5982636.20
2 C-110

CUT-OFF WALL DETAIL PER D C-105

56.3' @ 44.8%

MATCHLINE SEE C-104

3 C-110

4

5

7

RIPRAP ENERGY DISSIPATOR
END 24" HDPE
INV: 10.16'
N: 2010704.07
E: 5982664.63
4 C-110 7 C-110

VERTICAL RINGS

HEADWALL
TOP EL: 13.50 '
5 C-110

N: 2010714.79
E: 5982668.62

3 SEE NOTE 4

65 60 55 50 45 40 35 30 20 15 10

(12.8') EL
N: 2010712.45
E: 5982643.68

N: 2010927.27
E: 5982631.61

0.3%

MATCHLINE SEE C-104

6 C-110

BEG HDPE PIPE
INV: 9.37'
N: 2010951.92
E: 5982584.72

ENVIRONMENTALLY SENSITIVE AREAS. SEE C-103 FOR OVERALL AREA LOCATIONS.

BIOFILTRATION BASIN

C -

(10.9') EL
N: 2010970.71
E: 5982624.47

(11.3') EL

(11.7') EL
N: 2010946.03
E: 5982561.00

1

N: 2010922.21
E: 5982589.59

49.5' @ 0.75%

0+59

1+00

4

8

2

6

END HPDE PIPE ENERGY DISSIPATOR
INV: 9.0'
N: 2010977.16
E: 5982628.52
4 C-110

PILLAR POINT MARSH

ENVIRONMENTALLY SENSITIVE AREAS. SEE C-103 FOR OVERALL AREA LOCATIONS.

EX ABANDONED 12" AC PIPE TO BE SLURRY ENCASED SEE SHEET NOTE 5.
4 C-108

N

0 20' 40'

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SOURCE: GHD, Inc., 2020

Pillar Point Harbor West Trail Living Shoreline Project

Figure 11
Project Stormwater System Improvements

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2.6.1 Construction Staging and Site Access

Construction staging would occur in a portion of the Harbor District parking lot off of West Point Avenue. Site access would be from the Cabrillo Highway and West Point Avenue. The staging area connects to the project site via the existing West Trail. One or more temporary sand ramps would be constructed from the existing trail to the beach to enable vehicles and construction equipment to access the beach during construction. The West Point Avenue parking lot is relatively small for staging and laydown for a project of this size, so it is anticipated that the Contractor would also require offsite laydown facilities for storage of materials and equipment, site facilities and personnel parking.

During construction, the intention is to keep the trail open to the public during daylight hours and have any trail closures occur at night. However, there may be times when the section of the trail at the project site may be closed to public access; in this case, site signage will be posted ahead of time to inform the public of detours during the trail closures. West Point Avenue, the access point for the trail and parking lot, will generally remain open through the project, though it may be reduced to one lane at times during the movement of materials and mobilization/demobilization of equipment. Short durations of full road closure should also be anticipated, likely to be 10 minutes or less.

2.6.2 Equipment and Employees

Construction of the project would require various equipment, operators and labor force depending on the elements under construction throughout the construction schedule. The labor force would increase and decrease based on the daily activities and construction schedule. It is estimated that an average of approximately 10 construction workers would be onsite at any given time, with additional non-contractor personnel onsite for construction management, special inspections, materials testing, environmental monitoring, etc.

Table 2-1 lists the anticipated construction equipment required to complete the proposed project. The actual type of construction equipment and quantity of equipment used by the contractor will be dependent on the means and methods selected by the contractor. The equipment listed in Table 3 is a reasonable estimate based on recent similar shoreline projects.

TABLE 2-1
ANTICIPATED CONSTRUCTION EQUIPMENT NEEDED FOR THE PROPOSED PROJECT

Equipment	Number of Equipment	Maximum Hours per Day	Total Hours
CAT 320 Excavator	1	8	352
CAT 336 Excavator	1	8	40
CAT 415F Skiploader	1	8	256
CAT 226D3 Skid Steer	1	8	36
CAT CB22B Small Roller	1	8	44
Super 10 truck	1	8	181
Super 10 truck + trailer	1	8	1,502
Putzmeister 47Z Boom Pump	1	8	20
Concrete Truck	1	8	16

SOURCE: GHD, 2020

It is anticipated that both tracked and wheeled vehicles would be employed in the construction of the proposed project. The beach is a dynamic environment and actual site conditions encountered during construction may require equipment adjustments. Other factors influencing the equipment used include the resources available to meet the construction schedule. For example, adverse weather could potentially delay the project for a period, in which case, if the scheduled completion date must be maintained, the contractor may need to use additional equipment and manpower to increase production.

2.6.3 Construction Schedule and Sequence

The District anticipates approximately four months of construction, beginning in fall/winter of 2020 and concluding in winter/spring of 2021. Construction activities will take place primarily during daytime hours, between approximately 8:00 a.m. and 5:00 p.m., Monday through Friday. Some work may be completed at night to take advantage of tidal conditions and to minimize impacts on trail users. If night work is required, mobile lighting would be used to light the areas where work activities would occur. If needed to satisfy the requirements of the schedule, the Contractor may request to also work during the weekends; any weekend work will be subject to approval by the District.

It is anticipated that the Contractor's schedule will follow the sequence below. However, this could change depending on the tidal conditions, weather, or other constraints. The Contractor may complete some activities in parallel:

1. Mobilization
2. Site Clearing
3. Demolition
4. Grading
5. Constructing storm drainage improvements
6. Constructing new shoreline: including excavation, placing of rock fingers, cobble, and sand backfill, and planting of dune vegetation
7. Constructing bioretention basin, including inlet and outlet works, and planting vegetation
8. Constructing final grade for the trail, installing new concrete flush curb and placing of decomposed granite surface
9. Cleaning up site, including revegetation of temporarily disturbed areas
10. Demobilization
11. Establishing vegetation i.e. irrigation and replacing plants that do not establish

2.6.4 Construction Materials

The proposed project requires the import of cobble, sand, concrete, and decomposed granite from offsite sources. In addition, the proposed project demolition, excavation and grading requires hauling some materials off site to a local landfill, or other suitable disposal site. The total number of truck loads required for hauling and off-hauling of these materials would be approximately 1,235 truckloads based on a 16 cubic yard (CY) haul capacity for all materials, except concrete which is based on a nine cubic yard load capacity.

The proposed project would require approximately: 6,000 CY of cobble; 10,000 CY of sand; 1,000 CY of rock for rock fingers; and, 70 CY of concrete. The imported gravel and cobble would be sourced from a quarry within a 100-mile radius of the proposed project area. Rock and cobble for the rock finger and cobble beneath the dunes would be hauled from offsite suppliers.

Approximately 1,600 CY of sand would be sourced from an existing stockpile at the Half Moon Bay Airport, while the remaining amount of sand needed would come from within the Harbor as indicated on Figure 1.

Borrowing of sand from within the Harbor would require the use of an excavator, or multiple excavators, and two 16 CY haul trucks. Sand would be loaded into the haul trucks at the sand extraction location and the haul trucks would drive along the beach to unload sand within the proposed project area. It is anticipated that an excavator will be used to move and level the sand into the beach and dune construction area, however the Contractor may use other equipment depending on the conditions of the beach at the time of construction i.e. wheeled loader or tracked dozer.

Concrete used in the construction of the storm drainage improvements would be supplied by a nearby ready-mix concrete batch plant. A concrete boom pump or line pump would be used in concrete pours because trucks would have limited access to the swale locations due to the steep terrain and vegetation.

Other materials such as drainage pipes, special soils for the bioretention basin, plantings for the dunes, and water used in construction would be delivered from vendors and deposited directly at the location required within the proposed project area, or stockpiled in the staging area for future use. Stockpiled materials would be included in the Stormwater Pollution Prevention Plan (SWPPP) to ensure appropriate measures are taken to prevent stormwater pollution and runoff. The SWPPP would be prepared by the contractor and approved by the District.

2.7 Project Operation and Maintenance

After construction is completed, it is expected that the trail, upgraded stormwater system, and the living shoreline would be effective and require minimal on-going maintenance. However, minor operations and maintenance are expected to be needed in response to extreme events and long-term trends. For the stormwater system, maintenance items are expected to be limited to minor clearing of drains and swales of silt and debris.

In addition, dune vegetation would require irrigation and maintenance throughout the establishment period. Short-term, temporary weeding of sea-rocket would take place during dune establishment for approximately 12-24 months. Longer-term, low-level annual weeding of invasive iceplant seedlings would be expected to take place in early summer. Planting of additional dune vegetation is not expected to be necessary; the proposed diverse vegetation should be well-adapted to recolonize and self-maintain through storm erosion/post-storm recovery cycles, and low levels of dune sand accretion at the shoreline.

Necessary maintenance of the project area may include:

- Re-nourishment of the beach using suitable marine sands sourced from the Pillar Point Boat Ramp or other appropriate local sources (less than 5,000 CY per event). It is anticipated that re-nourishment would be infrequent.
- Physical monitoring of the shoreline and dune profile (e.g., photogrammetry or hydrographic survey methods) to forecast required re-nourishment

2.8 Report Organization

This report is organized as follows:

- **Chapter 1, Introduction**, provides an introduction to the project with project background, needs and objectives, and discusses the proposed facilities.
- **Chapter 2, Project Description,** presents the description of the location of the proposed project area, elements of the proposed project, a description of construction methods and materials, and schedule.
- **Chapter 3, Initial Study,** provided the analysis of impacts of the proposed project for the resource topics as listed in Appendix G of the CEQA Guidelines.

2.9 Required Approvals and Permits

The proposed project would require federal, state, and local permits and approvals. Based on the current understanding of the project, the following is a list of the agencies and approvals likely to be required for the Project.

1. San Mateo County Harbor District certification of the IS/MND and adoption of the Mitigation Monitoring and Reporting Program
2. U.S. Army Corps of Engineers' (Corps) approval of Section 404 and Section 10 Individual Permit;
3. Regional Water Quality Control Board's (RWQCB) approval of 401 Water Quality Certification and/or Waste Discharge Requirements application and Stormwater Pollution Prevention Plan (SWPPP);
4. California Department of Fish and Wildlife (CDFW) approval of Streambed Alteration Agreement.

5. California Coastal Commission approval of a Consolidated Coastal Development Permit.

6. Various approvals from San Mateo County agencies, such as an Encroachment Permit from Department of Public Works for material transport on County roads and SWPPP.

2.10 References

California Coastal Commission, 2018. Updated 2018 Sea-Level Rise Policy Guidance. https://www.coastal.ca.gov/climate/slrguidance.html.California Department Fish and Wildlife (CDFW), 2016a.

Ocean Protection Council, 2018. State of California Sea-Level Rise Guidance. http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf.

U.S. Army Corps of Engineers (USACE), 2015. Coastal Regional Sediment Management Plan for the Santa Cruz Littoral Cell, Pillar Point to Moss Landing, prepared for: The California Coastal Sediment Management Workgroup, Prepared by: U.S. Army Corps of Engineers San Francisco District, Monterey Bay National Marine Sanctuary, Noble Consultants, Inc., September 2015.

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CHAPTER 3
Initial Study

1.	**Project Title:**	Pillar Point Harbor West Trail Living Shoreline Project
2.	**Lead Agency Name and Address:**	San Mateo County Harbor District
3.	**Contact Person and Phone Number:**	John Moren (650)741-9163
4.	**Project Location:**	Pillar Point Harbor, San Mateo County, CA
5.	**Project Sponsor's Name and Address:**	San Mateo County Harbor District, PO BOX 1449, 504 Avenue, Alhambra, 2nd Floor, El Granada CA 94018
6.	**General Plan Designation(s):**	Open Space, Recreation, Public Recreation
7.	**Zoning:**	Resource Management - Coastal Zone District (RM-CZ)/Design Review District (DR)/Coastal Development District (CD)

8. Description of Project:

Within Pillar Point Harbor in western San Mateo County, an approximately 300-foot-long segment of the Pillar Point West Trail has been subject to erosion and emergency repairs since 1994, creating hazardous conditions for trail users and threatening the structural integrity of existing stormwater infrastructure along and near the trail. To protect and stabilize the trail, the proposed project would build a nourished beach with an elevated dune adjacent to 300 feet of the trail. Buried beneath the surface of the shoreline and dune would be a cobble berm and two rock fingers extending perpendicular from the trail. The proposed project would include storm water improvements needed to address the aesthetics, function, and maintenance needs of the existing storm drain system. Additionally, the proposed project was designed with considerations for the local hydrology and future sea level rise. See Chapter 2 for detailed description and figures of the proposed project.

9. Surrounding Land Uses and Setting.

The project is surrounded by the Pillar Point Air Force Station to the west, the Half Moon Bay Airport to the north, the community of Princeton by the Sea to the north-east, and the open water of the Pillar Point Harbor to the east and south. Mavericks Beach is at the southern terminus of the trail, and the Pillar Point Marsh is to the east of the parking area and start of the West Trail.

10. Other public agencies whose approval is required:

California Coastal Commission, U.S. Army Corps of Engineers, State Water Resources Control Board/San Francisco Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. National Marine Fisheries Service.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

No tribes have requested consultation.

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology/Soils	☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☒ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☒ Transportation	☒ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature _____ Date _____

3.2 Environmental Checklist

3.2.1 Aesthetics

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
1.	**AESTHETICS —** Except as provided in Public Resources Code Section 21099, would the project:				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

Aesthetic or visual resources include the "scenic character" of a particular region and site. Scenic features can include both natural features, such as vegetation and topography, and manmade features (e.g. historic structures). Areas that are more sensitive to potential effects are usually readily observable, such as land found adjacent to major roadways and hilltops.

The proposed project is located along the coast of California and is characterized by open space and includes views of Pillar Point Harbor, Princeton-by-the Sea, The Pillar Point Air Force Station and bluff, the Pacific Ocean, and the California coastline. The proposed project is within a San Mateo County designated scenic corridor (San Mateo County 2013). There are no officially designated scenic highways in the vicinity of the project area (Caltrans 2020).

Discussion

a) **No Impact**. The proposed project is located in an area designated as a county scenic corridor and offers views of Pillar Point Harbor, the Pacific Ocean, and the coastline. Construction of the proposed project would involve demolition, excavation, grading, trail stabilization, and stormwater system upgrades in order to repair the trail and shoreline. Construction of the proposed project would be temporary and would not result in features that would obscure views of the Harbor, Pacific Ocean or the coastline. Once completed, the proposed project would conform with the natural aesthetic of the existing landscape and have a beneficial aesthetic effect by repairing erosion damage and burying stormwater infrastructure. There would be no impacts on scenic vistas.

b) **No Impact**. A review of the current Caltrans Map of Designated Scenic Routes indicates the proposed project is not located near any officially designated scenic highways (Caltrans 2020) and there would be no impacts.

c) **No Impact**. The proposed project would repair and stabilize the trail and shoreline, upgrade the existing stormwater system, and enhance the long-term durability of the surrounding ecological systems by planting native vegetation. The proposed project would incorporate natural design features and conform with the natural aesthetics of the landscape. The proposed project would not include development that would substantially degrade the existing visual character or quality of the area and there would be no impacts on the existing visual character or quality of project area.

d) **Less than Significant.** Construction activities would take place primarily during daytime hours from 8:00 a.m. and 5:00 p.m., Monday through Friday. Some night work may be done to take advantage of tidal conditions, to minimize impacts on trail users, and to meet the restricted duration of construction activities. If nighttime lighting is required, it would be temporary and not used during the majority of construction. Following construction, there would be no nighttime lighting or materials that would result in glare and impacts would be less than significant.

References

San Mateo County. 2013. San Mateo County General Plan. January 2013.

California Department of Transportation (Caltrans) 2020. California State Scenic Highway System Map. Available: https://www.arcgis.com/apps/webappviewer/index.html?id=2e921695c43643b1aaf7000dfcc19983. Accessed May 21, 2020.

3.2.2 Agricultural and Forest Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
2. AGRICULTURE AND FORESTRY RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

a-c) The California Department of Conservation Division of Land Resource Protection's (DLRP) Important Farmland Maps indicate that the project area is designated as Other Land) and none of the project area includes land covered by a Williamson Act contract (DLRP 2018). The proposed project area is located on the coast and there no agricultural land is on or near the project site. Therefore, there would be no impact.

d) There is no forest land on the site (CDFW 2015) and no trees would be cut down as part of the proposed project. Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use and there would be no impact.

e) The proposed project involves improvements to the shoreline, trail, and stormwater system. None of these project elements would result in conversion of farmland or forest land and there would be no impact.

References

California Department of Conservation Division of Land Resource Protection (DLRP). *San Mateo County Important Farmland.* 2018. Available: http://maps.conservation.ca.gov/dlrp/metadata/importantfarmland/sanmateo_meta.htm. Accessed March 31, 2020.

California Department of Fish and Wildlife (CDFW). 2015. California Forests and Timberlands. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109917&inline. Accessed March 31, 2020.

3.2.3 Air Quality

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3.	**AIR QUALITY —** Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Environmental Setting

Under amendments to the Federal Clean Air Act (CAA), the U.S. Environmental Protection Agency (U.S. EPA) has classified air basins or portions thereof as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. The California CAA, which is patterned after the federal CAA, also requires areas to be designated as "attainment" or "non-attainment" for the state standards. Thus, areas in California have two sets of attainment/non-attainment designations: one set with respect to the national standards and one set with respect to the state standards. The San Francisco Bay Area Air Basin (SFBAAB) is currently designated as a non-attainment area for state and national ozone standards, state particulate matter (PM_{10} and $PM_{2.5}$) standards, and federal $PM_{2.5}$ (24-hour) standard.

The Bay Area Air Quality Management District (BAAQMD) is the regional air quality authority in the project area. In April 2017, the BAAQMD adopted the *2017 Clean Air Plan* (BAAQMD, 2017a) which aims to protect public health and protect the climate. The *2017 Clean Air Plan* is a road map that demonstrates how the Bay Area will implement all feasible measures to reduce ozone, particulate matter and Toxic Air Contaminants (TACs) in the SFBAAB in accordance with the requirements of the California CAA. The plan also includes a wide range of proposed control measures that consist of actions to decrease fossil fuel combustion, improve energy efficiency, and decrease greenhouse gas (GHG) emissions.

The *2017 Clean Air Plan* contains 85 measures to address reduction of ozone precursors, particulate matter, TACs, and GHGs. Control strategies from the plan that are potentially applicable to the project are as follows:

- Stationary source measures;
- Transportation control measures; and
- Water Control Measures.

The BAAQMD has published its California Environmental Quality Act Air Quality Guidelines (CEQA Guidelines), to assist lead agencies in analysis and mitigation of impacts from projects within the SFBAAB. The most recent update to the CEQA Guidelines was published in May 2017 (BAAQMD 2017b). The methodology described in the BAAQMD 2017 CEQA Guidelines was used to evaluate air quality impacts that may result from the proposed project. The BAAQMD CEQA Guidelines establish thresholds of significance for criteria air pollutants that can be used to determine whether emissions from a project would result in significant adverse effects to regional air quality. The BAAQMD thresholds of significance were used to determine the significance of each impact discussed in the impact analysis below.

Sensitive Receptors

Sensitive receptors are defined as a land use that includes members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive land uses include schools, hospitals, and daycare centers. Residential areas are also considered sensitive receptors, as sensitive individuals may be present at a residence, and because residents are home for extended periods of time, which results in greater exposure to ambient air quality.

The West Trail area is located approximately 1,100 feet southwest of the town of Princeton-By-The-Sea. The land uses include a mix of light industrial, business, warehouses, and residences. The closest residence is in the western portion of the town, approximately 1,100 feet northeast of the section of the West Trail that would be stabilized during the project. A borrow area that would supply sand for trail stabilization is located approximately 530 feet from this residence. This distance represents the center of the sand excavation area. Activities would be taking place throughout that area, sometimes at the farthest distance from this residence, sometimes in the center of the area, and sometimes closer to the eastern edge. It is unlikely that a majority of the activity would occur at the portion of the excavation area closest to the residence, so the center was chosen as a representative distance for impact analysis.

Discussion

a) **Less than Significant.** The most recently adopted air quality plan in the Bay Area is the BAAQMD's *2017 Clean Air Plan* (BAAQMD, 2017b). BAAQMD guidance states that "if approval of a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation (if necessary), the project would be considered consistent with the Clean Air Plan" (BAAQMD 2017b). As indicated in the discussion of criteria "b" and "c," the project would not result in significant air quality impacts; therefore, this impact is considered less than significant.

b) **Less than Significant with Mitigation.**

BAAQMD's guidance considers no single project is sufficient in size, by itself, to result in non-attainment of ambient air quality standards for regional criteria pollutants. Instead, a project's individual emissions can contribute to existing cumulatively significant adverse air quality impacts. If a project's incremental increase in emissions does not exceed the BAAQMD significance thresholds, the project's contribution to the

cumulative impacts is determined to be not considerable and the impact would be less than significant.

Construction Emissions – Criteria Air Pollutants

The proposed project would generate construction emissions from a variety of sources, including off-road construction equipment as well as on-road worker vehicles, vendor trucks, and haul trucks. Because construction activity can fluctuate during the course of a project, emissions from construction activities are assessed relative to average daily emissions over the entirety of the construction period (4 months). The average daily emissions approach is consistent with BAAQMD guidance as discussed below. Emissions from all of the construction emission sources were estimated using the CalEEMod emission estimator model version 2016.3.2. **Table AIR-1** summarizes the project's average daily construction emissions, based on four months of construction occurring five days per week (excluding holidays). BAAQMD thresholds of significance for PM_{10} and $PM_{2.5}$ are for exhaust emissions only, as fugitive particulate emissions (dust) impacts are addressed in the mitigation approach addressed below. BAAQMD thresholds of significance for construction represent average daily emissions and, as shown in Table AIR-1, construction emissions from the project would be less than significant for all pollutants.

TABLE AIR-1
AVERAGE CONSTRUCTION DAILY CRITERIA POLLUTANT EMISSIONS (POUNDS/DAY)

Emissions Category	ROG[1]	NOx[1]	PM10[1]	PM2.5[1]
Average Daily Construction Emissions	2.5	31.1	0.8	0.7
BAAQMD Average Daily Thresholds	54	54	82	54
Exceed Thresholds?	No	No	No	No

NOTES:
Pounds per day estimates are based on CalEEMod total construction emissions in tons per year, converted to an average pounds per day based on 81 days of construction. BAAQMD's threshold for PM_{10} and $PM_{2.5}$ are for exhaust emissions only.

[1] ROG – Reactive Organic Gases; NOx – Nitrogen Oxides; PM10 – particulate matter 10 microns or less in diameter; PM2.5 – particulate matter 2.5 microns or less in diameter

SOURCES: ESA, 2020; BAAQMD, 2017b.

Construction Emissions – Fugitive Dust

Demolition, excavation, grading, and other construction activities may cause wind-blown dust that could contribute PM into the local atmosphere. Construction-related dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, dust generated from construction activities may result in significant adverse impacts on a temporary and intermittent basis during the construction period.

The BAAQMD does not have a quantitative threshold of significance for construction-related fugitive dust emissions. Instead, the BAAQMD's recommended approach to evaluating significance of construction-related fugitive dust emissions impacts emphasizes implementation of effective and comprehensive dust control measures.

According to the BAAQMD CEQA Guidelines, construction-related fugitive dust impacts would be considered less than significant if a suite of recommended dust-control measures, also known as Best Management Practices (BMPs), are implemented during project construction. Therefore, BAAQMD-identified BMPs for control of fugitive dust are included as **Mitigation Measure AIR-1**.

Implementation of BAAQMD basic control measures for fugitive dust, which are recommended for every construction project, would reduce impacts associated with fugitive dust emissions to less than significant.

Operational Emissions – Criteria Air Pollutants

After construction is completed, the trail, upgraded stormwater system, and living shoreline would only require minimal on-going maintenance. In addition, minor operations and maintenance could be needed in response to extreme events and long-term trends. For the stormwater system, maintenance items are expected to be limited to minor clearing of drains and swales of silt and debris. In addition, dune vegetation would require irrigation and maintenance throughout the establishment period.

These activities would involve use of on- and off-road equipment emitting a minor amount of combustion pollutants. This work would be long-term but not continuous, and emissions are determined to be minimal. This work would also take place near the West Trail area, which is far from sensitive receptors (approximately 1,100 feet). Additionally, impacts from the proposed project on traffic levels and associated air emissions are also determined to be negligible.

Mitigation Measure AIR-1: Implement BAAQMD Basic Mitigation Measures.

The Applicant and/or its construction contractors shall comply with the following applicable BAAQMD basic control measures during project construction:

1. Water all exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) two times per day.
2. Cover all haul trucks transporting soil, sand, or other loose material off-site.
3. Remove all visible mud or dirt track-out onto adjacent public roads using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. Limit all vehicle speeds on unpaved roads to 15 miles per hour.
5. Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
6. Maintain and properly tune all construction equipment tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.

7. Post a publicly visible sign with the telephone number and person to contact at the Harbor District regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations (BAAQMD 2017a).

c) **Less than Significant.** Site preparation activities, such as demolition, excavation, grading, trail construction, and other ground-disturbing construction activity, would affect localized air quality during the construction phases of the proposed project and could result in adverse health impacts to nearby sensitive receptors. Short-term emissions from construction equipment during these activities would include directly-emitted $PM_{2.5}$, PM_{10}, and TACs such as diesel particulate matter (DPM). BAAQMD identifies a 1,000-foot zone of influence from a TAC source such as construction activity, beyond which the impact to a given sensitive receptor is assumed to be less than significant. While there is a resident sensitive receptor located approximately 530 feet from the sand excavation activities, as discussed below, the closest sensitive receptor is greater than 1,000 feet from the majority of the main trail construction activities.

Sand excavation would take place within 1,000 feet of the closest resident receptor, but emissions-generating activities would last less than two months at that location, thereby limiting both TAC emissions and exposure. State guidance for evaluating risks to sensitive receptors from TAC sources does not recommend conducting a health risk assessment for short-term construction periods less than two months, due to the uncertainty in assessing risks from very short-term exposures (OEHHA 2015).

Therefore, the proposed project would have a less-than-significant impact with respect to exposure of sensitive receptors to substantial pollutant concentrations.

d) **Less than Significant.** Typical odor sources of concern include: wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee roasting facilities. The proposed project does not fall into any of these categories. During construction, diesel exhaust from construction equipment would generate some odors, but these odorous emissions would be temporary and would likely disperse quickly with coastal wind patterns. Additionally, the proposed project would not introduce significant sources of new odors in the vicinity upon trail restoration completion. Therefore, odor impacts from the proposed project would be less than significant.

References

Bay Area Air Quality Management District (BAAQMD), 2017a. *Draft 2017 Clean Air Plan, Spare the Air, Cool the Climate*. Available: www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/baaqmd_2017_cap_draft_122816-pdf.pdf?utm_ campaign=CAP+2017+Draft&utm_ medium=email&utm_content=article3_link1. Accessed May 20, 2020.

———, 2017b. *California Environmental Quality Act Air Quality Guidelines.* May 2017. Available: www.baaqmd.gov/pln/ceqa/ceqa_guide.pdf. Accessed May 20, 2020.

Office of Environmental Health Hazard Assessment (OEHHA), 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*. February. Available: https://oehha.ca.gov/media/downloads/crnr/2015 guidancemanual.pdf. Accessed May 1, 2020.

3.2.4 Biological Resources

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
4.	**BIOLOGICAL RESOURCES —** Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

This section describes the existing conditions for biological resources present within the proposed project area. The biological resources study area referenced throughout this discussion is defined as the project area and relevant areas of similar habitat composition in the surrounding vicinity. The resources described include vegetation communities and associated wildlife, wetlands and other water bodies, and special-status plants and wildlife (federally- or state-listed as endangered, threatened, proposed, and candidate species, and state or local species of concern).

The information on natural communities, plant and animal species, and sensitive biological resources used in the preparation of this discussion was obtained from: the CDFW's Special Animals List (CDFW 2020a), Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2020b), California Natural Diversity Database (CNDDB; CDFW 2020c), the California Native Plant Society (CNPS) Electronic Inventory (CNPS 2020), and the USFWS (2020). In addition, on May 13, 2020, ESA staff conducted reconnaissance botanical and wildlife surveys of the proposed project area in order to characterize existing conditions, assess habitat quality, and assess the potential presence of special-status species and sensitive natural communities. Prior to

the survey, a review of pertinent literature and database queries was conducted for the proposed project area. The sources of reference data reviewed for this evaluation included the following:

- Biological Assessment. West Living Shoreline Pillar Point Harbor (GHD 2020a);
- Biological Resources Assessment. Pillar Point Harbor West Trail (WRA and Valerius 2014);
- Delineation of Waters and Wetlands of the United States, Including Wetlands, and Coastal Commission Wetlands, for the Pillar Point Harbor West Trail Living Shoreline Project, San Mateo County, California (Valerius2020);
- Rookery Survey Results for the San Mateo County Harbor District (SMCHD) Pillar Point Harbor West Trail Living Shoreline Project (GHD 2019);
- Pillar Point Harbor Beach and Foredune Vegetation Establishment and Related Environmental Enhancement Options (Baye 2019);
- Pillar Point West Trail Project: Essential Fish Habitat Assessment (Marine Taxonomic Services, Ltd. 2019);
- Federal Endangered and Threatened Species that may occur in the proposed project area, and/or may be affected by the proposed Project (USFWS 2020a);
- CNDDB list of special-status species occurrences within the proposed project area and within the Half Moon Bay and Montara Mountain USGS 7.5-minute topographic quadrangles;
- CNPS Inventory of Rare and Endangered Plants (v8-03) known to occur within the Half Moon Bay and Montara Mountain USGS 7.5-minute topographic quadrangles;
- USFWS Critical Habitat for Threatened and Endangered Species (USFWS 2020b);
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2020); and
- Special Animals List (CDFW 2019).

Natural Communities and Wildlife Habitat

Natural communities are assemblages of plant and wildlife species that occur together in the same area, which are defined by species composition and relative abundance. Vegetation communities and wildlife habitat within and around the proposed project area were described by WRA and Valerius (2014) (**Appendix B**). These habitats and communities were observed and confirmed during the reconnaissance survey conducted by ESA in 2020. The following natural communities and aquatic habitats occur, or have potential to occur, in and adjacent to the study area: northern coastal salt marsh, freshwater marsh, northern coastal scrub, non-native grassland/Monterey cypress (*Cupressus macrocarpa*) grove mosaic, and coastal strand. Descriptions of these communities can be found in Appendix B.

In addition to natural communities, the proposed project area contains existing developed areas. Developed areas include paved and dirt roadways and trails, parking lots, and other manmade features. These areas are typically unvegetated but may support small patches of non-native grassland and ruderal vegetation. Ruderal vegetation growing in these areas, including the areas

immediately adjacent to the trail, include Italian ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum* ssp. *leporinum*), and wild oat (*Avena fatua*). Associated forbs include filaree (*Erodium botrys*), English plantain (*Plantago lanceolata*), wild radish (*Raphanus sativus*), prickly sow thistle (*Sonchus asper*), and iceplant (*Carpobrotus edulis*). Developed areas within the project footprint include the proposed access roads and stockpile areas.

Federal and State Jurisdictional Wetlands and Waters

There are two types of federal and/or state jurisdictional waters: wetlands and other waters. Wetlands and/or waters are regulated by the USACE, RWQCB, CDFW, and/or the California Coastal Commission (CCC).

Waters of the United States are areas subject to federal jurisdiction pursuant to Section 404 of the Clean Water Act as regulated by the USACE. Waters of the United States are typically divided into two types: (1) wetlands and (2) other waters of the United States. Wetlands are "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Section 328.3[b], 40 CFR Section 230.3). USACE jurisdiction typically extends to the limit of the wetland, as defined by the presence of hydrophytic vegetation, hydric soils, and wetlands hydrology. Other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for the three wetland parameters (33 CFR 328.4). Additionally, navigable waters are subject to federal jurisdiction under Section 10 of the Rivers and Harbors Act.

The RWQCB also regulates waters of the state under the Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act; Section 13260 of the California Water Code). "Waters of the state" is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state," and typically includes Waters of the United States as a subset.

The CDFW regulates lakes and streambeds within the state, including the fish and wildlife resources within them, under Section 1600 of the California Fish and Game Code (CFGC Section 1602). Project proponents must notify CDFW about projects which would divert or obstruct the natural flow of; change the bed, channel, or bank of; or use material from or deposit or dispose of material into any river, stream, or lake.

The CCC jurisdiction for wetlands may extend to the limit of any one of the above three parameters used to identify USACE jurisdictional wetlands and therefore typically is much broader than USACE jurisdiction. The CCC only has jurisdiction over wetlands and waters located within the coastal zone, as well as the open ocean to the Mean High Tide line.

A formal delineation of aquatic resources was conducted on May 28, 2014, and again on January 23, 2020, after the proposed project area limits were changed (Valerius 2020) (**Appendix C**). **Table BIO-1** summarizes the results the January 23, 2020 delineation.

TABLE BIO-1
SUMMARY OF JURISDICTIONAL WETLANDS AND WATERS WITHIN THE PROJECT AREA

Habitat	Acres
Wetlands	
Wetlands of the U.S. and State (Freshwater Emergent Wetland)	0.014
Wetlands of the State/CCC wetlands only	0.008
Jurisdictional Waters	
Non-tidal Section 404 waters of the U.S. (drainage on west side of trail – overlaps with CCC wetlands above)	0.008
Tidal Waters - Section 404 / waters of the State (area below HTL)	2.905
Tidal Waters - Section 10 / waters of the State (area below MHW)	2.84

SOURCE: Valerius, 2020

Special-Status Species

A number of species known to occur in the vicinity of the proposed project area are protected pursuant to federal and/or State endangered species laws, or have been designated species of special concern by the CDFW. In addition, Section 15380(b) of the CEQA Guidelines provides a definition of rare, endangered, or threatened species that are not currently included in an agency listing, but whose "survival and reproduction in the wild are in immediate jeopardy" (endangered) or which are "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens" or "is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act."[1] Species recognized under these terms are collectively referred to as "special-status species." For the purpose of this analysis, special-status species include:

1. Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.12 [listed plants], 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]);

2. Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);

3. Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 Cal. Code Regs. 670.5);

[1] For example, the CDFW interprets Ranks 1A, 1B, 2A, and 2B of the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* to consist of plants that, in a majority of cases, would qualify for listing as rare, threatened, or endangered. However, the determination as to whether an impact is significant is made by the lead agency, absent the protection of other laws.

4. Species formerly designated by the USFWS as species of concern or species designated by the CDFW as species of special concern;[2]

5. Species designated as "special animals" by the state;[3]

6. Species designated as "fully protected" by the state (there are about 35, most of which are also listed as either endangered or threatened);[4]

7. Raptors (birds of prey), which are specifically protected by California Fish and Game Code Section 3503.5, thus prohibiting the take, possession, or killing of raptors and owls, their nests, and their eggs;[5]

8. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);

9. Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (CEQA Guidelines, Section 15380); and

10. Plants considered by the CNPS to be "rare, threatened or endangered in California" under the California Rare Plant Ranking system (CRPR) which include Rank 1A, 1B, 2A, and 2B as well as Rank 3 and 4[6] plant species.

Lists of special-status plant and animal species that have the potential to occur within the proposed project area and surrounding vicinity, or the study area for biological resources, were compiled based on data contained in the CNDDB (CDFW 2020c) and the CNPS Inventory of Rare and Endangered Plants (CNPS 2020) for the Half Moon Bay and Montara Mountain U.S. Geological Survey 7.5 minute topographical quadrangles, in addition to those included on the official USFWS list of federal endangered and threatened species that have potential to occur

[2] A California species of special concern is one that: has been extirpated from the state; meets the state definition of threatened or endangered but has not been formally listed; is undergoing or has experienced serious population declines or range restrictions that put it at risk of becoming threatened or endangered; and/or has naturally small populations susceptible to high risk from any factor that could lead to declines that would qualify it for threatened or endangered status.

[3] Species listed on the current CDFW "special animals" list which includes 906 species. This list includes species that CDFW considers "those of greatest conservation need." (CDFW 2019)

[4] The "fully protected" classification was California's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. The designation can be found in the Fish and Game Code.

[5] The inclusion of birds protected by Fish and Game Code Section 3503.5 is in recognition of the fact that these birds are substantially less common in California than most other birds, having lost much of their habitat to development, and that the populations of these species are therefore substantially more vulnerable to further loss of habitat and to interference with nesting and breeding than most other birds. It is noted that a number of raptors and owls are already specifically listed as threatened or endangered by State and federal wildlife authorities.

[6] Rank 3 plants may be analyzed under CEQA Guidelines Section 15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 4 plant are significant even if individual project impacts are not. CRPR Rank 3 and 4 may be considered regionally significant if, e.g., the occurrence is located at the periphery of the species' range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CRPR Rank 3 and 4 plants should be included in the special-status species analysis. Rank 3 and 4 plants are also included in the CNDDB Special Vascular Plants, Bryophytes, and Lichens List. The current online published list is available: http://www.dfg.ca.gov/biogeodata (CDFW 2020).

in the proposed project area (USFWS 2020a) (**Appendix D**). Several species not included on these lists are also discussed based on documentation of their presence in the proposed project area and surrounding vicinity presented in prior reports or environmental literature. **Appendix E** presents the special-status species, their status, their habitat requirements, and considers the potential for each species to occur within the proposed project area.

Based on review of the biological literature of the region, information presented in previous environmental documentation, and an evaluation of the habitat conditions of the study area, a species was designated as having "no potential" to occur if: (1) the species' specific habitat requirements are not present, or (2) the species is presumed, based on the best scientific information available, to be extirpated from the study area or region. A species was designated as having a "low potential" for occurrence if: (1) its known current distribution or range is outside of the study area or (2) only limited or marginally suitable habitat is present within the study area. A species was designated as having a "moderate potential" for occurrence if: (1) there is low to moderate quality habitat present within the study area or immediately adjacent areas or (2) the study area is within the known range of the species, even though the species was not observed during biological surveys. A species was designated as having a "high potential" for occurrence if: (1) moderate to high quality habitat is present within the study area, and (2) the study area is within the known range of the species. Many of the species listed in Appendix D have only a low potential for occurrence or are absent from the study area and were eliminated from further evaluation, primarily because the study area does not provide suitable habitat for them or the proposed project area is outside of their understood range.

Special-Status Plants and Bryophytes

The following special-status plants were determined to have at least a moderate potential to occur within the proposed project area or surrounding vicinity:

- Coastal triquetrella
- Blasdale's bent grass
- Coastal marsh milk-vetch
- johnny-nip
- perennial goldfields
- coast iris
- rose leptosiphon
- San Mateo tree lupine
- Choris' popcornflower
- San Francisco campion

Coastal triquetrella (*Triquetrella californica*) is a CRPR 1B.2 moss that is most often found near the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. The project area contains suitable habitat for this species.

Blasdale's bent grass (*Agrostis blasdalei*) is a CRPR 1B.2 perennial rhizomatous herb in the grass family (Poaceae) that blooms from May through July. This species occurs in dune, prairie, and bluff scrub communities along the coast from Rockport (Mendocino County) to Point Reyes and between Pescadero and Davenport. The nearest CNDDB occurrence is from 2015 and within 2.5 miles of the Project Site. Coastal prairie habitat is present on top of the plateau.

Coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*) is a CRPR 1B.2 perennial herb in the pea family (Fabacea) that blooms from April to October. This species is another associate of dunes and scrub along the coast that also occurs in marshes, swamps, and coastal brackish streamsides, primarily between Pacifica and Año Nuevo State Reserve with some records documented in Point Reyes and south of the Eel River. Potential habitat exists in the project area and there is a CNDDB record from Pillar Point. This species has not been recorded at Pillar Point since 1902.

Johnny-nip (*Castilleja ambigua var. ambigua*) is a CRPR 4.2 annual herb that occurs in coastal bluff scrub, coastal prairie, coastal scrub, marsh and swamp, and valley and foothill grassland habitats. Vernal pools margins. It blooms from March to August. According to Consortium of California Herbaria, the nearest occurrence was located in 1914, 1.5 miles away near El Granada. The most recent collection near the study area is from 2015, 2.4 miles away near Moss Beach. Coastal prairie and scrub habitat are present in the project area.

Perennial goldfields (*Lasthenia californica* ssp. *macrantha*) is a CRPR 1B.2 perennial herb in the sunflower family (Asteraceae) that blooms from January to November. This species is found in dunes, scrub, and bluff scrub communities along the coast from Fort Bragg to Gualala, Jenner to Point Reyes, and around Pescadero. The nearest CNDDB occurrences are located 3.5 miles north of the proposed project area near the town of Montara and south near the town of Half Moon Bay. Coastal dune and scrub habitat are present in the project area.

Rose Leptosiphon (*Leptosiphon rosaceus*) is a CRPR 1B.1 species that blooms from April to July. This species is found in coastal bluff scrub habitat**.** Habitat for this species exists in the project area. There is a CNDDB occurrence reported from the top of the project area's bluff from 2014. There are also occurrences from Montara Point, Moss Beach and Pacifica.

San Mateo tree lupine (*Lupinus arboreus var. eximius*) is a CRPR 3.2 species that occurs in chaparral and coastal scrub habitat. This species was observed by Jane Valerius in 2014 within the project area. This subspecies is currently unresolved in the Jepson Manual. It states "possible addition, unresolved variant" (Jepson eFlora 2020).

Coast iris (*Iris longipetala*) is a CRPR 4.2 perennial rhizomatous herb in the iris family (Iridaceae) that blooms March through May. This species is associated with mesic sites in coastal prairie, meadows and seeps, and lower montane coniferous forest communities. The nearest CNDDB occurrence is within 2.5 miles of the proposed project area, near Half Moon Bay. Coastal prairie habitat is present on top of the plateau in the project area.

Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*) is a CRPR 1B.2 annual herb in the forget-me-not (borage) family (Boraginaceae) that occurs in mesic sites in chaparral, coastal prairie, and coastal scrub communities and blooms from March to June. The nearest CNDDB occurrence is a little over 3 miles from the proposed project area, near Half Moon Bay, and grows in similar conditions to the project area.

San Francisco campion (*Silene verecunda ssp. verecunda*) is a CRPR 1B.2 perennial herb that usually blooms from March to June. It is found in coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, and coastal prairie habitat, often on mudstone or shale. The nearest

CNDDB occurrence is within 3 miles of the Project Site. Coastal prairie habitat is present on top of the plateau in the project area.

Special-Status Animals

The following special-status animals were determined to have at least a moderate potential to occur within the project area or surrounding vicinity:

- San Francisco garter snake
- California red-legged frog
- Monarch Butterfly California Overwintering Population
- Marbled Murrelet
- Western snowy plover
- Hoary Bat
- Central California Coast Coho ESU
- Central California Coast Steelhead DPS
- Green sturgeon
- Other Special-Status Birds
- Other Breeding and Migratory Bird
- Marine Mammals

San Francisco garter snake (*Thamnophis sirtalis tetrataenia*; SFGS) is federally and State-listed as an endangered species and is a CDFW "fully protected" species. This snake historically occurred in wetland areas on the San Francisco Peninsula from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains at least to the Upper Crystal Springs Reservoir, and along the coast south to Año Nuevo Point, San Mateo County, and Waddell Creek, Santa Cruz County, California (Barry 1994; USFWS 1985). Currently, the species has been reduced to only six significant populations in San Mateo County and northern Santa Cruz County, which were described in the USFWS *San Francisco Garter Snake 5-year Review Summary and Evaluation* (USFWS 2006). The preferred habitat for San Francisco garter snake is a densely vegetated pond that hosts its prey base of CRLF, American bullfrog, and Sierran treefrog (*Pseudacris sierra*) near an open hillside with access to sun and rodent burrows for cover. Temporary ponds and other seasonal freshwater bodies are also used. Emergent bankside vegetation such as cattails (*Typha* spp.), bulrushes (*Schoenoplectus* spp.), and rushes (*Juncus* spp.) are preferred and used for cover. Adult garter snakes sometimes aestivate in rodent burrows during summer months when the ponds are dry. On the coast, the snakes hibernate during the winter, but further inland, if the weather is suitable, garter snakes may be active year-round (McGinnis et al. 1987; McGinnis 1989; USFWS 2006).

Exact locations of SFGS occurrences are considered sensitive by CDFW. There is a suppressed record for SFGS within the Montara Mountain Quadrangle (CDFW 2020b). While no occurrences have been documented, suitable habitat exists within the proposed project area and potential presence of SFGS in the project area is assumed.

California red-legged frog (*Rana draytonii*; CRLF) is federally listed as a threatened species throughout its range in California and is a CDFW Species of Special Concern (SSC). This frog historically occurred over much of the State from the Sierra Nevada foothills to the coast and from Mendocino County to the Mexican border. CRLF typically inhabit ponds, slow-moving creeks, and streams with deep pools that are lined with dense emergent marsh or shrubby riparian vegetation. Submerged root masses and undercut banks are important habitat features for this

species. However, this species is capable of inhabiting a wide variety of perennial aquatic habitats. CRLF is known to survive in ephemeral streams, although only if deep pools with vegetative cover persist through the dry season. Factors that have contributed to the decline of CRLF include destruction of riparian habitat from development, agriculture, flood control practices, or the introduction of exotic predators such as American bullfrog (*Rana catesbeiana*), crayfish, and a variety of non-native fish.

While CRLF has not been documented in the proposed project area, there are occurrence records of this species from 1999 in the freshwater portion of Pillar Point Marsh as well as more recent records from the nearby Half Moon Bay Airport (CNDDB 2020). CRLF are not expected to occur in brackish waters of the marsh closest to the proposed project area. However, CRLF could temporarily disperse onto the proposed project area.

Monarch butterfly (*Danaus plexippus*) California Overwintering Population. Monarch butterflies living west of the Rocky Mountains migrate to overwintering sites in California along the coast near the Santa Cruz and San Diego areas where climatic conditions allow minimal use of their energy stores. Monarch butterflies cluster together by the thousands at roost sites to stay warm along trunks, branches, and leaves of eucalyptus, Monterey pine, and Monterey cypress tree stands. (Natural Resources Conservation Service and U.S. Fish and Wildlife Service 2016). Monarch butterfly overwintering sites are included on CDFW's Special Animals List (CDFW 2020a). The closest CNDDB record for this species is within one mile of the proposed project area. A suitably mature stand of Monterey cypress trees that could be used as a wintering site by Monarch butterflies is located within the proposed project area.

Marbled Murrelet (*Brachyramphus marmoratus*) is a federally threatened and State endangered species. Marbled murrelets are a small seabird that forage and spend the majority of their lives in near-shore marine environments. They nest in coastal old-growth coniferous forests. The proposed project area is located approximately 6 miles west the closest critical habitat, located along Pilarcitos Creek. Marbled murrelets have been observed within Pillar Point Harbor, but are not expected to the nest in the area due to a lack of suitable nesting habitat.

Western Snowy Plover (*Charadrius nivosus nivosus*) is federally listed as a threatened species and is a California species of special concern. It is a small shorebird with pale brown to gray upper body, white or buff colored belly, and darker patches on its shoulders and head. The Pacific coast population of the snowy plover has a current breeding range from southern Washington to Baja California, Mexico. It breeds primarily above the high tide line on coastal beaches, sand spits, sparsely vegetated dunes, beaches at creeks and river mouths, and salt pans. Wintering areas are usually similar to nesting habitat. This species forages above and below the mean high waterline, typically gathering food from the surface of the sand, wrack line, or low foredune vegetation. The proposed project area is located approximately 3.1 miles north of the closest critical habitat at Half Moon Bay Beach. Western snowy plovers have not been observed breeding in recent years within the vicinity of the proposed project area. Wintering birds have been observed on the adjacent Mavericks beach, near the proposed project area.

Other Special Status Birds. Several special-status birds nest or could potentially nest within or adjacent the proposed project area. A heron and egret rookery is located within the Monterey cypress grove in and adjacent to the project area. Great blue herons (*Ardea herodias*) were observed nesting during the May 13, 2020 reconnaissance survey conducted by ESA. Rookeries of this species are classified as "sensitive species" by the California Department of Forestry and Fire Protection. Merlin (*Falco columbarius*) is considered a "watch list" species by CDFW that could nest in Monterey Cypress groves or bluffs in the Project area. American peregrine falcon (*Falco peregrinus anatum*) is a "fully protected" species in California. This species was reported to have nested successfully on the Pillar Point bluffs in 2019 (GHD 2019). Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) is considered a Species of Special Concern by CDFW and a Bird of Conservation Concern by USFWS. This species is documented as occurring in Pillar Point Marsh, which borders the proposed project area.

Other Breeding and Migratory Birds. The proposed project area contains a diverse array of habitats that offer foraging and nesting opportunity to a variety of resident and migratory birds. Common raptor species which may nest in the mature Monterey cypress trees could include red-tailed hawk, red-shouldered hawk, great horned owl, and American kestrel (*Falco sparverius*). Passerine species which could nest in the area include but are not limited to Anna's hummingbird, Bewick's wren, white-crowned sparrow, American robin, American crow (*Corvus brachyrhynchos*), California towhee (*Melozone crissalis*), and spotted towhee (*Pipilo maculatus*) among many others. The federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code protect raptors, most native migratory birds, and breeding birds that could occur in the proposed project area and/or nest in the surrounding vicinity.

Hoary Bat (*Lasiurus cinereus*) is a solitary roosting bat species that roosts in dense foliage of medium to large coniferous and deciduous trees. It occurs year-round in California and can be found overwintering in the San Francisco Bay Area. The Monterey cypress grove located within and adjacent to the proposed project area provides potential roosting habit for this species.

Central California Coast Coho (*Oncorhynchus kisutch*) evolutionarily significant unit (ESU) is listed as endangered by NMFS. This evolutionarily significant unit, or ESU, includes naturally spawned coho salmon originating from rivers south of Punta Gorda, California, to and including Aptos Creek, as well as such coho salmon originating from tributaries to San Francisco Bay. Denniston Creek, a 4.4-mile tributary stream flowing into Pillar Point Harbor is designated Central California Coast coho critical habitat. Denniston Creek is outside the proposed project area. Dams and culverts (barriers to movement) were installed in the creek in 1992.

Central California Coast steelhead (*O. mykiss*) distinct population segment (DPS) is listed as threatened by NMFS. This DPS includes all naturally spawned populations of steelhead from the Russian River to Aptos Creek, and includes the populations spawning in streams and rivers tributary to San Francisco Bay (including San Pablo, and Suisun Bays) eastward to Chipps Island. Denniston Creek, which is outside if the proposed project area, is designated Central California Coast steelhead critical habitat. Neither Pillar Point Harbor nor Denniston Creek provide suitable spawning habitat. Due to dams and culverts placed in Denniston Creek, the steelhead remaining upstream are now considered rainbow trout (Titus et. al. 2011)

North American Green Sturgeon (Acipenser medirostris). The southern DPS of North American green sturgeon is listed as threatened by NMFS. Green Sturgeon spend much of their life in marine waters, and are anadromous, migrating in March-June from seawater into the freshwater reaches of larger coastal rivers to spawn. The waters in and around Pillar Point Harbor are within the range of the southern DPS of North American green sturgeon and the offshore marine waters outside the boundaries of Pillar Point Harbor are designated as critical habitat.

Marine Mammals. Pacific harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*) occur within and around Pillar Point Harbor and are known to haul out on docks in the harbor. The California sea lion and Pacific harbor seal are both protected under the Marine Mammal Protection Act (MMPA).

Critical Habitat

The USFWS can designate critical habitat for species that have been listed by the federal government as threatened or endangered. "Critical Habitat" is defined in Section 3(5)(A) of the federal Endangered Species Act as those lands (or waters) within a listed species' current range that contain the physical or biological features that are considered essential to its conservation. Critical habitat for leatherback sea turtle, green sturgeon, and black abalone is present within the project area as follows: for the leatherback sea turtle, at below the extreme low water line; for green sturgeon, below the Mean Higher High Water (MHHW) to 360.9 feet (110 meters) in depth; and for black abalone, rocky intertidal and subtidal habitat from MHHW to 19.7 feet (6.0 meters) in depth.

Sensitive Natural Communities and Environmentally Sensitive Habitat Areas

Sensitive Natural Communities

Sensitive natural communities (or special-status native plant communities) are designated as such by various resource agencies, such as CDFW, or in local policies and regulations and are generally considered to have important functions or values for wildlife or humans and/or are recognized as declining in extent or distribution and are considered threatened enough to warrant some sort of protection. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint.

The CNDDB reports several sensitive natural community occurrences for the Half Moon Bay and Montara Mountain quadrangle areas containing and surrounding the proposed project area. These include northern coastal salt marsh, northern maritime chaparral, serpentine bunchgrass, and valley needlegrass grassland (CDFW 2020). Upon review of the CNDDB data and previous studies (WRA and Valerius 2014), as well as observations during the May 13, 2020 reconnaissance survey, northern coastal salt marsh occurs within the vicinity of the proposed project area. No project related activities are anticipated to occur within this habitat.

Environmentally Sensitive Habitat Areas

The California Coastal Act of 1976 defines Environmentally Sensitive Habitat Areas (ESHA) as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by

human activities and developments." In areas where a local coastal program has been developed and approved, the local coastal program may include a separate definition of ESHA.

The San Mateo County's Local Coastal Program (SMC-LCP) defines several environmentally sensitive habitat areas (ESHA) that are afforded special protection. These ESHA are defined in the SMC-LCP as "…as any area in which plant or animal life or their habitats are either rare or especially valuable and any area which meets one of the following criteria: (1) habitats containing or supporting 'rare and endangered' species as defined by the California Department of Fish and Wildlife Commission, (2) all perennial and intermittent streams and their tributaries, (3) coastal tide lands and marshes, (4) coastal and offshore areas containing breeding or nesting sites and coastal areas used by migratory and resident water-associated birds for resting areas and feeding, (5) areas used for scientific study and research concerning fish and wildlife, (6) lakes and ponds and adjacent shore habitat, (7) existing game and wildlife refuges and reserves, and (8) sand dunes."

Several of these resources occur in the vicinity of and within the proposed project area. However, the designation of these habitats as ESHA are made by County staff on a case-by-case basis at the time a project is proposed. The SMC-LCP limits development in ESHA to resource dependent uses and prescribes minimum set-back, or buffer distances from ESHA for other development.

Habitat Areas of Particular Concern and Essential Fish Habitat

Habitat Areas of Particular Concern

Habitat Areas of Particular Concern (HAPC) are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function. Under the Pacific Groundfish Fishery Management Plan, two HAPCs, rocky reef and canopy kelp, have been designated in the vicinity of the project site because of the valuable ecological functions they provide to multiple species. Canopy kelp does not occur within the proposed project area but is present in the vicinity of Pillar Point Harbor. Rocky reef habitat is present in the southwest portion of the proposed project area. Although not designated in the vicinity of the proposed project area, seagrass beds are also considered an HAPC. Surveys conducted in August and November 2019 showed no presence of eelgrass (*Zostera* spp.) within the proposed project area (Marine Taxonomic Services 2019; GHD 2020b). However, eelgrass beds were mapped in the vicinity of proposed project area near Dogleg Shoal Beach (GHD 2020b).

Eelgrass is a native marine vascular plant indigenous to the soft-bottom shallow bays and estuaries of the Northern Hemisphere. The species' range extends from Baja California to northern Alaska along the West Coast of North America, as well as from North Carolina to Newfoundland on the East Coast, and along the coasts of Europe and East Asia. Eelgrass beds are extremely dynamic, expanding and contracting seasonally and annually depending on the quality of the site. Consequently, they serve as an indicator community for the overall health of an estuary.

Eelgrass plays many roles within the estuary system. It clarifies water through sediment trapping and habitat stabilization. It also provides benefits of nutrient transformation and water oxygenation. Eelgrass serves as a primary producer in a detrital based food-web and is further directly grazed upon by invertebrates, fish, and birds. It supports epiphytic plants and animals that, in turn, are grazed upon by other invertebrates, larval and juvenile fish, and birds. Eelgrass is a nursery area

for many commercially and recreationally important finfish and shellfish species including those that are resident within bays and estuaries, nearly all of the anadromous fish species found along the Pacific coast, and oceanic species, which enter the estuaries to breed or spawn. Besides providing important habitat for fish, eelgrass habitat also is considered to be an important resource supporting migratory birds during critical life stages, including migratory periods.

Essential Fish Habitat

Essential Fish Habitat (EFH) was defined by the U.S. Congress in the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, or Magnuson-Stevens Act, as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." An Essential Fish Habitat Assessment was prepared for the Project in 2019 (Marine Taxonomic Services, Ltd, 2019). The assessment identified a total of 104 species of marine fish and invertebrates, managed under three distinct Pacific Fishery Management Council (PFMC) Fishery Management Plans (FMP), contain EFH within the Project survey area. Of these species, 96 are currently managed under the Pacific Coast Groundfish FMP, 7 under the Coastal Pelagic Species FMP, and one is managed under the Pacific Coast Salmon FMP.

PFMC-managed fish species with the highest likelihood of occurrence within the project area are listed in **Table BIO-2**, below.

TABLE BIO-2
PFMC-MANAGED FISH SPECIES WITH HABITAT REQUIREMENTS WITHIN THE PROJECT AREA

Common Name	Scientific Name
Coastal Pelagic Species FMP	
Jack mackerel	*Trachurus symmetricus*
Krill	*Euphausia Pacifica* & *Thysanoessa Spinifera*
Market squid	*Loligo opalescens*
Northern anchovy	*Engraulis mordax*
Pacific makerel	*Scomber japonicas*
Pacific sardine	*Sardinops sagax*
Pacific Coast Salmon FMP	
Coho salmon	*Oncorhynchus kisutch*
Pacific Coast Groundfish FMP	
Black and Yellow Rockfish	*Sebastes chrysomelas*
Blue Rockfish	*Sebastes mystinus*
Boccaccio	*Sebastes paucispinis*
Cabezon	*Scorpaenichthys marmoratus*
California skate	*Raja inornate*
Chilipepper Rockfish	*Sebastes phillipsi*
Copper rockfish	*Sebastes caurinus*
Curlfin sole	*Pleuronichthys decurrens*
Gopher rockfish	*Sebastes carinatus*

TABLE BIO-2
PFMC-MANAGED FISH SPECIES WITH HABITAT REQUIREMENTS WITHIN THE PROJECT AREA

Common Name	Scientific Name
Grass rockfish	*Sebastes rastrelliger*
Green-spotted rockfish	*Sebastes chlorostictus*
Kelp greenling	*Hexagrammos decagrammus*
Kelp rockfish	*Sebastes atrovirens*
Leopard shark	*Triakis semifasciata*
Pacific cod	*Gadus macrocephalus*
Quillback rockfish	*Sebastes maliger*
Squarespot rockfish	*Sebastes hopkinsi*
Starry flounder	*Platichthys stellatus*
Stripetail rockfish	*Sebastes saxicola*
Treefish	*Sebastes serriceps*
Yellowtail rockfish	*Sebastes flavidus*

SOURCE: Marine Taxonomic Services, Ltd, 2019

Discussion

a) **Less than Significant with Mitigation Incorporated.**

Special-Status Plants

Special-status plants, including Coastal triquetrella, Blasdale's bent grass, Coastal marsh milk-vetch, johnny-nip, perennial goldfields, coast iris, rose Leptosiphon, San Mateo tree lupine, Choris' popcornflower, San Francisco campion, and others listed in the setting section, have potential to occur with the proposed project area.

The proposed project would include placement of cobble and sand in an eroded portion of beach habitat along the existing trail, as well as placement of decomposed granite on the trail. The project would also include replacement of the existing stormwater system and creation of a new stormwater bioretention basin, which span bluff, Monterey cypress, and coastal scrub habitat. Construction activities, including placement and spreading the sand, cobble and rock with equipment, could result in direct mortality of individual special-status plants, if present, through soil disturbance and loss of habitat. Permanent indirect impacts on special-status plant species may arise from population fragmentation and introduction of non-native weeds. These direct and indirect impacts to special-status plants are potentially significant.

Implementing measures **BIO-1a: General Construction Mitigation Measures, BIO-1b General Wildlife Conservation Measures and BIO-1c Avoidance and Minimization for Special-Status Plants**, would reduce potential impacts on special-status plants to a less-than significant level by implementing a construction worker environmental awareness training and education program; implementing general measures to protect

special-status plants such as delineating the work area and avoiding the introduction of weeds; and requiring pre-construction protocol-level surveys, implementing avoidance measures, and providing compensation if special-status plants cannot be avoided.

Mitigation Measure BIO-1a: General Construction Conservation Measures.

The contractor shall be supplied with copies of the permit conditions of approval that detail the below listed measures prior to ground breaking, as well as any other pertinent avoidance and minimization measures:

- No project related activities shall occur outside the delineated work area.
- No rodenticides, pesticides, or herbicides shall be used as part of the project.
- Construction Areas: Areas within which construction activities and staging are to take place shall be minimized in size and shall be sited and designed to avoid impacts on coastal waters and marine life, and to the extent feasible, public access to the water and shoreline. Construction (including but not limited to dredging activities, and materials and/or equipment storage) shall be prohibited outside of the defined construction, staging, and storage areas.
- Construction Methods and Timing: Methods shall be used to keep the construction areas separated from public recreational use areas (including using unobtrusive fencing or equivalent measures to delineate construction areas) to the maximum extent practicable. Full closure of the trail is anticipated during night work (trail is already closed after dusk and varies seasonally) to the public per County rules.
- All vehicle parking shall be restricted to previously determined staging areas or existing roads. Necessary vehicles belonging to the biological monitors and construction supervisors shall be parked at the nearest point on identified existing access roads.

Construction BMPs shall be installed prior to construction and used during construction to protect coastal water quality, including the following:

- Silt fences, straw wattles, or equivalent apparatus shall be installed at the perimeter of the construction site to prevent construction-related runoff or sediment from discharging to coastal waters or to areas that would eventually transport such discharge to coastal waters.
- The fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any aquatic habitat or water body.
- All construction equipment shall be inspected and maintained at an off-site location to prevent leaks and spills of hazardous materials at the project site.
- The contractor shall ensure that good construction housekeeping controls and procedures are maintained at all times including: clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly; place trash receptacles on site for that purpose; cover open trash receptacles during wet weather; and remove all construction debris from the site.

- All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday.

Mitigation Measure BIO-1b. General Wildlife Conservation Measures.

- At least 15 days prior to any ground disturbing activities, the Harbor District shall submit to the USFW and CDFW for review and approval the qualifications of the proposed biological monitor(s). A qualified biological monitor means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the listed species.

- Prior to the start of construction, a USFWS- and CDFW-approved biologist will conduct an Environmental Awareness Training. The training will educate all construction personnel regarding habitat, identification of special status species, and required practices before the start of construction. The training will include the general measures that are being implemented to conserve the species as they relate to the Project, the penalties for non-compliance, and the boundaries of the project area. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A fact sheet or other supporting materials containing this information will be prepared and distributed to all construction personnel. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all the conservation and protection measures.

- A "soft-start" policy shall be implemented in order to allow wildlife species to vacate the area prior to construction activities. A soft-start (e.g. ramp-up period) shall be used prior to full-power equipment use at the beginning of each day, or following a 30 minute or longer break.

- A litter control program shall be instituted at the proposed project area. All construction personnel will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers will be removed from the project area at the end of each working day.

Mitigation Measure BIO-1c: Avoidance and Minimization Measures for Special-status Plants.

Prior to the commencement of ground disturbance activities, a focused botanical survey(s) for special-status plants shall be conducted in all potentially suitable habitat during the appropriate blooming period for each species and in accordance with the guidelines established by the California Department of Fish and Wildlife in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). If more than two years elapse between the focused botanical surveys and commencement of ground disturbance activities, a final set of appropriately-timed focused botanical surveys shall be conducted and populations mapped. The results of these final surveys shall be combined with previous survey results to produce habitat maps showing where the special-status plants have been observed during either of the focused botanical surveys conducted for each site.

- To the extent feasible, construction activities shall be sited to avoid permanent and temporary impacts on special-status plants. Special-status plants to be avoided shall be fenced or flagged prior to construction.

- If avoidance is not feasible, seasonal avoidance measures (i.e., limited operating periods based on timing of annual plant dormancy shall be applied as appropriate. Topsoil salvage and site restoration may also be implemented, to be determined by the Lead Biologist and USFWS and CDFW, as appropriate, to ensure the site is returned to pre-construction conditions.

- For potential impacts to federal and/or state listed plant species, the Harbor District shall comply with the FESA and/or CESA by implementing any requirements from USFWS and CDFW consultation. For state listed rare plants, a state Incidental Take Permit (ITP) may be required, which would provide conditions for allowable take and measures to compensate impacts on rare plants.

- If avoidance is not feasible, compensation for temporary or permanent loss of special-status plant occurrences, in the form of land purchase or restoration, shall be provided at a minimum 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts. Compensation for loss of special-status plant populations may include the restoration or enhancement of temporarily impacted areas, purchase and permanent stewardship of known occupied habitat or the restoration and reintroduction of populations in degraded, unoccupied habitat. Restoration or reintroduction may be located on- or off-site, or can be incorporated, with agency approval, into the planned dune and associated native plant restoration efforts that are part of the plan. At a minimum, the compensation areas shall meet the following performance standards by the fifth year following initiation of compensation efforts:

    a. The compensation area shall be at least the same size as the impact area.

    b. Native vegetation cover shall be at least 70 percent of the baseline/impact area native vegetation cover.

    c. Population of the impacted special-status species shall have either:

        i. at least 60 percent cover of the impact area, or

        ii. at least 70 percent survival of installed plants

    d. Invasive species cover shall be less than or equal to the invasive species cover in the impact area.

Alternatively, compensatory credits may be purchased through a USFWS- and/or CDFW-approved mitigation bank, or USFWS-approved Habitat Conservation Plan.

Plant populations that cannot be avoided shall be monitored to document whether the populations re-established after ground-disturbing activities. Results from this monitoring shall be used to determine future compensation requirements for future project impacts.

Invertebrates

Overwintering monarch butterflies (*Danaus plexippus* pop. 1) can be found roosting along the coast from Baja California, Mexico to northern Mendocino county. This species roosts in wind-protected trees groves such as eucalyptus, Monterey pine, and cypress. The Monterey cypress groves present within the proposed project area provide potential roosting habitat for overwintering monarch butterflies. Except for minor tree limbing, as needed, no impacts to Monterey cypress trees are anticipated as part of the proposed project. Any project related impacts to food plants would be minimal and mostly temporary. As such, the proposed project would have less than significant impacts on overwintering monarch butterflies.

Marine Species

Several special-status fish species and marine mammals, critical habitat for green sturgeon, leatherback sea turtle, and black abalone, as well as EFH, occur within and around Pillar Point Harbor.

Sand and cobble for the Project will be sourced from a combination of imported rock from local quarries and sand from sources within the harbor. Dredging and fill placement activities can cause direct mortality of individuals. These activities, as well as increased activity and noise from construction work and with lights used during night work, could also cause indirect impacts to marine species by disrupting feeding and resting animals and affecting water quality resulting in potentially significant impacts. Implementation of **Mitigation Measures BIO-1b General Wildlife Conservation Measures, BIO-1d Avoidance and Minimization Measures for Fish and Sea Turtles, and BIO-1e Avoidance and Minimization Measures for Marine Mammals** would reduce impacts to less than significant.

Mitigation Measure BIO-1d: Avoidance and Minimization Measures for Fish and Sea Turtles. The following measures shall be implemented to avoid potential impacts to listed fish species, sea turtles, and critical habitat:

- All sand borrow activities shall occur at low tide when no standing water is present.
- No refueling or maintenance of equipment shall occur on the beach.
- Temporary artificial lighting proposed during night work shall be angled away from open water in Pillar Point Harbor to the greatest extent possible.

Mitigation Measure BIO-1e: Avoidance and Minimization Measures for Marine Mammals. The following measures shall be implemented avoid potential impacts to marine mammals:

- A “soft start” (e.g. ramp-up period) prior to full-power equipment use at the beginning of each day, or following a 30 minute or longer break, shall be implemented to warn any marine mammals to move away from the construction area.

To address possible disturbance from temporary artificial lighting during night work:

- Temporary artificial lighting proposed during night work shall be angled away from open water in Pillar Point Harbor to the greatest extent possible.

Amphibians and Reptiles

The proposed project area contains suitable habitat for San Francisco garter snake. While less likely to occur and be impacted by the proposed project, California red-legged frog is also considered here as there is potential for this species to disperse onto the proposed project area. Construction related activities, including vehicular traffic, placement of materials, and predation by corvids, raccoons, and other species attracted by human presence and associated food waste could cause direct mortality to these species resulting in potentially significant impacts. Implementation of **Mitigation Measures BIO1-b General Wildlife Conservation Measures** and **BIO-1f Avoidance and Minimization Measures for San Francisco garter snake and California red-legged frog** would reduce impacts to less than significant.

Mitigation Measure BIO-1f: Avoidance and Minimization Measures for San Francisco Garter Snake (SFGS) and California Red-legged Frog (CRLF).

- There shall be no use of plastic mesh erosion control materials, to prevent entanglement of CRLF or SFGS.

- No less than 15 calendar days prior to the onset of activities, the Harbor District shall submit the name(s) and credentials of biologists who could conduct the activities specified in the following measures. A qualified biologist means any person who has completed at least four years of university training including wildlife biology or related coursework, and/or has demonstrated field experience in the identification and life history of the CRLF and SFGS. Resumes of all biologists shall be submitted to the USFWS and CDFW for approval. No earth moving or other project activities shall begin until written approval from the USFWS and CDFW has been received that the biologist(s) is qualified to conduct the work.

- Pre-construction surveys for listed species shall be conducted immediately prior to groundbreaking or ground disturbance activities (including grading or equipment staging) that occurs in CRLF or SFGS habitat or any activity that may result in take of these species. Surveys shall be conducted by USFWS- and CDFW-approved biologists who shall carefully search all obvious potential hiding spots for CRLF and SFGS, including but not limited to downed woody debris, culverts, riparian vegetation, and entrances to small mammal burrows. In the event that an ESA-listed animal is observed, construction shall cease until the individual has moved out of the area of its own volition or has been relocated to an appropriate location. Only USFWS- and CDFW-approved biologists with appropriate permits shall relocate listed species to the nearest suitable habitat away from project activities.

- Before the onset of any construction activities, the District or construction manager and USFWS- and CDFW-approved biologist shall discuss locations for equipment, personnel access, and materials staging to minimize disturbance to CRLF and SFGS habitat.

- A USFWS- and CDFW-approved biologist shall be onsite during all ground-disturbing activities (i.e., vegetation grubbing, excavation) within potential ESA-listed species habitat to ensure compliance with these avoidance measures. This includes monitoring during both daytime and nighttime work.

- After ground disturbing activities are complete, the USFWS- and CDFW-approved biologist shall train an individual to act as the on-site construction monitor. The construction monitor shall have attended the Environmental Awareness Training. Both the USFWS- and CDFW-approved biologist and the construction monitor shall have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the proposed project. The USFWS- and CDFW-approved biologist and construction monitor shall complete a daily log summarizing activities and environmental compliance.

- The USFWS- and CDFW-approved biologist shall have oversight over the implementation of all the Terms and Conditions resulting from consultation (conducted as part of the resource permitting process), and shall have the authority to stop proposed project activities if any of the requirements associated with these Terms and Conditions are not being fulfilled. If the biologist has presented a stop work order due to take or near-take of any of the listed species, the USFWS and the CDFW shall be notified within one (1) working day via email or telephone.

- A USFWS- and CDFW-approved biologist shall survey the work site immediately prior to construction activities. If CRLF adults, tadpoles, or eggs or SFGS or are found, the approved biologist shall contact the Service to determine if moving any of these life-stages is appropriate. In making this determination the USFWS and CDFW shall consider if an appropriate relocation site exists as provided in the relocation plan. Artificial lighting at night shall be taken into consideration for relocation sites (i.e., relocation should occur outside of areas proposed for nighttime illumination). If the USFWS and CDFW approves moving animals, the approved biologist shall be allowed sufficient time to move CRLF or SFGS from the work site before work activities begin. Only USFWS- and CDFW-approved biologists shall participate in activities associated with the capture, handling, and monitoring of CRLF or SFGS.

- Bare hands shall be used to capture CRLF or SFGS. USFWS- and CDFW-approved biologists shall not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens of handling of the amphibians, USFWS- and CDFW-approved biologists shall follow the Declining Amphibian Populations Task Force's *Code of Practice* (DAPTF 2004).

- The site inspector shall be trained by the USFWS- and CDFW-approved biologist and may act as the construction monitor during non-ground disturbing or lower risk portions of the proposed project. The inspector shall be identified during the employee education program. The name and telephone number shall be provided to the USFWS and CDFW prior to the initiation of ground disturbance activities.

- No pets shall be permitted in the work area to avoid harassment, killing, or injuring of CRLF or SFGS individuals. Because the work area occurs along a pedestrian trail on which dogs are permitted, it is understood that canine or feline pets may be present in the vicinity of the work area that do not belong to the construction workers.

- Temporary artificial lighting proposed during night work shall be angled away from potential CRLF breeding habitat (i.e. freshwater portions of Pillar Point Marsh).

Special-Status Birds

Special-status birds, including the western snowy plover, California least tern, and marbled murrelet have the potential to occur in and adjacent to the proposed project area, and all have been documented either overwintering or foraging in the area. While it is highly unlikely, if any of these species were to nest within the vicinity of the proposed project area, construction activities could directly or indirectly impact these species through loss of nests, eggs, or nestlings, or by causing nest abandonment, which would be a significant impact. In addition, increased day and night construction activity could disrupt foraging patterns.

Implementation of Mitigation Measures BIO 1-b General Wildlife Conservation Measures and BIO-1g Avoidance and Minimization Measures for Special-Status Birds would reduce impacts to less than significant.

Mitigation Measure BIO-1g: Avoidance and Minimization Measures for Special-Status Birds.

- In event that Western Snowy Plovers or California Least Terns nest on the small beach along the West Trail within the project area, nest protection measures (as described below) shall be implemented. In addition, no night work (including artificial lighting) shall be permitted within 300 feet of the nest(s).

- If construction work occurs adjacent to suitable nesting habitat (i.e., beach) between January 15 to September 15 (general nesting season in the project area), a USFWS- and CDFW-qualified ornithologist shall conduct pre-construction nest surveys (specifically for Western Snowy Plovers and California Least Terns). The ornithologist shall conduct at minimum a one-day pre-construction survey within the 7-day period prior to ground-disturbing activities. If ground disturbance work lapses for seven days or longer during the nesting season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before project work is reinitiated.

- If active nests are detected within the construction footprint or up to 500 feet from construction activities, the ornithologist shall flag a buffer around each nest (assuming property access). Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers shall be implemented as needed (buffer size dependent on species). In general, the buffer size would be determined on a case-by-case basis in consultation with CDFW and, if applicable, with

USFWS. Buffer sizes shall take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity (including proposed temporary new sources of light in the project area during night work); (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds. An absolute minimum buffer size of 30 feet is recommended as a starting point of discussion with USFWS and CDFW for common species, with larger buffers expected for special status species and raptors.

- If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors.

- To minimize the potential for disturbance of Marbled Murrelets foraging in or traveling to/from Pillar Point Harbor during the dawn and dusk hours, temporary artificial lighting proposed during night work shall be angled away from open water in Pillar Point Harbor.

Other Special-Status and Nesting Birds

In addition to common passerines and raptors, other special-status birds that have the potential to occur and nest within the Project vicinity include American peregrine falcon, great blue heron, black-crowned night heron (*Nycticorax nycticorax*), merlin, and salt marsh common yellowthroat.

Implementation of Mitigation Measures **BIO-1b General Wildlife Conservation Measures** and **BIO-1h Avoidance and Minimization Measures for Nesting Birds** would reduce impacts to less than significant by conducting work during the non-nesting season as feasible. If work is implemented during the nesting season, then a pre-construction survey would be implemented and a no-work buffer would be placed around an active nest.

This measure applies to all nesting birds protected by the federal Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, except for western snowy plover, California least tern, and marbled murrelet, which are addressed in Mitigation Measure BIO-1g.

Mitigation Measure BIO-1h: Avoidance and Minimization Measures for Nesting Birds

- No preconstruction surveys or avoidance measures are required for construction activities that would be completed entirely during the non-nesting season (September 16 to January 31).
- For all construction activities scheduled to occur during the nesting season (February 1 to September 15), a USFWS- and CDFW-qualified biologist shall conduct a preconstruction avian nesting survey no more than 10 days prior to the start of staging, site clearing, and/or ground disturbance.
- If there is a break of 10 days or more in construction activities during the breeding season, a new nesting bird survey shall be conducted before reinitiating construction.
- The surveying biologist shall be capable of determining the species and nesting stage without causing intrusive disturbance. The surveys shall cover all potential nesting sites within 500 feet of the project area for raptors and within 300 feet for other birds.

If active nests are found in the proposed project area or vicinity, a no-disturbance buffer shall be created around the active nests, as determined by a qualified biologist. The buffer distance can be reduced in coordination with CDFW if construction activities would not cause an adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young. If the nest(s) are found in an area where ground disturbance is scheduled to occur, the Harbor District shall require that ground disturbance be delayed until after the birds have fledged.

If work must occur within the established buffers, nests shall be continuously surveyed for the first 24 hours prior to any construction related activities to establish a behavioral baseline and, once work commences, all nests shall be continuously monitored to detect any behavioral changes as a result of the project, if feasible. If behavioral changes are observed, work causing the change shall cease and CDFW shall be consulted for additional avoidance and minimization measures. The avoidance and minimization measures shall ensure that the construction activities do not cause the adult to abandon an active nest or young or change an adult's behavior so it could not care for an active nest or young.

Terrestrial Mammals

Hoary bat (*Lasiurus cinereus*) is ranked by the Western Bat Working group as a Medium Priority species. Hoary bat is a widespread species found throughout North America and parts of South America. Hoary bats are typically solitary and roost primarily in foliage of both coniferous and deciduous trees, near the ends of branches. The proposed project does not include the removal of any trees or structures where bats have potential to roost and little to no tree trimming is anticipated, and impacts would be less than significant on this species.

b) **Less than Significant with Mitigation Incorporated.** This section addresses impacts on sensitive natural communities, including environmentally sensitive habitat areas

(ESHA), essential fish habitat (EFH) and designated critical habitat. Riparian habitat is not addressed as it is not present in the project area.

Sensitive Natural Communities and Environmentally Sensitive Habitat Areas (ESHA)

Northern coastal salt marsh is located to the east of the proposed project area and is considered a sensitive natural community and is also likely considered ESHA under the SMC-LCP. As ESHA within a project area are determined by California Coastal Commission staff on a case-by-case basis, additional vegetation communities or habitat types within the project area may also be considered ESHA (e.g. bluffs, coastal, and marine habitats). The SMC-LCP limits development in ESHA to resource dependent uses and prescribes minimum set-back, or buffer distances from ESHA for other development.

Construction of the proposed stormwater drainage system would convey stormwater into a new rock-lined concrete channel to convey stormwater from the hillside to a new bioretention basin with native vegetation along the landward side of the trail. Stormwater in the bioretention basin would discharge into the upland portions of the Pillar Point Marsh northeast of the bioretention basin, thereby redirecting the existing direct discharge into the Harbor. In addition, all work and staging areas would be restricted to clearly delineated work areas outside of this sensitive habitat. Therefore, impacts to northern coastal salt marsh would be less than significant.

West Trail stabilization and construction of a nourished beach with elevated dunes, planted with native vegetation, would result in temporary impacts with the ultimate outcome of enhancing the existing beach habitat and creating new dune habitat that is likely to be considered an ESHA. In addition, construction of the stormwater drainage system would reduce erosion to coastal scrub and beach habitats. The project would adhere to SMC-LCP General Policies on sensitive habitats, which provide guidance on protection of and permitted uses of sensitive habitats. The proposed project would have an overall positive impact on habitats considered as ESHA and therefore would be considered less that significant. Specifically, the project would promote SMC-LCP Guidance Policies 7.20 Management of Pillar Point Marsh and 7.28 Restoration of Dunes.

Critical Habitat

When the USFWS proposes a species for listing under the Endangered Species Act, they are required to consider whether there are geographic areas that contain essential features on areas that are essential to conserve the species. These areas are then designated as critical habitat.

Critical habitat for green sturgeon, black abalone, and leatherback sea turtle is present within the proposed project area. However, no in-water work is proposed as part of this project. Sand borrow activities for beach nourishment are anticipated to be minor and have no adverse effects on habitat quality for these species. However, project activities including night work and use of construction equipment would expose the proposed project area to additional noise, artificial lighting, and the potential for accidental spills of

small amounts of fuel and/or oil. These effects are not specific to critical habitat, rather they would be shared by all aquatic life in the proposed project area. As such, these effects are applicable to critical habitat and would be considered significant impacts.

Implementation of measures **BIO-1a General Construction Conservation Measures, BIO 1b General Wildlife Conservation Measures** and **BIO-1d Avoidance and Minimization Measures for Fish and Sea Turtles** would reduce any potential effects to critical habitat to less than significant.

Eelgrass

While recent surveys do not report the presence of eelgrass within the proposed project area, eelgrass beds and suitable habitat conditions were mapped within the vicinity (Marine Taxonomic Services 2019; GHD 2019). Eelgrass is most prominent in the summer and locations can vary year-to-year. As no in-water work would take place, direct effects resulting from temporary water quality impairment as a result of in-water work are not anticipated. Though eelgrass was not found and has not been reported within the project area boundaries, sand borrowing activities could result in loss of eelgrass beds, which would be a significant impact.

In 2014, NMFS developed the California Eelgrass Mitigation Policy and Implementation Guidelines to ensure no net loss of eelgrass habitat function occurs within California. Contained within that document are guidelines for pre-project surveys, avoidance and minimization measures to implement during construction, and mitigation options for unavoidable impacts to eelgrass habitat. The following measure is adapted from these guidelines to avoid potential impacts to eelgrass beds. Implementation of **Mitigation Measure BIO-1i Avoidance and Minimization Measures for Eelgrass Beds** would reduce any potential impacts to less than significant.

Mitigation Measure BIO-1i: Avoidance and Minimization Measures for Eelgrass Beds

- **Pre-construction Survey.** The proposed project area shall be surveyed for eelgrass beds with side-scan sonar during the growing season (April to October) and the boundaries between the eelgrass beds and the project work area shall be marked prior to construction with temporary navigation buoys. To the extent feasible, the presence of work activities within the area(s) marked by the buoys shall be prohibited.

- **Biologist Inspection, Monitoring.** If eelgrass beds are found within the proposed project area, a California Coastal Commission-approved biologist shall be on-site during all marine construction activities to monitor the eelgrass beds and ensure that the beds are avoided and impacts are minimized as much as possible during construction.

c) **Less than Significant Impact.** A delineation of aquatic resources was conducted within the project area on May 28, 2014 and again on January 23, 2020 (after the project area limits were changed) to determine the limits of federal and/or State jurisdictional wetlands and/or waters (Valerius 2020). The proposed project would result in 2.84 acres

of fill of tidal waters below Mean High Water (MHW) (5.64 feet MLLW) and 2.905 acres of fill below the High Tide Line (HTL) (7.28 feet) and MHW. The proposed project would also directly impact 0.008 acre of an existing drainage ditch, mapped as seasonal wetland, during construction of the stormwater system improvements, which include a new earthen ditch and a new bioretention basin with native vegetation along the landward side of new trail. The area of drainage ditch that would be disturbed by grading would become a bioswale planted with native vegetation, thereby increasing the area of seasonal wetland. Therefore, impacts to seasonal wetlands would be less than significant as the net area and quality of habitat would be improved by the proposed project.

Restoration activities affecting tidal waters would include the installation of a cobble berm buried beneath the surface of the shoreline and dune, two rock fingers extending perpendicular from the trail, and placement of sand both above and below the high tide line, to support beach nourishment. Although this would be considered permanent fill within a federal and/or state jurisdictional waters, it would not result in the loss of this acreage of waters because the fill placement would be with native and/or appropriate clean materials (sand, cobbles and rock) remaining within the tidal range. In addition, the thin layer of moveable sand has been designed to protect the shoreline by working with the natural processes (e.g. waves, currents and tides) that have been modified from historic conditions due to construction of the breakwaters (**Figure 4**). The sand placement in jurisdictional waters would result in long-term benefits to the Pillar Point Harbor area by restoring and maintaining the beach, foredune, and dune communities in light of both recent erosion and long term sea level rise, and therefore would not have a significant adverse effect on federal and/or State waters. The quality of sand placed on the beach would match the existing sediment in the project area and would not result in increased turbidity as compared to existing conditions. Therefore, impacts would be less than significant.

d) **Less than Significant Impact.** Wildlife movement corridors are considered an important ecological resource by CDFW and the USFWS and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

Open ocean habitat outside of the proposed project area is used as a migratory corridor by numerous marine species. All proposed project activities would be limited to terrestrial

habitat and areas within Pillar Point Harbor. Beach and wetland habitats located on and adjacent to the proposed project area provide potential wildlife movement corridors and breeding areas for a variety of birds and other wildlife species. The proposed project area lies within the Great Pacific Flyway for migratory birds and just outside of California Essential Connectivity Areas (Spencer et. al. 2010). However, residential and commercial development, including California State Route 1, likely serve as a barrier to non-avian wildlife movement between the proposed project area and the Montara Mountain foothills. The proposed project would provide a benefit to the birds and wildlife species that use the areas within and adjacent to the project area by restoring areas of coastal erosion and loss of beach and sand dune communities. Construction activities would be short-term and would occur during the non-nesting season for many bird species. In addition, the proposed project features are not expected to create barriers to wildlife movement within the proposed project area or the surrounding area. Therefore, the project would have less than significant impacts to wildlife movement corridors or breeding areas.

e) **No Impact.** The proposed project does not require removal of trees; therefore, implementation of the project does not conflict with the City of Half Moon Bay Tree Ordinance and there would be no impact.

f) **No Impact.** The proposed project is not located within the permit area of an approved local, regional, or State habitat conservation plan; therefore, there is no impact.

References

Barry, S.J. 1994. The Distribution, habitat, and evolution of the San Francisco garter snake, *Thamnophis sirtalis tetrataenia.* Unpublished M.A. Thesis, University of California Davis.

Baye, 2019. Pillar Point Harbor beach and foredune vegetation establishment and related environmental enhancement options.

California Department of Fish and Wildlife (CDFW), 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities.

———, 2019. Natural Diversity Database. Special Animals List. Periodic publication. 67 pp. Data dated August 2019.

———, 2020a. California Natural Diversity Database RareFind 5 personal computer program (ver. 5.2.14). Available: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed May 20, 2020.

———, 2020b. Natural Diversity Database. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly publication. 140 pp. Data dated October 2019.

California Native Plant Society, 2019. Rare Plant Program. Inventory of Rare and Endangered Plants (online edition, v8-03 0.39). California Native Plant Society. Sacramento, CA. Available: http://rareplants.cnps.org/. Accessed June 9, 2020.

California Department of Parks and Recreation (CDPR). 2017. Marbled Murrelet landscape management plan for Zone 6. CDPR, Santa Cruz District, Felton, CA.

Coastside State Parks Association (CSPA). 2015. More plovers on our beaches. CSPA, Pescadero, California, USA. https://www.coastsidestateparks.org/articles/more-plovers-our-beaches

Declining Amphibian Task Force (DAPTF). 2004. Fieldwork code of practice. https://www.fws.gov/southwest/es/NewMexico/documents/SP/Declining_Amphibian_Task_Force_Fi eldwork_Code_of_Practice.pdf (05/26/2020).

eBird, 2020. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: http://www.ebird.org. Accessed May 13, 2020.

GHD, 2020a. Biological Assessment. West Living Shoreline Pillar Point Harbor. Prepared for the San Mateo County Harbor District.

GHD, 2020b. Pillar Point Harbor West Trail Living Shoreline Project. Sampling and Analysis Plan Results Report. Prepared for the San Mateo County Harbor District and U.S. Army Corps of Engineers Dredged Material Management Office.

GHD, 2019. Rookery Survey Results for the San Mateo County Harbor District Pillar Point Harbor West Trail Living Shoreline Project.

Marine Taxonomic Services, Ltd., 2019. Pillar Point West Trail Project: Essential Fish Habitat Assessment. Prepared for GHD Ltd. September 2019.

McGinnis, S., P. Keel, and E, Burko, 1987. The use of upland habitats by snake species at Año Nuevo State Reserve. Report to California Department of Fish and Game, Sacramento, California. 13 pp.

McGinnis, S., 1989. Distribution and feeding habitat requirements of the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Draft of Final Report, submitted to California Department of Fish and Game. 40 pp.

Natural Resources Conservation Service and U.S. Fish and Wildlife Service, 2016. Monarch Butterfly Conference Report.

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.

Spencer, W.D., Beier, P., Penrod, K., Winters, K., Paulman, C., Rustigian-Romsos, H., Strittholt, J., Parisi, M. and Pettler, A., 2010. California essential habitat connectivity project: a strategy for conserving a connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Titus, R., D. Erman and W. Snider, 2011. History and Status of Steelhead in California Coastal Drainages South of San Francisco Bay. California Department of Fish and Game Fish Bulletin. ESR 33. In Preparation.

U.S. Fish and Wildlife Service (USFWS), 2020a. List of Threatened and Endangered Species that May Occur in the Proposed Project Location, and/or May be Affected by the Proposed Project. Available: https://ecos.fws.gov/ipac/. Accessed June 9, 2020.

———, 2020b. Critical Habitat Portal. Available: http://ecos.fws.gov/crithab/. Accessed May 13, 2020.

———, 2013. Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California. Region 8 U.S. Fish and Wildlife Service Sacramento, California.

———, 2006. San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*) 5-Year Review: Summary and Evaluation. September, 2006.

Valerius, 2020. Delineation of Waters and Wetlands of the United States, Including Wetlands, and Coastal Commission Wetlands, for the Pillar Point Harbor West Trail Living Shoreline Project, San Mateo County, California.

Western Association of Fish and Wildlife Agencies, 2019. Western Monarch Butterfly Conservation Plan 2019-2069. Version 1.0.

WRA and Valerius, 2014. Biological Resources Assessment. Pillar Point Harbor West Trail. Pillar Point Harbor, San Mateo County, CA. Prepared for GHD.

3.2.5 Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
5. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Environmental Setting

ESA staff completed a records search of the project area and a 0.5-mile radius around the project area at the Northwest Information Center (NWIC) of the California Historical Resources Information System on March 17, 2020 (File No. 19-1646). The purpose of the records search was to (1) determine whether known cultural resources have been recorded within or adjacent to the project area; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources. Records were also reviewed in the Built Environment Resource Directory for San Mateo County, which contains information on places of recognized historical significance, including those evaluated for listing in the *National Register of Historic Places*, the *California Register of Historical Resources*, the *California Inventory of Historical Resources*, *California Historical Landmarks*, and *California Points of Historical Interest*.

Several cultural resources investigations have been completed in the vicinity of the proposed project including surface surveys, architectural analyses, and archaeological excavations (Applied Earthworks, 2005, 2008; Clark, 1989; Farquhar, 2000; Kendall, 1996; Rudo, 1981). Base maps indicate that there are no previously recorded archaeological resources in the project area. While there are at least four records of indigenous cultural resources in the general vicinity of the project area, including areas of shell midden and other evidence of use and occupation, these resources are not in areas that will be disturbed by project components (NWIC, 2020).

ESA completed a surface survey of the project area on May 17, 2020. An archaeologist walked the project area in narrow transects along all accessible pathways and exposed areas. The archaeologist closely inspected all areas of exposed ground surface for evidence of cultural materials. Cut banks adjacent to West Point Road and the parking area provided good visibility of the soil, which consisted of a medium to dark brown sandy silt with small gravels. Along the waterfront, erosion exposed the surrounding substrate, which consisted of disturbed sand and fill. Soil along the adjacent steep slope was a medium to dark brown silty sand. No cultural materials or other evidence of past human use or occupation, such as shell, midden soil, or lithic artifacts, was identified during the survey.

Discussion

a) ***No Impact.*** A significant impact would occur if the proposed project would cause a substantial adverse change to a historical resource, herein referring to historic-era architectural resources or the built environment, including buildings, structures, and objects. A significant impact includes physical demolition, destruction, relocation, or alteration of a historical resource.

There are no architectural resources in the project area that could be considered historical resources, as defined by Section 15064.5 of the CEQA Guidelines. The adjacent breakwater structure, constructed by the Corps in the early 1960s, will not be impacted by the proposed project. As there are no historical resources in the project area, the proposed project would have no impact on historical resources and no mitigation is required.

b) ***Less than Significant with Mitigation.*** Archaeological resources are considered historical resources, according to Section 15064.5 of the CEQA Guidelines, as well as unique archaeological resources, as defined in PRC Section 21083.2(g). A significant impact could occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Based on the records search results, survey results, nearby site distribution, previous disturbance, and environmental context, the proposed project area has a low potential to uncover archaeological resources. Despite the low potential, the discovery of archaeological materials during ground-disturbing activities cannot be entirely discounted. The inadvertent discovery of archaeological resources during project implementation could be a potentially significant impact. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-1**, which requires avoidance measures or the appropriate treatment of archaeological resources if discovered during project implementation.

> **Mitigation Measure CUL-1:** If prehistoric or historic-period cultural materials are encountered during project implementation, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify the San Mateo County Harbor District of their initial assessment. Prehistoric cultural materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period cultural materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.
>
> If the San Mateo County Harbor District determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is indigenous), that the resource may qualify as a historic property (meeting the National Register of Historic Places criteria at 36 CFR 60.4), a historical resource or

unique archaeological resource (as defined in CEQA Guidelines Section 15064.5), or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided if feasible. If avoidance is not feasible, the San Mateo County Harbor District shall consult with appropriate Native American representative (if the resource is indigenous), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

c) ***Less than Significant with Mitigation.*** There is no indication from the archival research that any part of the project area has been used for human burial purposes in the recent or distant past. Therefore, it is unlikely that human remains would be encountered during construction of the project. Despite the low potential, the possibility of inadvertent discovery cannot be entirely discounted and would result in a potentially significant impact. This impact would be reduced to a less than significant level with implementation of **Mitigation Measure CUL-2**, which requires avoidance measures or the appropriate treatment of human remains if accidentally discovered during project construction.

Mitigation Measure CUL-2: In the event of discovery of any human remains during project activities, all activities within 100 feet of the find shall cease and the San Mateo County Harbor District shall follow the provisions of California Health and Human Safety Code (Human Remains) Section 7050.5. This shall include immediate notification of the San Mateo County Coroner who will determine if an investigation of the cause of death is required. The Native American Heritage Commission will be contacted within 24 hours if it is determined that the remains are Native American. The Commission will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the San Mateo County Harbor District for the appropriate means of treating the human remains and any grave goods (PRC Section 5097.98).

References

Applied Earthworks, Inc., 2005. *Archaeological Investigations at CA-SMA-109/H, CA-SMA-151, and CA-SMA-347, Pillar Point Air Force Station, San Mateo County, California.* November.

———, 2008. *Cultural Resources Inventory in Support of Upgrades at Three Locations for the Western Range Instrumentation Modernization Project Vandenberg Air Force Base, Santa Barbara County Pillar Point Air Force Station, San Mateo County.* March.

Clark, Matthew, 1989. *Archaeological Evaluation of the Proposed New Boat Launch Ramp, Access Road, Parking Lot, Attendant Facilities and Mitigation Area, Pillar Point Harbor, San Mateo County.* Prepared by MRC Consulting. June.

Farquhar, Jennifer, 2000. *Archaeological Survey and Testing for the New Gatehouse Construction Area, Pillar Point Air Station, San Mateo County, California.* Prepared for Linden Shimizu Construction. October.

Kendall, Thomas, 1996. Letter to the State Historic Preservation Officer, Pillar Point Harbor. February.

Northwest Information Center (NWIC), 2020. Records search results from the California Historical Resources Information System (File No. 19-1646), On file at ESA, March 17, 2020.

Rudo, Mark, 1981. *Cultural Resources Survey Pillar Point Harbor Navigational Improvements.* Prepared by San Francisco District U.S. Army Corps of Engineers. December.

3.2.6 Energy

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
6. ENERGY — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Discussion

a) **Less than Significant.** During construction of the proposed project, energy use would be direct, in the form of consumption of fuel (typically gasoline and diesel fuel) for operation of construction equipment and vehicles. Proposed project construction is expected to commence in fall/early winter of 2020 with a duration of up to four months. Construction activities would include use of heavy-duty construction equipment such as excavators, loaders, concrete trucks, and dump trucks, which are generally diesel-fueled. Additionally, offsite vehicles would be required to transport equipment, materials, and workers to the project site during construction. The number of construction workers on site would be an average of 10 workers per day. Worker commute trips would primarily use gasoline fueled vehicles. In addition, construction activities would involve truck trips to haul away demolition debris and excavated soil, and bring sand and cobble to the site. It is assumed that haul trucks and vendor trucks would be diesel-fueled. Over the duration of construction, the proposed project would consume approximately 29,182 gallons of diesel and 760 gallons of gasoline. Consumption of fuel energy during construction would be temporary, localized, and would not represent a significant amount of fuel in comparison to the 304 million gallons of gasoline and 17 million gallons of diesel that were sold in San Mateo County in 2018 (CEC 2019).

In addition, the temporary energy consumption during construction would not result in long-term depletion of non-renewable energy resources and would not permanently increase reliance on energy resources that are not renewable. Construction activities would not reduce or interrupt existing electrical or natural gas services due to insufficient supply, and would not include inherently wasteful or unnecessary use of energy. Once operational, the proposed project's energy requirements would be very minor, in the form of fuel use in motor vehicle trips generated for minimal ongoing maintenance and any changes to surface traffic intensity and related fuel usage would be also be minimal.

San Mateo County developed the *San Mateo County Energy Efficiency Climate Action Plan* (CAP) in 2013. The CAP contains measures to reduce GHG emissions within San Mateo County. CAP Measure 15.1: Construction Idling, would be applicable to the

construction of the proposed project and includes the following strategies to reduce GHG emissions:

- Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes.
- Require maintenance of construction equipment per manufacturer specifications.
- County staff work with project proponents to limit GHG emissions from construction equipment by selecting measures identified by the BAAQMD. Such measures could include use of Tier 4 engines or compressed natural gas fuel, or biodiesel, where available (San Mateo County 2013).

Both construction and operation of the proposed project would involve expenditure of energy, however the consumption of energy would not be wasteful, inefficient or unnecessary. Because of this, both construction and operational activities would result in a less-than-significant impact associated with energy consumption.

b) **Less than Significant.** Equipment and vehicles used for Project construction would be required to comply with all federal and state fuel efficiency standards. Additionally, there are no Project characteristics or features that would be inefficient or that would result in the use of construction equipment and vehicles in a manner that would be less energy efficient than similar projects. Fuel use for Project construction would be consistent with typical construction practices.

Therefore, the Project would not conflict with or obstruct any state or local plan for renewable energy or energy efficiency. This would be a less than significant impact.

References

Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan, Spare the Air, Cool the Climate*, adopted April 19, 2017. Available: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en, Accessed October 14, 2019.

California Energy Commission (CEC), 2019. 2018 California Annual Retail Fuel Outlet Report Results (CEC-A15) Energy Assessments Division, July 1, 2019.

San Mateo County, 2013. *Energy Efficiency Climate Action Plan*. June, 2013. Available: https://planning.smcgov.org/sites/planning.smcgov.org/files/documents/files/SanMateo County_EECAP_FINAL_06-04-2013.pdf. Accessed May 4, 2020.

3.2.7 Geology, Soils, and Seismicity

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
7. GEOLOGY and Soils — Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Environmental Setting

Regional Geology

San Mateo County is located within the Coast Range geomorphic province of California. The Coast Ranges are a series of relatively low mountain ranges and associated valleys that trend northwest, subparallel to the active San Andreas Fault. Elevations of the ranges are typically 2,000 to 4,000 feet, sometimes reaching 6,000 feet above sea level. The Coast Ranges are predominantly composed of thick late Mesozoic and Cenozoic (251 million years ago to present) sedimentary rocks. The northern and southern portions of the province are separated by a depression containing the San Francisco Bay (California Geological Survey 2002).

In some areas of the Coast Ranges, the topography is dominated by irregular, knobby outcrops of the landslide-prone rocks of the Franciscan Complex. In the Sonoma and Clear Lake regions Pliocene and younger volcanic flows, ash deposits, and cones are prominent. In the southern Coast Ranges, granitic and metamorphic rocks of the Salinian block lie to the west of the San

Andreas Fault and extend from the southern extremity of the Coast Ranges, north to the Farallon Islands (CGS 2002).

Seismic Hazards

Surface fault rupture (or disruption at the ground surface as a result of fault activity) and seismic ground shaking are considered primary seismic hazards by the State of California. The major hazards associated with earthquakes are surface fault rupture (ground displacement), ground motion (or ground shaking), ground failure (e.g., liquefaction), and landslides. Each of these hazards is discussed further below.

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered most likely along active faults. The highest potential for surface faulting is along existing fault traces that have had Holocene displacement.

The closest known active faults with historical earthquake events are the San Gregorio and San Andreas. The Pilarcitos fault is approximately 5 miles from the project area, but has not exhibited Holocene displacement and is not considered sufficiently active or well-defined, the potential is very low that the individual traces of this fault could generate an earthquake and result in surface fault rupture. The San Andreas fault is approximately 7 miles from the proposed project and the San Gregorio fault transects the project area. According to the California Earthquake Hazards Zone Application (CGS 2019), the portion of the San Gregorio fault that transects the project area is within an Alquist-Priolo Fault Zone. As such, fault ground rupture is considered a hazard in the project area.

Potential Ground Motion

Unlike surface rupture, ground shaking is not confined to the trace of a fault, but propagates into the surrounding areas during an earthquake. The intensity of ground shaking typically diminishes with distance from the fault, but ground shaking may be locally amplified or prolonged by some types of substrate materials. The Bay Area region contains both active and potentially active faults and is considered a region of high seismic activity.[7] Throughout the project area there is a potential for damage from movement along any one of a number of the active Bay Area faults. In 2007, the USGS, the CGS, and the Southern California Earthquake Center formed the Working Group on California Earthquake Probabilities (WGCEP) to evaluate the probability of one or more earthquakes of Mw 6.7 or higher occurring in the state of California over the next 30 years. (WGCEP 2015).

[7] An "active" fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A "potentially active" fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive (CGS 2018).

The WGCEP estimates that there is a 72 percent probability of at least one moment magnitude 6.7 or greater earthquake occurring in the San Francisco Bay region over the next 30 years (WGCEP 2015).[8] Within the 72 percent probability, the San Gregorio fault has a 2.69 percent probability of having an earthquake of moment magnitude 6.7 or greater. The Pilarcitos fault has a 0.50 percent probability of having an earthquake of moment magnitude 6.7 or greater.

Liquefaction

Liquefaction is the process in which the soil is transformed to a fluid form during intense and prolonged ground shaking. Areas most prone to liquefaction are those that are water saturated and consist of relatively uniform sands that are of loose to medium density. Liquefaction can lead to severe settlement of foundations and slope failure. Properties such as depth to groundwater, soil texture and density, and sediment within and above the groundwater are the primary factors that determine whether an area is prone to liquefaction. The sediments most susceptible to liquefaction are saturated, unconsolidated sand and silt soils (particularly Quaternary-age units) with low plasticity within 50 feet of the ground surface (CGS 2008). The project area is within an area mapped as a Liquefaction Zone within the Earthquake Zone of Required Investigation as prepared by CGS (2019).

Earthquake-Induced Settlement

The relatively rapid compaction and settling of subsurface materials (particularly loose, noncompacted, and variable sandy sediments) during prolonged ground shaking can cause settlement of the ground surface. Typically, areas underlain by artificial fills, unconsolidated alluvial sediments, and slope wash, and areas with improperly engineered construction fills are susceptible to settlement. The proposed project is located in an area with the potential to experience stronger earthquake shaking more frequently (DOC 2016).

Slope Instability and Landslides

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, triggered by either static (i.e., gravity) or dynamic (i.e., earthquake) forces. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. The proposed project is located in an area with the potential for landslides (Metropolitan Transportation Commission and Association of Bay Area Governments [MTC/ABAG] 2020).

Soils and Soil-Related Hazards

Erosion

Erosion is the detachment and movement of soil materials through natural processes or human activities. In general, rates of erosion can vary depending on the soil resource's capacity to drain water, slope angle and length, extent of ground cover, and human influence. Soils underlying the project area consist of Denison loam, stabilized dune land, coastal beaches, Elkhorn sandy loam, and Elkhorn sandy loam. These soils have low to very high potential for erosion with the

[8] Moment magnitude is related to the physical size of a fault rupture and movement across a fault. The Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave. Moment magnitude provides a physically meaningful measure of the size of a faulting event (CGS 2002).

stabilized dune land and Coastal beaches having erosion potential from wind and wave action, respectively (National Resources Conservation Service [NRCS] 2020).

Expansive Soils

Expansive soils are characterized by a characteristic called "shrink-swell." Over a long time period, structural damage may result, usually from inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Expansive soils consist primarily of clays, which expand in volume when water is absorbed and shrink when dried. Soil resources in the project area have a low to high shrink-swell potential (NRCS 2020).

Corrosive Soils

Corrosive soils can damage underground pipelines and cables, and can weaken roadway structures. The soils in the project area have a low potential to erode concrete and a moderate to high potential to erode steel (NRCS 2020).

Land Subsidence

Subsidence is the gradual lowering of the land surface caused by loss or compaction of underlying materials. Subsidence can result from groundwater, gas, and oil extraction, or from the decomposition of highly organic soils. The soils in the project area have a low potential for subsidence (NRCS 2020).

Paleontological Resources

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, the preservation of plant or animal remains as fossils is extremely rare. Because of the infrequency of fossil preservation, particularly vertebrate fossils, they are considered to be nonrenewable resources. Due to the rarity and scientific information they can provide, fossils are important records of ancient life. The proposed project is in an area (San Mateo County Coastal Zone) where paleontological resources are extremely limited (City of Half Moon Bay 2018).

Discussion

a.i) **Less than Significant.** The project area is transected by the San Gregorio fault and, as a result, is located within an Alquist-Priolo Fault Zone. However, the proposed project would not result in the construction or operation of any habitable structures or potentially unstable slopes adjacent to habitable structures. In addition, the proposed project would stabilize the trail and upgrade the existing stormwater system, and would not significantly alter the existing trail alignment. Construction methods would be consistent with current codes and standards. Therefore, the proposed project would not increase the exposure of trail users or associated structures to increased risk of loss, injury, or death in the project area due to fault rupture. This impact would be less than significant.

a.ii) **Less than Significant.** The project area is within an area known to have the potential for strong ground shaking. The San Gregorio fault has a 2.69 percent probability of having an earthquake of moment magnitude 6.7 or greater and the Pilarcitos fault has a

0.50 percent probability of having an earthquake of moment magnitude 6.7 or greater. However, as discussed previously, the proposed project would not result in the construction or operation of any habitable structures or potentially unstable slopes adjacent to habitable structures. In addition, the proposed project would stabilize the trail and upgrade the existing stormwater system, and it would not significantly alter the existing trail alignment. Construction methods would be consistent with current codes and standards. Therefore, the proposed project would not increase the exposure of trail users or associated structures to risk of loss, injury, or death in the project area due to strong seismic ground shaking. This impact would be less than significant.

a.iii and iv) **Less than Significant.** The project area is within an area known to have the potential for seismic related ground failure, including liquefaction and landslides. Implementation of the proposed project would not create any structures or potentially unstable slopes that could exacerbate existing liquefaction or landslide conditions in the project area. Therefore, the proposed project would not increase the exposure of trail users to an increased risk of loss, injury, or death in the project area from liquefaction or landslides. This impact would be less than significant.

b) **Less than Significant.** Project construction would involve localized ground disturbance activities (e.g., demolition and removal of existing swale and pipeline, excavation, grading and the construction of shoreline, dunes, and stormwater system improvements). These activities could result in soil erosion.

Construction activities would involve short-term ground disturbance in relatively flat areas on the bluff to demolish and remove the existing swale. Construction activities to connect the new swale with the bioretention basin would be located on a portion of the hillside above the West Trail.

Because the overall footprint of construction activities would exceed 1 acre, the proposed project would be required to comply with the *NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit), the San Mateo County grading regulations, and San Mateo County erosion control regulations. These state and local requirements were developed to ensure that stormwater is managed and erosion is controlled on construction sites. The Construction General Permit requires preparation and implementation of a stormwater pollution prevention plan (SWPPP), which requires applications of best management practices (BMPs) to control run-on and runoff from construction work sites. The BMPs could include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of bio-infiltration swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction. The San Mateo County Planning and Building Department requires a grading permit for grading activities, unless exempted. The San Mateo County Planning and Building Department also requires the submittal of

an erosion and sediment control plan for review and approval prior to the issuance of any demolition, grading, or building permit that involves site disturbance.

Currently, the trail is overtopped during an approximately 10-year wind wave event coincident with an extreme high tide. The Geomorphic Basis of Design Report (ESA 2020) concluded that design concepts incorporated into the proposed project, such as reducing the wind wave runup to the shore would prevent the trail from being overtopped during 100-year wind wave event. In addition, the inclusion of gravel and rock fingers would protect the trail even if the sand eroded in the future (ESA 2020). Stormwater system improvements would improve the conveyance and containment of stormwater and reduce the potential for erosion by redirecting flows to the bioretention basin and the wetland to the southeast of the trail. For these reasons, and because project construction activities would be subject to numerous requirements discussed above, impacts associated with substantial increases in soil erosion would be less than significant.

c) **Less than Significant.** The proposed project area has a low to high potential for expansive soils and a low potential for subsidence. Implementation of the proposed project would repair and stabilize the trail and shoreline, and improve the existing stormwater system. Implementation of the proposed project would not exacerbate or increase the subsidence or expansive nature of the project area soils and therefore, impacts would be less than significant.

e) **No Impact.** The proposed project would not construct or use septic tanks or alternative wastewater systems; therefore, no impact would occur.

f) **Less than Significant.** The proposed project is in an area (San Mateo County Coastal Zone) where paleontological resources are extremely limited. The proposed project construction would be located in areas that were previously disturbed by past construction of the existing swale, stormwater pipeline, and trail. Other areas where construction activities would occur have sources of sand or soil that have been recently deposited through wetland runoff or deposition of sand from within the harbor. A such, the proposed project is not anticipated to encounter paleontological resources and would not directly or indirectly destroy any unique geologic feature and impacts would be less than significant.

References

CGS, 2019. California Earthquake Hazards Zone Application ("EQ Zapp"). Available: https://www.conservation.ca.gov/cgs/geohazards/eq-zapp. Accessed May 15, 2020.

———, 2018. Special Publication 42, Earthquake Fault Zones - a Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California. Revised 2018.

———, 2016. Earthquake Shaking Potential for California.

———, 2002. Note 36: California Geomorphic Provinces. December 2002.

Half Moon Bay, City of, 2018. Local Coastal Land Use Plan Cultural Resource Element (Draft). Available: https://nebula.wsimg.com/fa605e08283c76e2fadead9ccbc47eb5?AccessKeyId=06ACEAA5216D33A5C3B0&disposition=0&alloworigin=1. Accessed May 18, 2020.

Environmental Science Associates, 2020. Pillar Point West Trail Living Shoreline Project, Geomorphic Basis of Design Report. May 2020.

Metropolitan Transportation Commission and Association of Bay Area Governments (MTC/ABAG), 2020. Hazard Viewer Map. Available: https://mtc.maps.arcgis.com/apps/webappviewer/index.html?id=4a6f3f1259df42eab29b35dfcd086fc8. Accessed May 15, 2020.

Working Group on California Earthquake Probabilities (WGCEP), 2015. *UCERF3: A new earthquake forecast for California's complex fault system*: U.S. Geological Survey Fact Sheet 2015–3009, March 2015.

3.2.8 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
8. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

Greenhouse gases (GHGs) trap heat by preventing some of the solar radiation that hits the earth from being reflected back into space. Some GHGs occur naturally and are needed to keep the earth's surface habitable. Over the past 100 years, human activities have substantially increased the concentration of GHGs in our atmosphere. This has intensified the natural greenhouse effect, increasing average global temperatures.

Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are the principal GHGs associated with land use projects. GHG associated with construction projects are generated from fossil fuel combustion from heavy equipment, haul trucks, and worker vehicles. CO_2, CH_4, and N_2O occur both naturally and through human activity.

CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas contributes to global warming relative to how much the same mass of CO_2 contributes to global warming. CH_4 and N_2O are substantially more potent GHGs than CO_2, with 100-year GWPs of 28 and 265 times that of CO_2, respectively.

In emissions inventories, GHG emissions are typically reported as metric tons of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWPs than CO_2, CO_2 is emitted in such higher quantities that it accounts for the majority of GHG emissions in CO_2e.

Approach to Analysis

Both the BAAQMD and the California Air Pollution Control Officers Association (CAPCOA) consider GHG impacts to be cumulative impacts (BAAQMD, 2017; CAPCOA, 2008). Therefore, assessment of significance is based on whether a project's GHG emissions represent a cumulatively considerable contribution to the global atmosphere.

BAAQMD has not established thresholds specifically for construction-related emissions. However, BAAQMD has developed two thresholds of significance for operational emissions: the first for stationary sources that require air permits, equal to 10,000 metric tons CO2e per year and

the second for land use development projects (such as residential and commercial development projects), equal to 1,100 metric tons CO2e per year. In the absence of a threshold of significance for construction-related GHG emissions, the BAAQMD's threshold of significance of 1,100 metric tons of CO2e was used to evaluate the significance of construction emissions from the proposed project for checklist item a).

San Mateo County developed the *San Mateo County Energy Efficiency Climate Action Plan* (CAP) in 2013. The CAP contains measures to reduce GHG emissions within San Mateo County. CAP Measure 15.1: Construction Idling, would be applicable to the construction of the proposed project and includes the following strategies to reduce GHG emissions:

- Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes.
- Require maintenance of construction equipment per manufacturer specifications.
- County staff working with project applicants to limit GHG emissions from construction equipment by selecting measures identified by the BAAQMD. Such measures could include use of Tier 4 engines or compressed natural gas fuel, or biodiesel, where available (San Mateo County 2013).

Discussion

a) **Less than Significant.**

Construction

GHG emissions from construction activity occur for a relatively short period of time, while GHG emissions are of long-term concern. The BAAQMD has no significance criterion for construction-related emissions of GHGs; therefore, this analysis applies the operational emissions threshold to construction-period emissions. This is a conservative evaluation of GHG construction emissions.

Construction of the proposed project would generate GHG emissions from a variety of sources, including off-road construction equipment and on-road worker and hauling vehicles. Emissions from all of the construction emission sources were estimated using CalEEMod version 2016.3.2. The results of emissions modeling determined that total construction period GHG emissions would be approximately 380 metric tons of CO_2e, which is well below the operational threshold and impacts would be less than significant.

Operation

After construction is completed, the trail, upgraded stormwater system, and living shoreline would only require minimal on-going maintenance. In addition, minor operations and maintenance could be needed in response to extreme events and long-term trends. For the stormwater system, maintenance items are expected to be limited to minor clearing of drains and swales of silt and debris. In addition, dune vegetation would require irrigation and maintenance throughout the establishment period.

These activities would involve use of on-road and off-road equipment emitting a minor amount of combustion pollutants, including GHGs. This work would be long-term but not continuous, and emissions are expected to be minimal. Additionally, impacts from the project on traffic levels and associated GHG emissions are also determined to be negligible and impacts would be less than significant.

b) **Less than Significant.** As discussed previously, San Mateo County has adopted the County CAP, which identifies a number of measures to reduce GHG emissions from construction, listed above. The proposed project would be required to incorporate these GHG reduction measures and would thus be consistent with the County CAP. Therefore, the proposed project would not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This would be a less than significant impact.

References

Bay Area Air Quality Management District (BAAQMD), 2017. *California Environmental Quality Act Air Quality Guidelines*. May 2017. Available: www.baaqmd.gov/pln/ceqa/ceqa_guide.pdf. Accessed May 20, 2020.

California Air Pollution Control Officers Association (CAPCOA), 2008. *CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from projects Subject to the California Environmental Quality Act*, January 2008.

San Mateo County, 2013. *Energy Efficiency Climate Action Plan*. June, 2013. Available: https://planning.smcgov.org/sites/planning.smcgov.org/files/documents/files/SanMateo County_EECAP_FINAL_06-04-2013.pdf. Accessed May 4, 2020.

3.2.9 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
9. HAZARDS AND HAZARDOUS MATERIALS — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Environmental Setting

The proposed project area is within western San Mateo County, along the western edge of Pillar Point Harbor. The closest school to the proposed project is Picasso Preschool, approximately 1 mile west.

Hazardous Materials

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term "hazardous material" is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.[9] In some cases, past uses can result in spills or leaks of hazardous materials to the ground, resulting in soil and groundwater contamination. The use, storage, transportation and disposal of hazardous materials are subject to numerous federal, State and local laws and regulations.

[9] State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).

Information about hazardous materials sites in the project area was collected by conducting a review of the California Environmental Protection Agency's (CalEPA) Cortese List Data Resources (Cortese List) and the State Water Resources Control Board's GeoTracker list. The Cortese List includes data resources that provide information regarding the facilities or sites identified as meeting the Cortese List requirements. The Cortese List is updated at least annually, in compliance with California regulations (California Code Section 65964.6(a)(4)) and includes federal superfund sites, State response sites, non-operating hazardous waste sites, voluntary cleanup sites, and school cleanup sites. The GeoTracker list shows Underground Storage Tanks (UST). Based on a review of the Cortese List conducted in May 2019, no active listed sites are located within 0.5 miles of the proposed project (Department of Toxic Substances Control [DTSC] 2020).

Fire Suppression

The proposed project is located within a Local Responsibility Area (LRA) where San Mateo County is responsible for fire suppression for the Project area. The California Department of Forestry and Fire Protection (CAL FIRE) has determined that the project site is located in a Non-Very High Fire Hazard Severity Zone (Non-VHFHSZ) (CAL FIRE 2008).

Discussion

a,b) **Less than Significant.** Equipment and materials used during project construction activities would include fuels, oils, solvent and lubricants. The routine use or accidental spill of these materials during construction could inadvertently release hazardous materials, which could adversely affect construction workers, the public, and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations. These regulations are enforced to ensure that hazardous materials are transported, used, stored, and disposed of safely to protect worker safety, and to reduce the potential for a release of fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Construction contractors would be required to acquire coverage under the Construction General Permit, which requires the preparation and implementation of a SWPPP for construction activities. The SWPPP would: list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment, and fuel storage; describe protocols for responding immediately to spills; and describe BMPs for controlling site run-on and runoff.

Transport, use, or disposal of these materials would also follow the U.S. Department of Transportation, Caltrans, and the California Highway Patrol regulations which regulate the transportation of hazardous materials. Together, federal and State agencies determine driver-training requirements, load labeling procedures, and container specifications to minimize the risk of an accidental release.

The proposed project would comply with applicable permits, laws and regulations governing the transportation, use, handling, and disposal of hazardous materials. This compliance would limit the potential for the project to create hazardous conditions caused

by the use or accidental release of hazardous materials and impacts would be less than significant.

c) **No Impact.** the proposed project would not result in hazardous emissions or result in the use of acutely toxic materials and there are no schools located within one-quarter mile of the proposed project area. Therefore, there would be no impact.

d) **No Impact.** The proposed project area is not on a list of hazardous materials sites compiled under Government Code Section 65962.5 (the Cortese List); therefore, the proposed project would not create a significant hazard to the public or the environment from being locate on a hazardous materials site. No known active hazardous materials exist in the project area and there would be no impact.

e) **Less than Significant.** The proposed project area is approximately 0.30 miles southwest of the Half Moon Bay Airport and is located within the Airport Land Use Compatibility Plan (ALUCP) Airport Influence Area (AIA) (Zone 7) (City/County Association of Governments [C/CAG] of San Mateo County 2014). Land uses within the AIA are not restricted because the aircraft accident risk level is considered to be low for both airport operators, residents, or workers on the ground. The AIA zone requires airspace review for objects over 100 feet tall and other restriction on hazards to flight such as wildlife attractants, such as golf courses and wetland restoration projects. The proposed project would not include construction of any structures over 100 feet or result in the new or greater habitat that could attract wildlife above existing conditions and, therefore, would not conflict with and ALUCP safety requirements. Therefore, impacts would be less than significant.

f) **Less than Significant.** At any given time, project construction would require an average of 10 employees per day during the construction season. Site access would be from the Cabrillo Highway and West Point Avenue. Construction staging would occur in a portion of the parking lot off of West Point Avenue. The staging area would connect to the proposed project area via the existing gravel trail. West Point Avenue, the access point for the trail and parking lot, would remain open during construction of the proposed project, though it may be reduced to one lane at times during the movement of materials to be stored in the northwestern half of the parking lot. However, the project area has relatively low traffic volumes, construction would be temporary, and access to the project area would be possible from the other side of the beach. In addition, West Point Avenue would remain open and access to the Pillar Point Air Force Station would still be possible. Therefore, the proposed project would not impair or physically interfere with an adopted emergency response or evacuation plan and impacts would be less than significant.

g) **Less than Significant.** The project area is designated as a LRA – Non-VHFHSZ by the CAL FIRE (CAL FIRE 2008). The project area is within and adjacent to the Harbor, Half Moon Bay, vegetated wetlands, intertidal flats, and wooded and open bluffs. The vegetation and land use types have a low potential for wildland fires. The proposed project would not introduce increased risk for fire hazards compared to existing

conditions. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires compare to current conditions and impacts would be less than significant.

References

California Department of Forestry and Fire Protection (CAL FIRE), 2008. Fire Hazard Severity Zones in SRA, San Mateo County. November 2008.

City/County Association of Governments (C/CAG) of San Mateo County, 2014. Airport Land Use Compatibility Plan for the Environs of Half Moon Bay Airport. September 2014.

Department of Toxic Substances Control (DTSC), 2020. DTSC's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List). Available: www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm. Accessed May 13, 2020.

3.2.10 Hydrology and Water Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
10. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	☒
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☒
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Environmental Setting

Surface Water Hydrology and Water Quality

The proposed project area has a maritime Mediterranean climate characterized by warm, dry summers and cool, mild winters. Precipitation in the area primarily falls between the months of November and April with rain being the primary source and fog making up a small percentage. The Pillar Point Marsh area receives around 18 inches of precipitation per year (San Mateo County 2002).

The main hydrologic features within the area are San Vicente Creek to the north of the project site; Denniston Creek which drains to Pillar Point Harbor south of the Town of Princeton By The Sea; and Pillar Point Marsh. Water levels in the marsh are affected by recharge in Denniston Creek despite not being directly connected (San Mateo County 2002).

The presence of the San Gregorio fault, which is described in more detail in the *Geology, Soils, and Seismicity* section, directly influences the flow of surface water and groundwater in the

project area. More specifically, groundwater in the Pillar Point Marsh area is restricted to the Half Moon Bay Terrace Formation (San Mateo County 2002).

The Pillar Point Marsh is fed by groundwater and is also subject to tidal inflows. In addition, several man-made alterations of the area have contributed to the current hydrology including the access road to Pillar Point, construction of the Half Moon Bay Airport, and the breakwater within Pillar Point Harbor (San Mateo County 2002). The access road provides a barrier between the salt water marsh and the freshwater marsh and has also resulted in deposition of sediment in the freshwater area of the marsh. The stormwater runoff from the airport is the primary source of fresh water to the marsh. Lastly, the breakwater reduces wave action on the marsh barrier dunes.

Surface water quality in the project area is generally of good quality. Potential sources of water quality degradation include the drainages that drain to the marsh which may include sediment; urban runoff from the nearby town of Princeton; and chemical used by land owners within the vicinity of the project area (San Mateo County 2002). The State Water Board Total Maximum Daily Load (TMDL) programs are implemented pursuant to Clean Water Act Section 303(d) for impaired waterbodies. The TMDL program lists the Pacific Ocean at Pillar Point Beach as impaired for indicator bacteria (State Water Board 2020).

Groundwater Hydrology and Water Quality

The project area is within the Half Moon Bay Terrace groundwater basin which runs along the California coast from just north of the town of Montara to south of the city of Half Moon Bay. The nearest groundwater depth data point shows water at 1.9 feet below ground surface in the vicinity of the marsh. The nearest groundwater data point also shows a 0.1 foot decrease between the years of 2013 and 2018 (California Department of Water Resources [DWR] 2020). Groundwater is the primary source of water in the marsh; however, in lower elevations salt water intrusion results in brackish water with the exception of seasonal flushing during rain events (San Mateo County 2002).

Groundwater quality in the project area is also generally considered good, although elevated levels of iron and manganese have been present. Salt water intrusion has remained a concern due to the proximity to the ocean (San Mateo County 2002).

Stormwater and Drainage

As discussed previously, the stormwater from the Half Moon Bay Airport is the largest source of fresh water flows to the marsh. Additionally, stormwater runoff from Airport Road and the ditches that run parallel to it also drain to the eastern side of the marsh. The Pillar Point Ridge Manufactured Housing neighborhood is located north of the project area and stormwater from the neighborhood drains to the northern portion of the marsh. A majority of the precipitation in the area drains via San Vicente Creek. The stormwater runoff drains into the marsh with the water remaining in the marsh providing groundwater recharge (San Mateo County 2002).

Discussion

a, e) **Less than Significant.** Construction of the proposed project would involve the use of heavy equipment, including, but not limited to: demolition and removal of an existing

swale and pipeline, excavation, grading, the restoration of the trail, shoreline, dunes, and stormwater system improvements. Construction activities have the potential to cause increased rates of erosion that could increase turbidity in the Pillar Point Marsh and Half Moon Bay. In addition, the use of heavy machinery during construction could result in the potential accidental release of fuels, oils, solvents, hydraulic fluid, and other construction-related fluids to the environment, thereby degrading water quality. As described previously, soils in the project area have a low to very high potential for erosion. However, earthmoving and grading activities associated with construction have the potential to cause erosion.

As discussed in the *Geology, Soils, and Seismicity* section, the proposed project would be required to comply with the Construction General Permit, the San Mateo County grading regulations, and San Mateo County erosion control regulations. The Construction General Permit requires preparation and implementation of a SWPPP, which requires applications of best management practices BMPs to control run-on and runoff from construction work sites. The BMPs could include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of bio-infiltration swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction. Because the proposed project construction activities would be subject to the numerous regulatory requirements impacts associated with substantial increases in soil erosion during construction would be less than significant.

The proposed project would repair the chronic and ongoing erosion of the coastal trail. Currently, the trail is overtopped during an approximately 10-year wind wave event. The Geomorphic Basis of Design Report (ESA 2020) concluded that design concepts incorporated into the proposed project such as reducing the wave runup to the shore would prevent the trail from being overtopped during a 100-year wind wave event. In addition, the BOD Report concluded the inclusion of gravel and rock fingers would protect the trail even if the sand is eroded (ESA 2020).

Stormwater system improvements would improve the conveyance and containment of stormwater and reduce the potential for erosion. Planting native vegetation along the dune reach would reduce erosion. Routine operation and maintenance activities associated with the trail, upgraded stormwater system, and the living shoreline is anticipated to require minimal on-going maintenance. Dune vegetation would require irrigation and maintenance throughout the establishment period. Routine project operations and maintenance activities are not anticipated to result in substantial soil erosion or loss of topsoil. As such, there would be no significant increase in sediment or other potential pollutants discharged into receiving waters. As a result, impacts to water quality associated with operation and maintenance activities would be less-than-significant.

b) **Less than Significant.** The proposed project would not require dewatering during construction nor require groundwater during operation and maintenance. In addition, the proposed project would only result in the placement of a minimal amount of impervious

surfaces in the proposed new swale that would replace existing impervious surfaces. Stormwater would also be allowed to infiltrate the ground once collected in the bioretention basin and Pillar Point Marsh. Therefore, groundwater recharge would not be impeded nor would groundwater supplies be depleted and impacts would be less than significant.

c.i-iv) **No Impact.** The proposed project would substantially alter the existing drainage pattern of the area. The stormwater system improvements would replace the existing stormwater system to improve conveyance and discharge into a new bioretention basin to collect stormwater once it passes through a new earthen ditch and rock-lined concrete channel. Stormwater would then be conveyed from the bioretention basin into the Pillar Point Marsh for natural conveyance and filtration prior to discharging into Pillar Point Harbor, thereby improving the stormwater system compared to current conditions. The stormwater system improvements would not change the amount or location of drainage and would reduce erosion and siltation. As described previously, the proposed project would not result in substantial erosion or siltation on- or off-site post-construction. Further, the proposed project would not result in impeding or redirecting flood flows. Therefore, the proposed project would have no impact.

d) **No Impact.** The proposed project would restore the trail, upgrade the existing stormwater system, restore the shoreline, and plant native vegetation. Routine operation and maintenance activities associated with the trail, upgraded stormwater system, and living shoreline is anticipated to require minimal on-going maintenance. As such, the proposed project would not use substantial hazardous materials during operation and maintenance and hazardous materials would not be stored on site and would not be exposed to potential flood or tsunami. Therefore, no impact would occur in relation to the potential risk of release of pollutants due to project inundation.

References

California Department of Water Resources (DWR), 2020. Sustainable Groundwater Management Act (SGMA) Data Viewer. Available: https://sgma.water.ca.gov/webgis/?appid=SGMA DataViewer. Accessed June 17, 2020.

———, 2013. California Water Plan Update 2013 – San Francisco Bay Hydrologic Region.

San Mateo County, 2002. Fitzgerald Marine Reserve Master Plan. May 2002.

State Water Board, 2020. Final 2014/2016 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report). Available: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml. Accessed June 17, 2020.

3.2.11 Land Use and Planning

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
11. LAND USE AND PLANNING — Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Environmental Setting

The proposed project area is zoned Resource Management - Coastal Zone District (RM-CZ) under San Mateo County's zoning regulations (San Mateo County Planning and Building Department [SMC PBD] 2019), and land uses designated in the General Plan are Open Space, Recreation, and Public Recreation (SMC 2013). The Local Coastal Program classifies the proposed project area as Open Space (SMC PBD 2013). The project parcels that encompass the proposed project area are primarily under the land use authority of the San Mateo County Harbor District (SMCHD), including submerged lands within Pillar Point Harbor granted by the State in 1960 (SMCHD 2014). A small portion of the Pillar Point Marsh is under the land use authority of the San Mateo County Recreation and Parks Department and the West Point Avenue access road is under the land use authority of San Mateo County. Adjacent parcels to the west of the proposed project area are owned by the United States Air Force. Below are more detailed discussions of the lack of conflict and therefore lack of a significant environmental impact related to land use plans, policies, and regulations.

- **Pillar Point Harbor Master Plan.** The Pillar Point Harbor Master Plan guides development in the Pillar Point Harbor (SMCHD and State Coastal Conservancy 1991). The project area is located within the West Shoreline area, which includes land managed by the Harbor District, granted to the District under a state tidelands lease. The Master Plan allows the use of the West Shoreline for public access purposes, habitat mitigation, and otherwise preserves the area as a natural area.

- **San Mateo County Zoning Regulations.**

  – The Resource Management-Coastal Zone (RM-CZ) District zoning describes the maximum forms of development and types of use as well as design and review criteria. Development shall mean the construction of any significant structure on land, or in or under water; the discharge or disposal of any significant dredged material or any gaseous, liquid, solid or thermal waste, which the project would qualify as. Permitted uses include public recreation (p. 36.5).

  – Design Review (DR) – only apply to residential development (p. 28.1.1 of the SMC Zoning Regulations).

  – Coastal Development District (CD) – The CD District is an overlay district, combined with the RM-CZ District. The project would be required to obtain a Coastal Development Permit (CDP) to be constructed in this zoning district.

- **California Coastal Act, Local Coastal Program.** Policies under the Local Coastal Program include providing shoreline access, ensuring public safety of shoreline access, providing parking, and protecting fragile resources.

Discussion

a) **No Impact.** The proposed project includes construction of a living shoreline to protect and restore the severely eroded segment of the West Trail. The project would be implemented on lands and waters that are currently designated as Open Space and Recreation, and the project is surrounded by more open space and recreation land as well as the open water of the Harbor. The Pillar Point Air Force Station is located on lands designated Open Space to the west of the project site. The proposed project would not result in construction that would change land use in a way that would divide an established community and there would be no impact.

b) **No Impact.** The proposed project would not result in any changes to land use, and therefore would not conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect. The proposed uses of the site for recreation and open space would be consistent with relevant plans and policies, which include San Mateo County Zoning Regulations, the San Mateo County General Plan, the Local Coastal Program, and the Harbor District Master Plan. Therefore, the proposed project would have no impact with respect to plans and policies adopted for the purpose of avoiding or mitigating an environmental effect.

References

San Mateo County Harbor District (SMCHD) and the State Coastal Conservancy, 1991. Pillar Point Harbor Master Plan & Urban Waterfront Restoration Plan. Adopted December 4, 1991.

San Mateo County Harbor District (SMCHD), 2014. San Mateo County Harbor District Response to 2013-2014 San Mateo County Civil Grand Jury Report. August 22, 2014.

San Mateo County, 2013. San Mateo County General Plan. January.

San Mateo County Planning and Building Department (SMC PBD), 2019. Zoning Regulations. August.

———, 2013. Local Coastal Program Policies. June.

3.2.12 Mineral Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
12. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Discussion

a) There are no mines, mineral plants, oil, gas, or geothermal wells located in or adjacent to the proposed project area (Division of Oil, Gas, and Geothermal Resources (DOGGR) 2018; USGS 2013). The proposed project is not located in an area known to contain minerals that would be of value to the region or residents of the state. Therefore, the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region; no impact would occur.

b) Locally important mineral resources are not delineated in any local land use plans for the project area, including the San Mateo County General Plan (San Mateo County, 1986). Therefore, the project would not result in the loss of availability of a locally important mineral resource recovery site; no impact would occur.

References

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), 2018. DOGGR Online Mapping System. Accessed March 31, 2020.

San Mateo County, 1986. General Plan November 1986. http://www.co.sanmateo.ca.us/planning/genplan/. Accessed March 31, 2020.

U.S. Geological Survey (USGS), 2013. Active Mines and Mineral Plants in the U.S. 2003, mrdata.usgs.gov/mineral-resources/active-mines.html. Accessed March 31, 2020.

3.2.13 Noise

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
13. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead focusing on the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). All sound pressure levels and sound power levels reported below are A-weighted.

An individual's noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. In fact, noise varies continuously with time with respect to the contributing sound sources of the noise environment. Noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. Background noise levels change throughout a typical day, but do so gradually, corresponding with the addition and subtraction of distant noise sources and atmospheric conditions. The addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) makes noise constantly variable throughout a day.

These successive additions of sound to the noise environment vary the noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately

characterize a noise environment and evaluate noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. Different noise descriptors discussed in this analysis are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{dn}: The energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10 p.m. and seven a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: Similar to the L_{dn}, the Community Noise Equivalent Level (CNEL) adds a 5-dBA "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.

Sound level naturally decreases with more distance from the source. This basic attenuation rate is referred to as the *geometric spreading loss*. The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source. Point sources of noise, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases to 7.5 dBA for each doubling of distance due to ground absorption and reflective wave canceling. These factors are collectively referred to as *excess ground attenuation*. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receiver is reflective, such as parking lots or a smooth body of water. The excess ground attenuation rate (7.5 dBA per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

The proposed project area is located approximately 1,100 feet southwest of the town of Princeton-By-The-Sea. The land uses in this town are a mix of light industrial, business, warehouses, and residences. The closest residence is in the western portion of the town, approximately 1,100 feet northeast of the section of the West Trail that would be stabilized during

the proposed project. The closest point of the activities within the sand borrow area for the proposed project would be located approximately 500 feet from this residence.

a) **Less than Significant.**

Construction

The proposed project is located along the western edge of Pillar Point Harbor in western San Mateo County. Construction activities associated with the proposed project would increase noise in the vicinity temporarily. Section 4.88.330 of the San Mateo County Municipal Code contains exterior noise standards for receiving land uses such as single and multiple family residences, schools, hospitals, churches, and public library properties. However, noise sources associated with demolition and construction activities are exempt from these standards as long as these activities do not take place between the hours of 6:00 p.m. and 7:00 a.m. weekdays, 5:00 p.m. and 9:00 a.m. on Saturdays, or at any time on Sundays, Thanksgiving, or Christmas (San Mateo County 2020).

Project construction is expected to begin in fall/early winter of 2020, and last for a period of approximately 4 months. Construction activities would take place primarily during daytime hours from 8:00 a.m. and 5:00 p.m., Monday through Friday. However, some night work may be done to allow for complete parking lot and trail closures that may be needed during hauling/import of materials to the site. Night work would minimize public recreational impacts during hauling. Project construction activities and equipment used are described in detail in Section 2, *Project Description*.

Construction would involve use of equipment that generate substantial noise at, and adjacent to the proposed project area. Noise impacts from construction would depend on the type of activity being undertaken and the distance to the receptor location. **Table NOI-1** shows typical noise levels and usage factors for various types of construction equipment that would be used during proposed project construction activities.

TABLE NOI-1
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Type of Equipment	L_{max}, dBA at 50 feet	Usage Factor (%)
Excavator	85	40
Dump Truck	84	40
Concrete Mixer Truck	85	40
Concrete Pump Truck	82	20
Flat Bed Truck	84	40
Loader	80	40
Pump	77	50
Roller	85	20

SOURCE: FHWA, 2006

The noise levels shown in the table above represent maximum noise levels. However, each piece of off-road equipment in the proposed project area would not operate at its maximum capacity constantly throughout the day. This is captured in the usage factor for each equipment. Over a typical work day, equipment would operate at different locations on the proposed project area and would not always be operating concurrently. For a conservative approximation of construction noise levels, consistent with the evaluation approach suggested by the Federal Transit Administration in its Transit Noise and Vibration Manual, it is assumed for this analysis, that two of the loudest pieces of construction equipment would be operating at the same time and location in the proposed project area closest to the offsite sensitive receptor (FTA 2018).

Simultaneous operation of an excavator and a truck at the sand excavation area would generate a noise level of approximately 62.8 dBA L_{eq} at the nearest residence 290 feet away. Simultaneous operation of a concrete truck and a roller at the trail construction site would generate a noise level of approximately 49.2 dBA, L_{eq} at the nearest residence 1,100 feet away. Noise impacts from construction activities tend to be greatest when construction activities occur during the noise-sensitive times of the day (early morning, evening, or nighttime hours), in areas immediately adjacent to sensitive receptors, or when construction noise lasts for extended periods of time. However, as described above, construction associated with the proposed project would take place primarily during the less-noise sensitive daytime hours consistent with the San Mateo County Municipal Code and would take place at a distance of at least 290 feet from the nearest sensitive receptor. The County does not specify receiving noise standards for construction activities but the attenuated noise levels at the receptors would be below the short-term noise thresholds specified by other agencies such as the FTA's daytime threshold of 90 dBA, L_{eq} as well as the speech interference threshold of 70 dBA, L_{eq}. Therefore, though noise from activity at the sand excavation area could be audible over existing ambient daytime noise levels, it would not exceed standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Therefore, the impact of proposed project construction activities on the noise environment at the nearest residences would be less than significant.

Trucks transporting materials to and from the proposed project area would incrementally increase noise levels along haul routes. Approximately 2,470 one-way truck trips are expected to take place over the 4-month duration of project construction. This equates to an average of approximately 15 truck loads and 30 one-way truck trips per day. As a general rule, it takes a doubling of traffic to increase noise by 3 dBA, and approximately a tripling of traffic to increase noise by 5 dBA. A 3-dBA change is considered a just-perceivable difference, but typically does not cause an adverse human response; a change in level of at least 5 dBA is required before any adverse human response would be expected. The addition of 30 truck trips over the 9-hour workday would not cause a noticeable increase in traffic noise levels along the haul routes, and impacts would be less than significant.

Operation

After construction is completed, it is expected that the trail, upgraded stormwater system, and living shoreline would require minimal on-going maintenance, primarily in response to extreme events and long-term trends. These would include using sand from maintenance dredging to replenish beach erosion during extreme events. For the stormwater system, maintenance items are expected to be limited to minor clearing of drains and swales of silt and debris. With the improved trail and upgraded stormwater system, fewer maintenance activities are anticipated to be needed than currently. Therefore, noise levels associated with these maintenance activities would be less than significant.

b) **Less than Significant.** Temporary sources of groundborne vibration and noise during construction would result from operation of heavy construction equipment and ground disturbance activities. Construction equipment such as pile drivers and vibratory rollers generate highest levels of vibration. Large bulldozers, caisson drilling, and loaded haul trucks can also generate perceptible vibration in the immediate vicinity. Vibration attenuates rapidly from the source; therefore, the potential for vibration impact would be highest when construction takes place in immediate proximity (within 100 feet) to sensitive receptors. As project-related construction activities would not involve any high vibration generating equipment and would take place over 500 feet from sensitive receptors, vibration levels would attenuate to less-than-significant levels at the nearest sensitive receptors.

c) **Less than Significant.** The proposed project area is located within 2 miles of the Half Moon Bay Airport, but outside the 65 dBA CNEL contours for the airport (C/CAG of San Mateo County 2014). Therefore, the proposed project would not expose workers at the Project site to excessive noise levels from aircraft operations.

References

City/County Association of Governments (C/CAG) of San Mateo County, 2014. Airport Land Use Compatibility Plan for the Environs of Half Moon Bay Airport, September 2014. Available: https://ccag.ca.gov/wp-content/uploads/2014/10/HAF-ALUCP-Final.pdf.

Federal Highway Administration (FHWA), 2006. Construction Noise Handbook – Final Report, Table 9.1 – RCNM Default Noise Emission Reference Levels and Usage Factors, August 2006. Available: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm.

Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual, September 2018. Available: https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/noise-and-vibration.

San Mateo County, San Mateo County Code of Ordinances, 2020. Title 4 – Sanitation and Health, Chapter 4.88 – Noise Control, last updated on January 31, 2020. Available: https://library.municode.com/ca/san_mateo_county/codes/code_of_ordinances?nodeId=TIT4SAHE_CH4.88NOCO.

3.2.14 Population and Housing

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
14. POPULATION AND HOUSING — Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a) **No Impact.** The proposed project would not build new homes or businesses in the project area. Though stormwater infrastructure and pedestrian trails would be repaired, the level of service provided would not change such that any population growth would occur directly or indirectly due to the project being implemented. Therefore, the project would have no impact.

b) **No Impact.** No people or housing would be displaced as part of the project and there would be no impact.

3.2.15 Public Services

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
15. PUBLIC SERVICES —				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☐	☒

Discussion

a.i) **Less than Significant.** Coastside Fire Protection District (Coastside FPD) provides fire protection and general rescue services for the project area and vicinity, excluding the Pillar Point Air Force Station, which is served by the County (Coastside FPD 2008). In total, Coastside FPD operates three paid fire stations and one Headquarters. The nearest fire station is Fire Station 41, which is located at 531 Obispo Road, El Granada, CA 94018. In the event of a fire emergency in the proposed project area, Fire Station 40 and Station 41 would respond.

Because construction activities would be short-term and would involve a workforce average of 10 construction workers, project construction would not significantly increase demand for fire protection services throughout the project vicinity. Similarly, the proposed project would not change long-term use of the project area such that increased risk of fire would result. For these reasons, the project would not be expected to substantially affect Coastside FPD ability to maintain service ratios, response times, other performance objectives, such that new or physically altered facilities would be required. For these reasons, the project's impact with respect to the provision of fire service would be less than significant.

a.ii) **Less than Significant.** The Coastside Patrol Bureau of the San Mateo County Sheriff's Office provides law enforcement services for over 60% of San Mateo County, including the project area. The nearest San Mateo County Sheriff's office is the Moss Beach Substation, 500 California Avenue, Moss Beach, CA 94038, located approximately 3 miles from the proposed project area (San Mateo County Sherriff's Office 2018).

For the reasons provided in response to the previous item, the proposed project would not be expected to substantially affect the San Mateo County Sheriff's Office's ability to

maintain service ratios, response times, or other performance objectives such that new or physically altered facilities would be required. Therefore, impacts would be less than significant.

a.iii) **No Impact.** The proposed project would result in a small temporary increase of construction workers in the project area sourced from existing labor pools in the region that would not be expected to result in family relocations such that area school resources or facilities would be burdened. Project operations would not require hiring new staff or require new or modification of existing school facilities. For these reasons, the project would have no impact.

a.iv) **Less than Significant.** Other than the proposed project area, the nearest parks or recreational areas include the Fitzgerald Marine Reserve, Pillar Point Bluff, Pillar Point Harbor Beach, and Princeton by the Sea Park. For the reasons described in the previous responses, the proposed project would not result in increased population such that there would be additional demand for parks facilities during or after construction. While the trail would remain open during daylight hours during construction, some would-be trail users may be diverted to other trails in the area. Nevertheless, given the short construction duration and the sufficient amount of parks in the area, any such displacement would not result in substantial impacts on the receiving parks such that there would be need for increased or expanded parks facilities. For these reasons, the proposed project would have a less-than-significant impact.

a.v) **Less than Significant.** The proposed project would not result in new permanent employees and, therefore, would not increase the use of other public facilities such as libraries or hospitals. Therefore, the proposed project would result in less than significant impacts.

References

Coastside Fire Protection District (Coastside FPD), 2008. Coastside Fire Protection District – Response Area. https://www.coastsidefire.org/response-area. Accessed March 31, 2020.

San Mateo County Sheriff's Office, 2018. Coastside Patrol Bureau. https://www.smcsheriff.com/patrol-services/coastside-patrol-bureau. Accessed March 31, 2020.

3.2.16 Recreation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
16. RECREATION —				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental Setting

The proposed project is located south of the Fitzgerald Marine Reserve and the 2,300-foot-long north-south Pillar Point West Trail is part of the local trail system managed by the County including the Pillar Point Bluffs and the California Coastal Trail. The project area is adjacent to the Pillar Point Marsh.

Discussion

a) **Less than Significant.** The proposed project would restore and stabilize the trail to maintain access for recreationists, and upgrade the existing stormwater system to prevent future erosion of the shoreline and trail compared to the effects of the existing stormwater discharge. During construction, the intention is to keep the trail open to the public during daylight hours and have any trail closures occur at night. However, during portions of the construction work window, the section of the trail may be closed to public access and site signage would be posted to inform the public about detours during the trail closures. West Point Avenue, the access point for the trail and parking lot, would be open during construction for the storage of equipment, materials, and the hauling of materials into the project area. Because construction would be temporary and the trail would remain open for the majority of the time, it is not expected to result in deterioration of existing neighborhood parks or facilities because recreationalists could continue to use the West Trail for access to parking for the other trails north of the proposed project area. Therefore, the proposed project would result in less than significant impacts.

b) **No Impact.** The proposed project would restore and stabilize the existing trail to maintain access for recreationists. The proposed project would not construct new or expand the existing recreational facilities in the area and there would be no impact.

3.2.17 Transportation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
17. TRANSPORTATION — Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

Environmental Setting

Highways

The proposed project is located approximately 0.75 miles from State Route 1 (SR-1), 4 miles from SR-92 and 7.5 miles from Interstate 280 (I-280)

County Roadways

As described previously, the proposed project is located at Pillar Point Harbor in unincorporated San Mateo County. The roadways in the vicinity of the proposed project area are primarily classified as local streets with two lanes. Access from SR-1 to the proposed project area is via Capistrano Road to Prospect Way, and then by several optional avenues that run through Princeton-by-the-Sea. West Point Avenue provides access to the proposed project area and continues past the project site to the Pillar Point Air Force Station and the end of the Pillar Point peninsula.

Airports

The nearest airport to the project site is the Half Moon Bay Airport, approximately 0.30 miles northeast.

Discussion

a) **Less than Significant.** Importing materials would require hauling materials from a quarry within a 100-mile radius of the proposed project area. Stockpiled sand would be sourced from the nearby Half Moon Bay Airport. The remaining amount of sand would be excavated from within the Harbor. Excavation and grading would require hauling materials to a local landfill. The staging area would be within a portion of the existing parking lot off West Point Avenue. Haul routes would not require alterations to existing circulation systems. Traffic along haul routes to the proposed project area would increase due to the haul trucks and work vehicles, but would be consistent with normal construction traffic patterns and not obstruct or otherwise conflict with local traffic regulations. Therefore, the proposed project would be consistent with existing traffic and circulation plans, ordinances, and policies, and impacts would be less than significant.

b) **Less than Significant.** Section 15064.3 of the CEQA Guidelines establishes specific considerations for evaluating a project's transportation impacts. The CEQA Guidelines identify vehicle miles traveled (VMT), which is the amount and distance of automobile travel attributable to a project, as the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Construction of the proposed project would last for approximately four months and use the existing regional labor pool to supply construction labor. Construction traffic is not expected to affect local transit routes in the areas between SR-1 and the proposed project area. Operation of the proposed project would require infrequent maintenance trips to and from the proposed project area and would not add a substantial amount of VMT. Therefore, the proposed project would result in a less than significant impact.

c,d) **Less than Significant.** Importation of cement, cobble, sand, and other construction materials from offsite would be transported using highway approved trucks and trailers. Haul routes would use roadways with little to no sharp curves or uncontrolled intersections. Although there could be a lane closure near the entrance to the Pillar Point West Trail parking lot for short durations when large construction equipment would be brought in or removed from the proposed project area, emergency access along the West Point Avenue would be maintained at all times. Therefore, there would be no substantial increase in hazards due to a design feature or incompatible uses, and no restriction to emergency access and this impact would be less than significant.

3.2.18 Tribal Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
18. Tribal Cultural Resources —				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources. Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Environmental Setting

As described in the Cultural Resources section, Issue 5 above, ESA staff completed a records search of the project area and a 0.5-mile radius around the project area at the Northwest Information Center (NWIC) of the California Historical Resources Information System on March 17, 2020 (File No. 19-1646) to determine whether known cultural resources have been recorded within or adjacent to the project area. Base maps indicate that there are no previously recorded archaeological resources in the project area that could be considered tribal cultural resources. While there are at least four records of indigenous cultural resources in the general vicinity of the project area, including areas of shell midden and other evidence of use and occupation, these resources are not in areas that will be disturbed by project components (NWIC 2020).

In order to participate in tribal consultation as outlined in PRC Section 21080.3.1, a tribe must request, in writing, to be notified by lead agencies through formal notification of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated (PRC Section 21080.3.1(b)). There are no tribes that have requested consultation with the Harbor District.

ESA completed a surface survey of the project area on May 17, 2020. No cultural materials or other evidence of past human use or occupation, such as shell, midden soil, or lithic artifacts, was identified during the survey that could potentially be considered as tribal cultural resources.

Discussion

a.i/ii) **Less than Significant with Mitigation.** Tribal cultural resources are: 1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California

Native American tribe that are listed, or determined to be eligible for listing in the California Register of Historical Resources (California Register), or local register of historical resources, as defined in PRC Section 5020.1(k); or, 2) a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). For a cultural landscape to be considered a tribal cultural resource, it must be geographically defined in terms of the size and scope of the landscape (PRC Section 21074[b]). A historical resource, as defined in PRC Section 21084.1, unique archaeological resource, as defined in PRC Section 21083.2(g), or non-unique archaeological resource, as defined in PRC Section 21083.2(h), may also be a tribal cultural resource.

Through background research at the Northwest Information Center of the California Historical Resources Information System and a survey, no known archaeological resources that could be considered tribal cultural resources, listed or determined eligible for listing in the California Register, or included in a local register of historical resources as defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be impacted by the proposed project.

In addition, the San Mateo County Harbor District determined that no tribal cultural resources pursuant to criteria set forth in PRC Section 5024.1(c) could potentially be affected by the proposed project.

If any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts to the resource resulting from the proposed project could be potentially significant. Any such potential significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure CUL-1**. This mitigation measure would ensure that work halt in the vicinity of a find until a qualified archaeologist can make an assessment and provide additional recommendations if necessary, including contacting Native American tribes (refer to Section 2.5, Cultural Resources).

3.2.19 Utilities and Service Systems

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
19. UTILITIES AND SERVICE SYSTEMS — Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☒	☐	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Environmental Setting

The proposed project area is not served by water, wastewater, or other local utility connections. The West Trail parking lot has portable toilets to serve recreational visitors. There are trash receptacles located at the end of the Pillar Point West Trail.

Discussion

a) **Less than Significant with Mitigation.** The proposed project would demolish the existing stormwater collection swale and pipeline connection to the existing outfall and construct a new stormwater system to convey stormwater through a bioretention basin before discharging into the Pillar Point Marsh. As discussed in other resource sections of this document, the construction of the stormwater system could result in adverse environmental effects. The specific types of effects and mitigation measures identified to minimize or avoid those impacts are discussed in the subsections of this document corresponding to the affected topic area (e.g., Section 2.4, Biological Resources). Please refer to those sections for specific discussions of potential physical adverse effects on the environment. To reflect the conclusions of those sections, impacts would be at most less than significant with mitigation.

b) **Less than Significant.** The proposed project would not require water connections to local utilities. Project construction would require water for dust control that would be acquired by the construction contractor(s). Project operations would not result in

increased water demands because there is no connection to local water utilities proposed for the project. Water used during the establishment period for the vegetation plantings would be hauled in for use to irrigate the plantings as needed. For these reasons, the proposed project would have sufficient water supplies available to serve the project and the impact would be less than significant.

c) **No Impact.** The proposed project is not served by a wastewater treatment provider and there would be no impact on wastewater demand.

d,e) **Less than Significant.** To the extent practicable, the project would use excavated soil on site. However, up to an estimated 20 cubic yards of total debris and materials could require off-site disposal at the Corinda Los Trancos Landfill (formerly Ox Mountain), located at 12310 San Mateo Rd (Hwy 92), Half Moon Bay, CA 94019. The landfill has a remaining capacity of 22,180,000 cubic yards as of December 31, 2015 (CalRecycle 2018), the latest date at which remaining capacity estimates were available. The addition of 20 cubic yards would be negligible, and not contribute substantially to landfill capacity reduction. The proposed project would also comply with all applicable local, state, and federal regulations concerning solid waste, including the County's Construction and Demolition (C&D) Debris Ordinance (No. 04099). Therefore, the impact would be less than significant.

References

CalRecycle, 2018. Facility/Site Summary Details: Corinda Los Trancos Landfill (Ox Mtn) (41-AA-0002). Available: https://www2.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail. Accessed April 1, 2020.

3.2.20 Wildfire

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
20. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Environmental Setting

The proposed project is located within a Local Responsibility Area (LRA) where San Mateo County is responsible for fire suppression for the Project area. The California Department of Forestry and Fire Protection (CAL FIRE) has determined that the proposed project area is located in a Non-Very High Fire Hazard Severity Zone (Non-VHFHSZ) (CAL FIRE 2008).

a-d) **No Impact.** The proposed project area is not located in or adjacent to a LRA that is classified as VHFHSZ. Therefore, the project would have no impact related to wildfire.

References

CAL FIRE, 2008. Fire Hazard Severity Zones in SRA, San Mateo County. November 2008.

3.2.21 Mandatory Findings of Significance

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
19. MANDATORY FINDINGS OF SIGNIFICANCE —				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a) **Less than Significant with Mitigation.** The proposed project would be temporary in nature and involve construction activities to protect and restore the severely eroded segment of the Pillar Point Harbor's (PPH) West Trail. The proposed project would also address drainage issues in the vicinity of the project by constructing a new stormwater system that would divert stormwater through a more natural system and eliminate the direct discharge into the harbor. The proposed project would not: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce or restrict the range of rare or endangered plants or animals; or, eliminate important examples of the major periods of California history or prehistory. As discussed in the analyses provided in this Initial Study, adherence to federal, State, and local regulations, and proposed mitigation measures AIR-1, BIO-1 through BIO-20, CUL-1, and CUL-2 would reduce all potentially significant impacts to air quality, biological, cultural, and tribal cultural resources, as well as to other issue areas analyzed, to less-than-significant levels with mitigation incorporated.

b) **Less than Significant with Mitigation.** As noted throughout this document, the potential impacts of the proposed project are largely restricted to temporary and short-term construction-related impacts and are site-specific. As noted above, all of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to less than significant with incorporation of mitigation measures AIR-1, BIO-1 through BIO-20, CUL-1, and CUL-2. As a result, the potential impacts of the proposed

project are not considered cumulatively considerable, and impacts would be less than significant with mitigation incorporated.

c) **Less than Significant with Mitigation.** The potential impacts of the proposed project are temporary, short-term, and site-specific. These impacts are all localized to the proposed project area and include limited adverse effects on air quality, biological resources, cultural resources, greenhouse gas emissions, and water quality. However, the proposed project would not include any activities or uses that may cause substantial adverse effects on human beings, either directly or indirectly, or on the physical environment. The proposed project has been designed to meet federal and State engineering and design standards for shoreline restoration and stormwater conveyance projects and would adhere to applicable local codes and regulations. Compliance with applicable local, State, and federal standards, as well as incorporation of project mitigation measures, would result in less-than-significant impacts with mitigation incorporated.

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Appendix A

Air Quality and Greenhouse Gas Emission Model Data

Pillar Pt West Trail

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - PD

Construction Phase - Based on PD

Off-road Equipment - Based on PD

Off-road Equipment - Placeholder phase, no equipment

Off-road Equipment - PD

Off-road Equipment - PD

Trips and VMT - PD

Grading -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	150	0
tblConstructionPhase	NumDays	8.00	85.00
tblConstructionPhase	NumDays	8.00	40.00
tblConstructionPhase	NumDays	8.00	40.00
tblLandUse	LotAcreage	0.00	4.00
tblOffRoadEquipment	HorsePower	402.00	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	PhaseName		Site Preparation and new swale

tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	UsageHours	8.00	9.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	0.12
tblTripsAndVMT	HaulingTripNumber	0.00	200.00
tblTripsAndVMT	HaulingTripNumber	0.00	750.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,176.00
tblTripsAndVMT	HaulingTripNumber	0.00	328.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0470	0.5970	0.2872	1.4900e-003	0.0318	0.0148	0.0466	8.3800e-003	0.0136	0.0220	0.0000	137.7695	137.7695	0.0241	0.0000	138.3710
2021	0.0530	0.6643	0.3680	1.8000e-003	0.0343	0.0156	0.0498	9.0200e-003	0.0144	0.0234	0.0000	165.4741	165.4741	0.0307	0.0000	166.2410
Maximum	**0.0530**	**0.6643**	**0.3680**	**1.8000e-003**	**0.0343**	**0.0156**	**0.0498**	**9.0200e-003**	**0.0144**	**0.0234**	**0.0000**	**165.4741**	**165.4741**	**0.0307**	**0.0000**	**166.2410**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0470	0.5970	0.2872	1.4900e-003	0.0318	0.0148	0.0466	8.3800e-003	0.0136	0.0220	0.0000	137.7695	137.7695	0.0241	0.0000	138.3709
2021	0.0530	0.6643	0.3680	1.8000e-003	0.0343	0.0156	0.0498	9.0200e-003	0.0144	0.0234	0.0000	165.4741	165.4741	0.0307	0.0000	166.2409
Maximum	**0.0530**	**0.6643**	**0.3680**	**1.8000e-003**	**0.0343**	**0.0156**	**0.0498**	**9.0200e-003**	**0.0144**	**0.0234**	**0.0000**	**165.4741**	**165.4741**	**0.0307**	**0.0000**	**166.2409**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-2-2020	2-1-2021	1.0354	1.0354
2	2-2-2021	5-1-2021	0.3360	0.3360
		Highest	1.0354	1.0354

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation and new swale	Site Preparation	11/2/2020	11/6/2020	5	5	
2	Trail Construction	Grading	11/2/2020	2/26/2021	5	85	
3	Sand Excavation	Grading	1/4/2021	2/26/2021	5	40	
4	Sand Excavation export	Grading	1/4/2021	2/26/2021	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation and new swale	Excavators	1	8.00	158	0.38
Site Preparation and new swale	Off-Highway Trucks	1	3.00	402	0.38
Site Preparation and new swale	Pumps	1	4.00	84	0.74
Site Preparation and new swale	Rollers	1	9.00	80	0.38
Site Preparation and new swale	Skid Steer Loaders	1	7.00	65	0.37
Trail Construction	Off-Highway Trucks	2	9.00	402	0.38
Trail Construction	Rubber Tired Loaders	1	3.00	203	0.36
Sand Excavation	Excavators	1	9.00	158	0.38
Sand Excavation	Off-Highway Trucks	1	5.00	402	0.38
Sand Excavation export	Off-Highway Trucks	0	0.00	0	0.00

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation and new swale	5	20.00	4.00	200.00	10.80	6.60	1.00	LD_Mix	HDT_Mix	HHDT
Trail Construction	3	20.00	0.00	750.00	10.80	6.60	100.00	LD_Mix	HDT_Mix	HHDT
Sand Excavation	2	4.00	0.00	1,176.00	10.80	6.60	0.12	LD_Mix	HDT_Mix	HHDT
Sand Excavation export	0	0.00	0.00	328.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation and new swale - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5200e-003	0.0246	0.0248	5.0000e-005		1.2400e-003	1.2400e-003		1.1600e-003	1.1600e-003	0.0000	3.9737	3.9737	1.1000e-003	0.0000	4.0012
Total	**2.5200e-003**	**0.0246**	**0.0248**	**5.0000e-005**	**0.0000**	**1.2400e-003**	**1.2400e-003**	**0.0000**	**1.1600e-003**	**1.1600e-003**	**0.0000**	**3.9737**	**3.9737**	**1.1000e-003**	**0.0000**	**4.0012**

3.2 Site Preparation and new swale - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-004	0.0104	1.6000e-003	1.0000e-005	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	1.2964	1.2964	1.6000e-004	0.0000	1.3005
Vendor	4.0000e-005	1.1000e-003	2.8000e-004	0.0000	6.0000e-005	1.0000e-005	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2416	0.2416	1.0000e-005	0.0000	0.2420
Worker	1.7000e-004	1.2000e-004	1.2300e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3461	0.3461	1.0000e-005	0.0000	0.3464
Total	**4.2000e-004**	**0.0117**	**3.1100e-003**	**1.0000e-005**	**5.5000e-004**	**2.0000e-005**	**5.6000e-004**	**1.5000e-004**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**1.8842**	**1.8842**	**1.8000e-004**	**0.0000**	**1.8888**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5200e-003	0.0246	0.0248	5.0000e-005		1.2400e-003	1.2400e-003		1.1600e-003	1.1600e-003	0.0000	3.9737	3.9737	1.1000e-003	0.0000	4.0011
Total	**2.5200e-003**	**0.0246**	**0.0248**	**5.0000e-005**	**0.0000**	**1.2400e-003**	**1.2400e-003**	**0.0000**	**1.1600e-003**	**1.1600e-003**	**0.0000**	**3.9737**	**3.9737**	**1.1000e-003**	**0.0000**	**4.0011**

3.2 Site Preparation and new swale - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-004	0.0104	1.6000e-003	1.0000e-005	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	1.2964	1.2964	1.6000e-004	0.0000	1.3005
Vendor	4.0000e-005	1.1000e-003	2.8000e-004	0.0000	6.0000e-005	1.0000e-005	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2416	0.2416	1.0000e-005	0.0000	0.2420
Worker	1.7000e-004	1.2000e-004	1.2300e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3461	0.3461	1.0000e-005	0.0000	0.3464
Total	**4.2000e-004**	**0.0117**	**3.1100e-003**	**1.0000e-005**	**5.5000e-004**	**2.0000e-005**	**5.6000e-004**	**1.5000e-004**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**1.8842**	**1.8842**	**1.8000e-004**	**0.0000**	**1.8888**

3.3 Trail Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0359	0.3494	0.2021	7.1000e-004		0.0126	0.0126		0.0116	0.0116	0.0000	61.9465	61.9465	0.0200	0.0000	62.4474
Total	**0.0359**	**0.3494**	**0.2021**	**7.1000e-004**	**0.0000**	**0.0126**	**0.0126**	**0.0000**	**0.0116**	**0.0116**	**0.0000**	**61.9465**	**61.9465**	**0.0200**	**0.0000**	**62.4474**

3.3 Trail Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.6900e-003	0.2104	0.0464	6.9000e-004	0.0278	8.7000e-004	0.0287	7.3100e-003	8.3000e-004	8.1400e-003	0.0000	66.9191	66.9191	2.6700e-003	0.0000	66.9858
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4600e-003	1.0400e-003	0.0108	3.0000e-005	3.4800e-003	2.0000e-005	3.5000e-003	9.2000e-004	2.0000e-005	9.5000e-004	0.0000	3.0460	3.0460	7.0000e-005	0.0000	3.0479
Total	**8.1500e-003**	**0.2114**	**0.0572**	**7.2000e-004**	**0.0313**	**8.9000e-004**	**0.0322**	**8.2300e-003**	**8.5000e-004**	**9.0900e-003**	**0.0000**	**69.9651**	**69.9651**	**2.7400e-003**	**0.0000**	**70.0337**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0359	0.3494	0.2021	7.1000e-004		0.0126	0.0126		0.0116	0.0116	0.0000	61.9465	61.9465	0.0200	0.0000	62.4473
Total	**0.0359**	**0.3494**	**0.2021**	**7.1000e-004**	**0.0000**	**0.0126**	**0.0126**	**0.0000**	**0.0116**	**0.0116**	**0.0000**	**61.9465**	**61.9465**	**0.0200**	**0.0000**	**62.4473**

3.3 Trail Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.6900e-003	0.2104	0.0464	6.9000e-004	0.0278	8.7000e-004	0.0287	7.3100e-003	8.3000e-004	8.1400e-003	0.0000	66.9191	66.9191	2.6700e-003	0.0000	66.9858
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4600e-003	1.0400e-003	0.0108	3.0000e-005	3.4800e-003	2.0000e-005	3.5000e-003	9.2000e-004	2.0000e-005	9.5000e-004	0.0000	3.0460	3.0460	7.0000e-005	0.0000	3.0479
Total	**8.1500e-003**	**0.2114**	**0.0572**	**7.2000e-004**	**0.0313**	**8.9000e-004**	**0.0322**	**8.2300e-003**	**8.5000e-004**	**9.0900e-003**	**0.0000**	**69.9651**	**69.9651**	**2.7400e-003**	**0.0000**	**70.0337**

3.3 Trail Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0306	0.2725	0.1785	6.6000e-004		9.9000e-003	9.9000e-003		9.1000e-003	9.1000e-003	0.0000	57.7192	57.7192	0.0187	0.0000	58.1859
Total	**0.0306**	**0.2725**	**0.1785**	**6.6000e-004**	**0.0000**	**9.9000e-003**	**9.9000e-003**	**0.0000**	**9.1000e-003**	**9.1000e-003**	**0.0000**	**57.7192**	**57.7192**	**0.0187**	**0.0000**	**58.1859**

3.3 Trail Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.9000e-003	0.1779	0.0426	6.3000e-004	0.0275	7.2000e-004	0.0283	7.2100e-003	6.9000e-004	7.9000e-003	0.0000	61.5387	61.5387	2.4700e-003	0.0000	61.6004
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	8.7000e-004	9.2000e-003	3.0000e-005	3.2400e-003	2.0000e-005	3.2600e-003	8.6000e-004	2.0000e-005	8.8000e-004	0.0000	2.7388	2.7388	6.0000e-005	0.0000	2.7403
Total	**7.1600e-003**	**0.1787**	**0.0518**	**6.6000e-004**	**0.0308**	**7.4000e-004**	**0.0315**	**8.0700e-003**	**7.1000e-004**	**8.7800e-003**	**0.0000**	**64.2775**	**64.2775**	**2.5300e-003**	**0.0000**	**64.3407**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0306	0.2725	0.1785	6.6000e-004		9.9000e-003	9.9000e-003		9.1000e-003	9.1000e-003	0.0000	57.7192	57.7192	0.0187	0.0000	58.1858
Total	**0.0306**	**0.2725**	**0.1785**	**6.6000e-004**	**0.0000**	**9.9000e-003**	**9.9000e-003**	**0.0000**	**9.1000e-003**	**9.1000e-003**	**0.0000**	**57.7192**	**57.7192**	**0.0187**	**0.0000**	**58.1858**

3.3 Trail Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.9000e-003	0.1779	0.0426	6.3000e-004	0.0275	7.2000e-004	0.0283	7.2100e-003	6.9000e-004	7.9000e-003	0.0000	61.5387	61.5387	2.4700e-003	0.0000	61.6004
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	8.7000e-004	9.2000e-003	3.0000e-005	3.2400e-003	2.0000e-005	3.2600e-003	8.6000e-004	2.0000e-005	8.8000e-004	0.0000	2.7388	2.7388	6.0000e-005	0.0000	2.7403
Total	**7.1600e-003**	**0.1787**	**0.0518**	**6.6000e-004**	**0.0308**	**7.4000e-004**	**0.0315**	**8.0700e-003**	**7.1000e-004**	**8.7800e-003**	**0.0000**	**64.2775**	**64.2775**	**2.5300e-003**	**0.0000**	**64.3407**

3.4 Sand Excavation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1142	0.1187	2.8000e-004		4.7600e-003	4.7600e-003		4.3800e-003	4.3800e-003	0.0000	24.7080	24.7080	7.9900e-003	0.0000	24.9077
Total	**0.0127**	**0.1142**	**0.1187**	**2.8000e-004**	**0.0000**	**4.7600e-003**	**4.7600e-003**	**0.0000**	**4.3800e-003**	**4.3800e-003**	**0.0000**	**24.7080**	**24.7080**	**7.9900e-003**	**0.0000**	**24.9077**

3.4 Sand Excavation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0200e-003	0.0544	7.8100e-003	6.0000e-005	7.0000e-005	3.0000e-005	1.0000e-004	2.0000e-005	3.0000e-005	5.0000e-005	0.0000	5.8278	5.8278	8.4000e-004	0.0000	5.8488
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.7000e-004	1.7900e-003	1.0000e-005	6.3000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5344	0.5344	1.0000e-005	0.0000	0.5347
Total	**1.2700e-003**	**0.0546**	**9.6000e-003**	**7.0000e-005**	**7.0000e-004**	**3.0000e-005**	**7.4000e-004**	**1.9000e-004**	**3.0000e-005**	**2.2000e-004**	**0.0000**	**6.3622**	**6.3622**	**8.5000e-004**	**0.0000**	**6.3835**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1142	0.1187	2.8000e-004		4.7600e-003	4.7600e-003		4.3800e-003	4.3800e-003	0.0000	24.7079	24.7079	7.9900e-003	0.0000	24.9077
Total	**0.0127**	**0.1142**	**0.1187**	**2.8000e-004**	**0.0000**	**4.7600e-003**	**4.7600e-003**	**0.0000**	**4.3800e-003**	**4.3800e-003**	**0.0000**	**24.7079**	**24.7079**	**7.9900e-003**	**0.0000**	**24.9077**

3.4 Sand Excavation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0200e-003	0.0544	7.8100e-003	6.0000e-005	7.0000e-005	3.0000e-005	1.0000e-004	2.0000e-005	3.0000e-005	5.0000e-005	0.0000	5.8278	5.8278	8.4000e-004	0.0000	5.8488
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.7000e-004	1.7900e-003	1.0000e-005	6.3000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5344	0.5344	1.0000e-005	0.0000	0.5347
Total	**1.2700e-003**	**0.0546**	**9.6000e-003**	**7.0000e-005**	**7.0000e-004**	**3.0000e-005**	**7.4000e-004**	**1.9000e-004**	**3.0000e-005**	**2.2000e-004**	**0.0000**	**6.3622**	**6.3622**	**8.5000e-004**	**0.0000**	**6.3835**

3.5 Sand Excavation export - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Sand Excavation export - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2900e-003	0.0443	9.4300e-003	1.3000e-004	2.7700e-003	1.4000e-004	2.9100e-003	7.6000e-004	1.3000e-004	8.9000e-004	0.0000	12.4073	12.4073	6.3000e-004	0.0000	12.4231
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2900e-003**	**0.0443**	**9.4300e-003**	**1.3000e-004**	**2.7700e-003**	**1.4000e-004**	**2.9100e-003**	**7.6000e-004**	**1.3000e-004**	**8.9000e-004**	**0.0000**	**12.4073**	**12.4073**	**6.3000e-004**	**0.0000**	**12.4231**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Sand Excavation export - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2900e-003	0.0443	9.4300e-003	1.3000e-004	2.7700e-003	1.4000e-004	2.9100e-003	7.6000e-004	1.3000e-004	8.9000e-004	0.0000	12.4073	12.4073	6.3000e-004	0.0000	12.4231
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2900e-003**	**0.0443**	**9.4300e-003**	**1.3000e-004**	**2.7700e-003**	**1.4000e-004**	**2.9100e-003**	**7.6000e-004**	**1.3000e-004**	**8.9000e-004**	**0.0000**	**12.4073**	**12.4073**	**6.3000e-004**	**0.0000**	**12.4231**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Pillar Pt West Trail

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	4.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - PD

Construction Phase - Based on PD

Off-road Equipment - Based on PD

Off-road Equipment - Placeholder phase, no equipment

Off-road Equipment - PD

Off-road Equipment - PD

Trips and VMT - PD

Grading -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	150	0
tblConstructionPhase	NumDays	8.00	85.00
tblConstructionPhase	NumDays	8.00	40.00
tblConstructionPhase	NumDays	8.00	40.00
tblLandUse	LotAcreage	0.00	4.00
tblOffRoadEquipment	HorsePower	402.00	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	PhaseName		Site Preparation and new swale

tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	PhaseName		Site Preparation and new swale
tblOffRoadEquipment	UsageHours	8.00	9.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	0.12
tblTripsAndVMT	HaulingTripNumber	0.00	200.00
tblTripsAndVMT	HaulingTripNumber	0.00	750.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,176.00
tblTripsAndVMT	HaulingTripNumber	0.00	328.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	3.1999	40.0268	23.1086	0.0906	1.7023	1.1179	2.8202	0.4484	1.0384	1.4868	0.0000	9,147.3262	9,147.3262	1.7127	0.0000	9,190.1442
2021	2.6191	32.7308	18.2424	0.0878	1.7401	0.7661	2.5062	0.4572	0.7064	1.1636	0.0000	8,916.3399	8,916.3399	1.6674	0.0000	8,958.0254
Maximum	**3.1999**	**40.0268**	**23.1086**	**0.0906**	**1.7401**	**1.1179**	**2.8202**	**0.4572**	**1.0384**	**1.4868**	**0.0000**	**9,147.3262**	**9,147.3262**	**1.7127**	**0.0000**	**9,190.1442**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	3.1999	40.0268	23.1086	0.0906	1.7023	1.1179	2.8202	0.4484	1.0384	1.4868	0.0000	9,147.3262	9,147.3262	1.7127	0.0000	9,190.1442
2021	2.6191	32.7308	18.2424	0.0878	1.7401	0.7661	2.5062	0.4572	0.7064	1.1636	0.0000	8,916.3399	8,916.3399	1.6674	0.0000	8,958.0254
Maximum	**3.1999**	**40.0268**	**23.1086**	**0.0906**	**1.7401**	**1.1179**	**2.8202**	**0.4572**	**1.0384**	**1.4868**	**0.0000**	**9,147.3262**	**9,147.3262**	**1.7127**	**0.0000**	**9,190.1442**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation and new swale	Site Preparation	11/2/2020	11/6/2020	5	5	
2	Trail Construction	Grading	11/2/2020	2/26/2021	5	85	
3	Sand Excavation	Grading	1/4/2021	2/26/2021	5	40	
4	Sand Excavation export	Grading	1/4/2021	2/26/2021	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation and new swale	Excavators	1	8.00	158	0.38
Site Preparation and new swale	Off-Highway Trucks	1	3.00	402	0.38
Site Preparation and new swale	Pumps	1	4.00	84	0.74
Site Preparation and new swale	Rollers	1	9.00	80	0.38
Site Preparation and new swale	Skid Steer Loaders	1	7.00	65	0.37
Trail Construction	Off-Highway Trucks	2	9.00	402	0.38
Trail Construction	Rubber Tired Loaders	1	3.00	203	0.36
Sand Excavation	Excavators	1	9.00	158	0.38
Sand Excavation	Off-Highway Trucks	1	5.00	402	0.38
Sand Excavation export	Off-Highway Trucks	0	0.00	0	0.00

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation and new swale	5	20.00	4.00	200.00	10.80	6.60	1.00	LD_Mix	HDT_Mix	HHDT
Trail Construction	3	20.00	0.00	750.00	10.80	6.60	100.00	LD_Mix	HDT_Mix	HHDT
Sand Excavation	2	4.00	0.00	1,176.00	10.80	6.60	0.12	LD_Mix	HDT_Mix	HHDT
Sand Excavation export	0	0.00	0.00	328.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation and new swale - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0093	9.8190	9.9242	0.0182		0.4964	0.4964		0.4649	0.4649		1,752.0913	1,752.0913	0.4846		1,764.2050
Total	**1.0093**	**9.8190**	**9.9242**	**0.0182**	**0.0000**	**0.4964**	**0.4964**	**0.0000**	**0.4649**	**0.4649**		**1,752.0913**	**1,752.0913**	**0.4846**		**1,764.2050**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0909	4.0967	0.7510	5.0400e-003	0.0357	4.3600e-003	0.0401	9.8700e-003	4.1700e-003	0.0140		538.4697	538.4697	0.0762		540.3754
Vendor	0.0150	0.4398	0.1193	9.9000e-004	0.0245	2.0700e-003	0.0266	7.0500e-003	1.9800e-003	9.0300e-003		104.8326	104.8326	6.0000e-003		104.9825
Worker	0.0735	0.0520	0.5040	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.2131	151.2131	3.7000e-003		151.3055
Total	**0.1795**	**4.5884**	**1.3743**	**7.5500e-003**	**0.2245**	**7.4900e-003**	**0.2320**	**0.0605**	**7.1300e-003**	**0.0676**		**794.5153**	**794.5153**	**0.0859**		**796.6634**

3.2 Site Preparation and new swale - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.0093	9.8190	9.9242	0.0182		0.4964	0.4964		0.4649	0.4649	0.0000	1,752.0913	1,752.0913	0.4846		1,764.2050
Total	**1.0093**	**9.8190**	**9.9242**	**0.0182**	**0.0000**	**0.4964**	**0.4964**	**0.0000**	**0.4649**	**0.4649**	**0.0000**	**1,752.0913**	**1,752.0913**	**0.4846**		**1,764.2050**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0909	4.0967	0.7510	5.0400e-003	0.0357	4.3600e-003	0.0401	9.8700e-003	4.1700e-003	0.0140		538.4697	538.4697	0.0762		540.3754
Vendor	0.0150	0.4398	0.1193	9.9000e-004	0.0245	2.0700e-003	0.0266	7.0500e-003	1.9800e-003	9.0300e-003		104.8326	104.8326	6.0000e-003		104.9825
Worker	0.0735	0.0520	0.5040	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.2131	151.2131	3.7000e-003		151.3055
Total	**0.1795**	**4.5884**	**1.3743**	**7.5500e-003**	**0.2245**	**7.4900e-003**	**0.2320**	**0.0605**	**7.1300e-003**	**0.0676**		**794.5153**	**794.5153**	**0.0859**		**796.6634**

3.3 Trail Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6323	15.8797	9.1860	0.0321		0.5732	0.5732		0.5274	0.5274		3,103.8345	3,103.8345	1.0038		3,128.9305
Total	**1.6323**	**15.8797**	**9.1860**	**0.0321**	**0.0000**	**0.5732**	**0.5732**	**0.0000**	**0.5274**	**0.5274**		**3,103.8345**	**3,103.8345**	**1.0038**		**3,128.9305**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3053	9.6876	2.1202	0.0313	1.3135	0.0398	1.3532	0.3443	0.0380	0.3824		3,345.6720	3,345.6720	0.1347		3,349.0397
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0520	0.5040	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.2131	151.2131	3.7000e-003		151.3055
Total	**0.3789**	**9.7396**	**2.6241**	**0.0328**	**1.4778**	**0.0408**	**1.5186**	**0.3879**	**0.0390**	**0.4269**		**3,496.8851**	**3,496.8851**	**0.1384**		**3,500.3453**

3.3 Trail Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.6323	15.8797	9.1860	0.0321		0.5732	0.5732		0.5274	0.5274	0.0000	3,103.8345	3,103.8345	1.0038		3,128.9305
Total	**1.6323**	**15.8797**	**9.1860**	**0.0321**	**0.0000**	**0.5732**	**0.5732**	**0.0000**	**0.5274**	**0.5274**	**0.0000**	**3,103.8345**	**3,103.8345**	**1.0038**		**3,128.9305**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3053	9.6876	2.1202	0.0313	1.3135	0.0398	1.3532	0.3443	0.0380	0.3824		3,345.6720	3,345.6720	0.1347		3,349.0397
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0520	0.5040	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.2131	151.2131	3.7000e-003		151.3055
Total	**0.3789**	**9.7396**	**2.6241**	**0.0328**	**1.4778**	**0.0408**	**1.5186**	**0.3879**	**0.0390**	**0.4269**		**3,496.8851**	**3,496.8851**	**0.1384**		**3,500.3453**

3.3 Trail Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.4919	13.2915	8.7093	0.0321		0.4827	0.4827		0.4441	0.4441		3,103.6366	3,103.6366	1.0038		3,128.7311
Total	**1.4919**	**13.2915**	**8.7093**	**0.0321**	**0.0000**	**0.4827**	**0.4827**	**0.0000**	**0.4441**	**0.4441**		**3,103.6366**	**3,103.6366**	**1.0038**		**3,128.7311**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2888	8.7880	2.0876	0.0308	1.3960	0.0352	1.4312	0.3646	0.0337	0.3983		3,301.7476	3,301.7476	0.1337		3,305.0905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0681	0.0464	0.4596	1.4600e-003	0.1643	1.0300e-003	0.1653	0.0436	9.5000e-004	0.0445		145.9073	145.9073	3.3000e-003		145.9899
Total	**0.3569**	**8.8344**	**2.5472**	**0.0323**	**1.5603**	**0.0363**	**1.5966**	**0.4082**	**0.0347**	**0.4429**		**3,447.6549**	**3,447.6549**	**0.1370**		**3,451.0804**

3.3 Trail Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.4919	13.2915	8.7093	0.0321		0.4827	0.4827		0.4441	0.4441	0.0000	3,103.6366	3,103.6366	1.0038		3,128.7311
Total	**1.4919**	**13.2915**	**8.7093**	**0.0321**	**0.0000**	**0.4827**	**0.4827**	**0.0000**	**0.4441**	**0.4441**	**0.0000**	**3,103.6366**	**3,103.6366**	**1.0038**		**3,128.7311**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2888	8.7880	2.0876	0.0308	1.3960	0.0352	1.4312	0.3646	0.0337	0.3983		3,301.7476	3,301.7476	0.1337		3,305.0905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0681	0.0464	0.4596	1.4600e-003	0.1643	1.0300e-003	0.1653	0.0436	9.5000e-004	0.0445		145.9073	145.9073	3.3000e-003		145.9899
Total	**0.3569**	**8.8344**	**2.5472**	**0.0323**	**1.5603**	**0.0363**	**1.5966**	**0.4082**	**0.0347**	**0.4429**		**3,447.6549**	**3,447.6549**	**0.1370**		**3,451.0804**

3.4 Sand Excavation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6365	5.7122	5.9335	0.0141		0.2382	0.2382		0.2191	0.2191		1,361.7928	1,361.7928	0.4404		1,372.8036
Total	**0.6365**	**5.7122**	**5.9335**	**0.0141**	**0.0000**	**0.2382**	**0.2382**	**0.0000**	**0.2191**	**0.2191**		**1,361.7928**	**1,361.7928**	**0.4404**		**1,372.8036**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0546	2.6630	0.4694	2.7800e-003	3.7000e-003	1.8100e-003	5.5100e-003	1.0700e-003	1.7400e-003	2.8000e-003		296.9914	296.9914	0.0497		298.2338
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0136	9.2800e-003	0.0919	2.9000e-004	0.0329	2.1000e-004	0.0331	8.7200e-003	1.9000e-004	8.9100e-003		29.1815	29.1815	6.6000e-004		29.1980
Total	**0.0682**	**2.6723**	**0.5614**	**3.0700e-003**	**0.0366**	**2.0200e-003**	**0.0386**	**9.7900e-003**	**1.9300e-003**	**0.0117**		**326.1729**	**326.1729**	**0.0504**		**327.4318**

3.4 Sand Excavation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6365	5.7122	5.9335	0.0141		0.2382	0.2382		0.2191	0.2191	0.0000	1,361.7928	1,361.7928	0.4404		1,372.8036
Total	**0.6365**	**5.7122**	**5.9335**	**0.0141**	**0.0000**	**0.2382**	**0.2382**	**0.0000**	**0.2191**	**0.2191**	**0.0000**	**1,361.7928**	**1,361.7928**	**0.4404**		**1,372.8036**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0546	2.6630	0.4694	2.7800e-003	3.7000e-003	1.8100e-003	5.5100e-003	1.0700e-003	1.7400e-003	2.8000e-003		296.9914	296.9914	0.0497		298.2338
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0136	9.2800e-003	0.0919	2.9000e-004	0.0329	2.1000e-004	0.0331	8.7200e-003	1.9000e-004	8.9100e-003		29.1815	29.1815	6.6000e-004		29.1980
Total	**0.0682**	**2.6723**	**0.5614**	**3.0700e-003**	**0.0366**	**2.0200e-003**	**0.0386**	**9.7900e-003**	**1.9300e-003**	**0.0117**		**326.1729**	**326.1729**	**0.0504**		**327.4318**

3.5 Sand Excavation export - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0656	2.2205	0.4910	6.3300e-003	0.1433	6.9200e-003	0.1502	0.0393	6.6200e-003	0.0459		677.0827	677.0827	0.0358		677.9786
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0656**	**2.2205**	**0.4910**	**6.3300e-003**	**0.1433**	**6.9200e-003**	**0.1502**	**0.0393**	**6.6200e-003**	**0.0459**		**677.0827**	**677.0827**	**0.0358**		**677.9786**

3.5 Sand Excavation export - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0656	2.2205	0.4910	6.3300e-003	0.1433	6.9200e-003	0.1502	0.0393	6.6200e-003	0.0459		677.0827	677.0827	0.0358		677.9786
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0656**	**2.2205**	**0.4910**	**6.3300e-003**	**0.1433**	**6.9200e-003**	**0.1502**	**0.0393**	**6.6200e-003**	**0.0459**		**677.0827**	**677.0827**	**0.0358**		**677.9786**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Pillar Point West Trail

Diesel and Gasoline Use Calculations

Diesel Sources - Construction		
TOTAL Diesel Sources =	297.94	MT of CO_2
Convert to kilograms	2.98E+05	kg of CO_2
CO_2 from diesel fuel combustion[a]	10.21	kg of CO_2/gallon of diesel
Diesel Use over construction period =	29181.46	gallons of diesel

Gasoline Sources - Construction		
Construction workers	6.67	MT of CO_2
Convert to kilograms	6.67E+03	kg of CO_2
CO_2 from gasoline fuel combustion[a]	8.78	kg of CO_2/gallon of gasoline
Gasoline Use over construction period =	759.60	gallons of gasoline

Notes:

[a] Emissions factors per The Climate Registry 2019 Default Emission Factors (Table 2.1 - US Default Factors for Calculating CO_2 Emissions from Combustion of Transport Fuels)

Conversion	1 MT =	1000

Appendix B

Biological Resources Assessment

BIOLOGICAL RESOURCE ASSESSMENT

Pillar Point Harbor West Trail
Pillar Point Harbor, San Mateo County, CA

FINAL

July 25, 2014

Prepared for:
GHD
2235 Mercury Way, Suite 150
Santa Rosa, CA 95407

Prepared by:
Wildlife Research Associates
1119 Burbank Avenue
Santa Rosa, CA 95407
707-544-6273

And

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SUMMARY

The Pillar Point Harbor West Trail repair project, located south of West Point Avenue, on the west side of Pillar Point Marsh, is situated on the northwest side of Pillar Point Harbor in the coastal area of San Mateo County, California. The West Trail provides a 13-foot wide pedestrian pathway that runs south from the West Point Avenue access road and parking area to the Pacific Ocean beach, approximately 2,300 feet to the west. Three phases of repair and maintenance work are proposed for the West Trail, including culvert replacement (Phase 1), shoreline repair along various portions of the trail, and hillside erosion control (Phase 2) and resurfacing the trail to meet ADA accessibility standards and paving the existing parking lot and adding public restrooms (Phase 3). The focus of this report is on Phase 1, with the other phases mentioned to provide background information. The Study Area includes the parking lot to the west end of the trail even though the Phase 1 work will be limited to a relatively small area around the culvert replacement area, approximately midway along the trail.

Jane Valerius Environmental Consulting and Wildlife Research Associates were contracted by GHD to perform this Biological Resources Assessment for the federally listed Threatened California red-legged frog (*Rana draytonii*), federally listed Endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and the federal and State listed threatened Central Coast steelhead (*Oncorhynchus mykiss irideus*).

Five vegetation types were observed within the study area and include the following: 1) Northern Coastal Salt Marsh; 2) Freshwater Marsh; 3) Northern Coastal Scrub; 4) Non-Native Grassland/ Monterey Cypress Mosaic; and 5) Coastal Strand. Vegetation community names are taken from the Fitzgerald Marine Reserve Master Plan (Brady/LSA 2002) for consistency of habitat descriptions. As part of this Biological Resource Assessment, we also evaluated the potential for occurrence of 41 special-status plant species, one San Mateo County locally unique plant species, and 25 special-status wildlife species, as well as the potential for California red-legged frog to occur on the site.

Seventeen (17) CNPS ranked species have the potential to occur in the study area. One CNPS Rank 3 species, San Mateo tree lupine (*Lupinus arboreus* var *eximius*) was observed within the project area although the variety *eximius* is not recognized in The Jepson Manual, Vascular Plants of California (Baldwin et. al. 2012). One San Mateo County locally unique plant, beach strawberry (*Fragaria chiloensis*), also occurs in the study area and one special status vegetation community, Northern Coastal Salt Marsh, is present within the study area. Two special status plant surveys were conducted: May 28 and July 24, 2014. These surveys covered the flowering period for all of the potential special status plants that could occur in the area. No further surveys are required.

Steelhead may come into Pillar Point Harbor but Denniston Creek does not provide suitable spawning habitat. No suitable spawning habitat occur sin Pillar Point Harbor. No impacts to the species were identified at this time.

California red-legged frog individuals have been reported in freshwater portion of Pillar Point Marsh, on the north side of West Point Avenue, north of the project area (CNDDB 2014).

San Francisco garter snakes have been reported historically on the north side of West Point Avenue, north of the project area (CNDDB 2014).

There is a high potential for nesting passerines (perching birds), such as saltmarsh common yellowthroat (*Geothylpis trichas sinuosa*), to occur adjacent to the project area.

Best Construction Practices and Avoidance and Minimization Measures as well as Mitigation Measures to prevent take of individuals discussed above are included in this report.

List of Acronyms and Abbreviations

BRA	Biological Resource Assessment
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Base
CRF	California red-legged frog
Corps	US Army Corps of Engineers
FESA	Federal Endangered Species Act
OHWM	Ordinary High Water Mark
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
RPW	Relatively Permanent Water
RWQCB	Regional Water Quality Control Board
SFGS	San Francisco garter snake
SSC	California Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Trans Mercator
WPT	Western pond turtle

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1.0 INTRODUCTION

The purpose of this Biological Resource Assessment is to provide technical information and to review the proposed Pillar Point Harbor West Trail Phase 1 culvert replacement study area, located in San Mateo County (Appendix A, Figure 1). Wildlife Research Associates and Jane Valerius Environmental Consulting prepared this Biological Resources Assessment to provide sufficient detail to determine the potential effects of the proposed project on the federally-listed Threatened California red-legged frog (*Rana draytonii*) (hereafter CRF), known to occur in the area, as well as to determine the potential for special-status vegetation communities, plant and animal species to occur within the proposed linear project, and to identify the limitations to potential development of the project, such as wetland habitat removal. The biological resource assessment is prepared in accordance with legal requirements found in Section 7 (a)(2) of the Endangered Species Act (16 U.S. C 1536(c)) and also provides information required for an Initial Study/Mitigated Negative Declaration as part of the California Environmental Quality Act (CEQA) review for the project. The document presents technical information upon which later decisions regarding project affects are developed.

This report presents the results of a reconnaissance-level survey of the project site, a discussion of the existing plant communities and wildlife habitats on-site, potentially occurring special-status natural communities, and special-status plant and animal species on-site, and identifies potential impacts and mitigation measures.

1.1 Reason for the Project

The project is being undertaken for Phase 1 which involves repair of erosion (i.e., wash-out) damage in the immediate vicinity of existing drainage culverts, and culvert repair (Phase 1). The study area also includes a review for the site for future work planned as Phase 2 and Phase 3. Phase 2 would involve repairing erosion at several points along the trail and currently reducing its usable width. Phase 3 would potentially involve grading and resurfacing of the trail to meet ADA accessibility standards and may include resurfacing the trail with permeable material, paving the existing parking lot, and adding public restrooms. This report addresses the impacts primarily from the culvert replacement (i.e., Phase 1).

1.2 Project Sponsor

The Pillar Point Harbor West Trail repair project is proposed by the San Mateo County Harbor District. The contact person is:

Name:	Peter Grenell, General Manager
	San Mateo Harbor District
Address:	400 Oyster Point Boulevard, Suite 300
	S. San Francisco, CA 94080
Tel:	650-583-4400

2.0 PROJECT DESCRIPTION

2.1 Location

The Pillar Point Harbor West Trail repair project, located south of West Point Avenue, on the west side of Pillar Point Marsh, is situated on the northwest side of Pillar Point Harbor in the coastal area of San Mateo County, California (Appendix A, Figure 1). Pillar Point Harbor is situated on the east side of Pillar Point, west of Highway 1, south of the James V. Fitzgerald Marine Reserve and west of Granada Beach in El Granada. The project area is located in the

unsectioned portion of the Corral de Tierra (Palomares) Rancheria of the Montara Mountain 7.5-minute topographic quadrangle, within Township 5S and Range 6W. Surrounding land uses consist of mainly open space lands, with the exception of the Vandenberg Air Force Base northern radar station immediately upslope and north of the trail.

2.2 Action Area

For Federal permitting purposes, the Project Action Area is defined as all areas to be affected directly or indirectly by the Federal action, and not merely in the immediate area involved in the action (50 CFR Sect. 402.02). The action area is analyzed for potential direct and indirect effects to federally-listed species. This same area will be considered for state and regional permitting purposes, as well.

The Action Area occurs approximately 3,390 feet west of Pillar Point Harbor Marina, along the west bank of Pillar Point Harbor. The action area includes the 800 square feet for the pipe replacement and access to this site via the parking lot and trail. West Point Avenue is the access route for the action area that will be used for equipment and machines.

Given the generally minor nature of the ground-disturbing construction activities for the Phase 1 culvert repair, the limits of the action area are minor and include the immediate areas of culvert replacement. All staging areas will be on existing roadways or compacted parking areas. Please refer to Chapter 5.0 for discussion of these potential effects

2.3 Proposed Action

The West Trail provides a 13-foot-wide pedestrian pathway from the West Point Avenue access road and parking area to the Pacific Ocean beach about 2,300 feet to the west. The trail varies in width, but is generally about 13 feet wide. The trail provides public access to the Pillar Point outer harbor and to the Maverick's Beach beyond. The date of original trail construction is not known. Three phases of repair and maintenance work are proposed for the West Trail, as noted above. The Phase 1 includes repair of an existing culvert and shoreline erosion in the immediate vicinity of the culvert.

2.3.1 Phase 1 – Culvert Repair

Phase 1 consists of repair of erosion (i.e., wash-out) damage in the immediate vicinity of existing drainage culverts, and culvert repair. Erosion at two existing stacked culverts near Station 6+00 on the West Trail has created severe encroachment into the pathway along the Project site. In February 2012, it was noted that the void along the waterward side of the trail was 3 feet wide, with a 3.5 foot drop-off (to the bottom of the top culvert). The trail is also further undermined along the culverts extending at least 8 feet back under the trail. The upper culvert is a 12" Corrugated Metal Pipe (CMP) that is 48 linear feet (Appendix A, Figures 2-4). The lower culvert is an 18" inner diameter, 24" outer diameter concrete pipe that is 48 linear feet long that is broken into many segments. Both culverts are clogged with debris, and it can be assumed that they are not functioning. The bench at this location is undermined, and is unsafe. These issues create an unsafe condition for trail users and could potentially preclude the use of the trail as an emergency service access to Mavericks Beach.

The culvert repair project includes a minimal amount of rip rap at the manhole, and riprap to protect the soldier pile wall and culvert. The existing 24-inch CMP attached to the surface of the hillside would remain, and would outfall into a new precast concrete catch basin structure, similar to the figure shown below. A new approximately 3 feet section of 24-inch CMP and 90 degree elbow will be attached to the existing CMP and will be removable for maintenance purposes. The

CMP will outfall into a new 60-inch flat top manhole, which will capture stormwater and hillside debris. The manhole will have a 36-inch diameter round grated lid. Approximately 98 cubic yards (CY) of rock slope protection will be installed around the manhole for erosion protection. A new 42-foot long 36-inch RCP will convey stormwater under the trail and will outfall at the shoreline. Because of the shallow depth of the trail, three new 8 by 8 foot steel plates will be installed on the trail surface to disperse the load and protect the pipe.

At the outfall, approximately 750 CY of rock slope protection and filter fabric will be placed along the wall mostly above the mean high tide line, over an approximately 165 square feet (SF) area (20 linear feet) of shoreline, to protect against future erosion. As shown on sheet S-501 of the Preliminary Engineering Civil Details, a new approximately 19-foot long, 4-feet high solid pipe wall with four 1.5 inch diameter concrete footings will be installed to protect the trail from wave action and erosion. The concrete footings will be drilled to a depth of approximately 16 to 20 feet, and cast in place. The concrete panel will also be cast in place. Precast concrete laggings will be installed, and approximately 15 CY of engineered fill will be backfilled behind the headwall.

The total project area is approximately 800 square feet.

2.4 Staging Areas and Fueling

To prevent contamination of fuel or other contaminants into Pillar Point Harbor, the following measures will apply:

- The use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waters of the U.S. and State,
- Areas for fuel storage, refueling and servicing of construction equipment must be located in an upland location,
- Wash sites must be located in upland locations to ensure wash water does not flow into the stream channel or adjacent wetlands.
- All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. All questionable motor oil, coolant, transmission fluid, and hydraulic fluid hoses, fittings and seals shall be replaced. The mechanical equipment shall be inspected on a daily basis to ensure no leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.
- Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation within 100 feet of the water. If a spill occurs, no additional in-water work shall occur until, 1) the mechanical equipment is inspected by the contractor and the leak has been repaired, 2) the spill has been contained, and 3) CDFW and NMFS are contacted and have evaluated the impacts of the spill

2.5 Construction Techniques/Methods

The following methods will be used for Phase 1:

- Headwall concrete footings: steel pile casing will be drilled approximately 16 to 20 feet deep from a drill rig located on the trail, and filled with concrete. Concrete footings and concrete panel will be cast-in-place. Concrete lagging are precast.
- Equipment: drill rig, backhoe, loader
- Truck trips – 7 for materials and equipment transport; does not include worker trips.

2.6 Construction Scheduling

The project applicant, the San Mateo County Harbor District, proposes to execute the Phase 1 project (i.e., culvert repair) in late summer or fall 2014, with completion prior to the 2015 Maverick's competition, typically held in January. Phase 1 is estimated to take about two weeks to complete.

2.7 Construction Best Management Practices

Construction BMPs will be incorporated in the construction of the project and include, but are not limited to, the following:

A. Work is proposed to be conducted outside the rainy season (defined as October 15-April 15), and preferably during the driest season, between August 1 and October 15. To avoid debris contamination in the harbor, all work will be conducted at low and any concrete that may inadvertently drop into the creek during construction will be removed. All debris will be cleared out of the harbor.

B. To prevent soils getting into the harbor and coastal waters, it is further recommended that work be conducted during low tide periods when feasible.

C. Silt fences, straw wattles, or equivalent apparatus shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from discharging to coastal waters or to areas that would eventually transport such discharge to coastal waters.

D. Equipment washing, refueling, and/or servicing shall take place at least 50 feet from the water's edge.

E. All construction equipment shall be inspected and maintained at an off-site location to prevent leaks and spills of hazardous materials at the project site.

F. The contractor shall ensure that good construction housekeeping controls and procedures are maintained at all times (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the site).

G. All erosion and sediment controls shall be in place prior to the commencement of construction, as well as at the end of each work day.

H. Nesting surveys for special-status bird species by a qualified biologist shall be conducted at the appropriate times before construction starts to determine occupancy at the site. If no special-status species are found, no further action other than the Best Management Practices identified above are required. If individuals are found, including plants or nesting birds, a buffer zone around the species or nest will be required at a sufficient distance to prevent take of individual plants, or until after the nesting season.

I. Due to the potential for special-status animal species to occur, move through, or into the freshwater marsh portion of the project area, an on-site biological monitor, shall at a minimum, check the ground beneath all equipment and stored materials each morning

2.8 Avoidance and Minimization Measures

California red-legged frog: The following avoidance measures, adopted from the *Programmatic Biological Opinion* (USFWS 1999), will be implemented to prevent mortality of individuals:

1. Ground disturbing construction activities for Phase 1 will be limited to the dry season period from May 1 through October 15, to avoid potential CRF dispersal events.

2. No less than 15 calendar days prior to the onset of activities, the applicant shall submit the name (s) and credentials of biologists who could conduct the activities specified in the following measures. A qualified biologist means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the CRF. Resumes of all biologists will be submitted to the Service no later than 30 days prior to the start of construction for approval. No earth moving or other project activities will begin until written approval from the Service has been received that the biologist(s) is qualified to conduct the work.

3. A pre-construction survey will be conducted immediately preceding any construction activity (including grading or equipment staging) that occurs in CRF habitat or any activity that may result in take of these species. A biologist approved by the USFWS (Service-approved) will carefully search all obvious potential hiding spots for CRF, such as large downed woody debris. If CRF are found within the project area, the animal(s) will be allowed to move out of the construction area by its own volition.

4. Before the onset of any construction activities, the project engineer and Service-approved biologist will identify locations for equipment, personnel access and materials staging other than those identified in the project description to minimize disturbance to CRF habitat.

5. Prior to the start of construction, a Service-approved biologist will train all construction personnel regarding habitat sensitivity, identification of special status species, and required practices before the start of construction. The training will include the general measures that are being implemented to conserve the species as they relate to the project, the penalties for non-compliance, and the boundaries of the project area. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A fact sheet or other supporting materials containing this information will be prepared and distributed to all construction personnel. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all the conservation and protection measures.

6. No project related activities will occur outside the delineated work area.

7. Because dusk and dawn are often the times when CRF are most actively foraging and dispersing, all construction activities will cease 30 minutes before sunset and will not begin prior to 30 minutes before sunrise.

8. A Service-approved biologist will be onsite during all ground-disturbance related activities (i.e., vegetation grubbing, excavation) to ensure compliance with these avoidance measures.

9. After ground disturbing activities are complete, the Service-approved biologist will train an individual to act as the on-site construction monitor. The construction monitor (i.e., San Mateo County staff) will have attended the Employee Education Program training described above under Conservation Measure 5. Both the Service-approved biologist and the construction monitor will have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The Service-approved biologist and construction monitor will complete a daily log summarizing activities and environmental compliance.

10. The Service-approved biologist will have oversight over the implementation of all the Terms and Conditions in the informal consultation [conducted as part of the resource permitting process], and will have the authority to stop project activities if any of the requirements associated with these Terms and Conditions are not being fulfilled. If the biologist has presented a stop work order due to take of any of the listed species, the Service and the CDFW will be notified within one (1) working day via email or telephone.

11. If a CRF is encountered during project construction, the Service-approved biologist will remove the animal out of the construction area, either upstream or downstream.

12. All vehicle parking will be restricted to previously determined staging areas or existing roads. Necessary vehicles belonging to the biological monitors and construction supervisors will be parked at the nearest point on existing access roads.

13. Rodent control will be permitted only in developed portions of the project area. Rodent control will not be implemented in any of the open space areas. The method of rodent control will comply with the methods of rodent control discussed in the 4(d) rule published in the final listing rule for the CRF (USFWS 2004).

14. The San Mateo County site inspector will be trained by the Service-approved biologist and will act as the construction monitor. The site inspector/construction monitor will be the contact source for any employee or contractor who might inadvertently kill or injure a CRF or who finds a dead, injured or entrapped individual. The County inspector will be identified during the employee education program. The name and telephone number will be provided to the Service prior to the initiation of ground disturbance activities.

15. No canine or feline pets or firearms (except for Federal, State, or local law enforcement officers and security personnel) will be permitted in the work area to avoid harassment, killing, or injuring of CRF individuals. Because the work area occurs along a pedestrian trail on which dogs are permitted, it is understood that canine or feline pets may be present in the vicinity of the work area that do not belong to the construction workers.

16. A litter control program will be instituted at the project site. All construction personnel will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers will be removed from the project area at the end of each working day.

17. The fueling and maintenance of vehicles and other equipment shall occur at least 20 meters (66 feet) from any riparian habitat or water body.

18. The contractor will be supplied a copy of the informal consultation with conditions of approval that detail the above listed avoidance and minimization measures prior to ground breaking, as well as any other pertinent avoidance and minimization measures.

2.9 Extent of Project Effects

The construction of Phase 1 of the project will only involve temporary direct effects. Temporary effects include removing and replacing the 800 square feet of compacted dirt and pipeline.

2.10 Project Alternatives – Phase 1

There are no alternative locations for the Phase 1 project. However, the project applicant – the San Mateo County Harbor District – considered three alternative design scenarios for replacement of the culvert and repair of the immediately affected portion of West Trail at Sta. No. 6+00. Out of consideration for future operations and ease of maintenance, "Alternative 2" was selected as the Phase 1 project design. The three alternatives are briefly described below.

Alternative 1 – This design scenario proposed a direct connection to the existing 24-inch CMP traversing down the adjacent hillside to the west of the trail. The bottom end of this CMP would drain into an enclosed buried concrete junction box (i.e., catch basin). The existing culvert under the trail would also connect to this box, allowing stormwater flow to discharge into the Harbor. This alternative scenario was not selected as this "closed" system would posed greater effort and potential challenges for adequate and efficient maintenance.

Alternative 2 – This is the selected design scenario and is described in detail in Section 2.3.

Alternative 3 – This design scenario proposed the capping or abandonment [in-place] of the existing culverts under West Trail. A concrete apron would be constructed perpendicularly across the surface of the trail. The existing 24-inch CMP traversing down the adjacent hillside would discharge onto the apron, which would be pitched such to allow the stormwater flow to cross the trail and empty directly into the Harbor. This alternative scenario was not selected due to accessibility and compliance issues vis-à-vis the Americans with Disability Act requirements.

3.0 STUDY METHODOLOGY

This Biological Resource Assessment used the best available scientific and commercial data to evaluate the potential effects to biological resources from the proposed project. Literature review, aerial imagery and field surveys informed the descriptions of the vegetation communities, identification of present and past occurrences of special-status species in the vicinity of the proposed project, the assessment of habitats for special-status animal species.

3.1 Literature Search

Information on special-status plant species was compiled through a review of the literature and database search. Database searches for known occurrences of special-status species focused on the Montara Mountain and Half Moon Bay U.S. Geologic Service 7.5-minute topographic quadrangles, which provided a 4.8 km (3 mi) radius around the proposed project area. The following sources were reviewed to determine which special-status plant and wildlife species have been documented in the vicinity of the project site:

- U.S. Fish and Wildlife Service (USFWS) quadrangle species lists (USFWS 2014)
- USFWS list of special-status animals for San Mateo County (USFWS 2014)
- California Natural Diversity Database records (CNDDB) (CNDDB 2014)
- California Department of Fish and Wildlife's (CDFW) Special Animals List (CDFW 2014)
- State and Federally Listed Endangered and Threatened Animals of California (CDFW 2014)
- California Native Plant Society (CNPS) Electronic Inventory records (CNPS 2014)
- CDFW CalFish IMAPS Viewer for San Mateo County (CDFW 2014)
- Fitzgerald Marine Reserve Master Plan (Brady/LSA 2002)
- San Mateo County General Plan Update (2001)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al., 1990)

The U.S. Fish and Wildlife Service (USFWS) electronic list of Endangered and Threatened Species was queried electronically (www.fws.gov/sacramento/es_spp_lists-overview.htm).

3.2 Personnel and Survey Dates

Trish Tatarian, wildlife biologist of Wildlife Research Associates, and Jane Valerius, botanist and wetland specialist of Jane Valerius Environmental Consulting, conducted an initial daytime survey of the project site on May 28, 2014, from 1000 to 1400 hours. Jane Valerius conducted a second plant survey on July 24, 2014. Plant and animal species observed during this survey are provided in Appendices D and E, respectively.

Tatarian surveyed the shrubs for suitable bird nesting habitat, and analyzed the on-site habitats for suitability for CRF and San Francisco garter snake. Analysis of aerial photographs was conducted of adjacent habitat that could provide terrestrial habitat for CRF, and ponds and water bodies that could provide potential breeding habitat for CRF but from which have not been reported in the CNDDB. Habitats within 1.6 km were evaluated for their potential to provide connectivity between sites for CRF.

Valerius evaluated the on-site vegetation communities for their potential to support special status plants and/or wetland communities. Surveys for special status plants were also conducted. The entire project area was walked and plants identifiable at the time of the survey on May 28 and

July 24, 2014 were recorded. Locations of any special status plants, including a San Mateo County locally unique plant, were mapped.

A delineation of wetlands and waters of the U.S. and State was also conducted on May 28, 2014 (Jane Valerius Environmental Consulting 2014). A total of seven (7) sample or data points were recorded and potential jurisdictional wetlands and waters were mapped. A delineation report has been prepared and will be submitted to the U. S. Army Corps of Engineers and the California Coastal Commission.

3.3 Impact Assessment Methodology

On-site vegetation communities were examined, present and past occurrence locations of federally listed species and federal species of concern within close proximity of the proposed project areas, and habitats for special-status plant and animal species. Based on the current site conditions, the potential for occurrence on the site for special-status biological resources was evaluated and used the project description to determine any potential direct or indirect effects.

The CDFW, CNPS and San Mateo County guidelines for conducting special status plant surveys were followed for the May site visit in that the survey was floristic in nature, with every plant observed identified to the extent necessary to determine its rarity and listing status. The survey was conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas was well documented. The May survey was conducted within the flowering season for spring and summer flowering species. However, additional surveys should be conducted in April and June or July to cover the flowering period for all special status plant species with the potential to occur within the project area. Surveys will be conducted in accordance with the special status plant survey guidelines.

The determination of whether the proposed project may result in adverse impacts to federally-listed special-status species was based on guidelines established by the USFWS under Section 7(a) of the Federal Endangered Species Act (FESA), in which a project that may have an adverse effect impact on listed biological resources must be assessed. FESA states that, "each federal agency shall…insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered or threatened or result in the destruction or adverse modification of habitat of such species." Thus, components of the proposed project were deemed to have an adverse impact on special-status biological resources if they could result in effects as described in the above statement to any listed species or its habitat.

The determination of whether the proposed project may result in adverse impacts to State special-status species was based on CEQA, the CDFW and the CNPS guidelines for special status plants and animals.

Potential impacts were evaluated from the project to habitats not occupied by species but for which habitats occurred.

3.4 Limitations that May Influence Results

No focused surveys for this Biological Resource Assessment were conducted; species opportunistically observed during the field survey were noted. As a result, the potential for a special-status animal species to occur in the project area was based on reported occurrences in the vicinity of and habitats within the project area. The limitation of relying on reported occurrences is that not all lands have been surveyed for their occupancy of special status species. As a result, a

lack of findings of a species in a particular area may not be result of no occupancy but rather the result of no focused surveys being conducted.

For those species that were present (i.e., reported in the CNDDB) in the project area at the time of the Biological Resource Assessment, focused surveys were not conducted. The assessment was conducted in May which was within the flowering or blooming season for many special status plant species. However, many special status plants may have either been past flowering or still to come into flowering depending on climate and other factors. Plant surveys are typically conducted multiple times during the growing season to capture as much as possible the flowering time for all potential special status plants. No focused surveys for special status wildlife species were conducted given the timeline of this Biological Resource Assessment. Plant species identifiable at the time of the survey were recorded.

4.0 ENVIRONMENTAL BASELINE

The project area is located within the San Francisco Bay/Delta Bioregion (Welsh 1994). This bioregion is located within central California and encompasses the San Francisco Bay and the Sacramento Delta, extending from the Pacific Ocean to the eastern portion of the tule marsh zone, which is defined by Highway 99 (Welsh 1994). Habitats within this bioregion include both mesic (moist) habitats, such as freshwater marsh, and xeric (dry) habitats, such as coastal scrub, and are typical of a Mediterranean type climate. Average rainfall in the area is between 15-25 inches (San Mateo County 2001).

The project area is located outside of the Monterey Bay National Marine Sanctuary, which runs from the San Francisco Bay, in the north, to Cambria, San Luis Obispo County, in the south. Designated in 1992, the sanctuary encompasses a shoreline length of 276 miles. Pillar Point Harbor is located adjacent to the northern portion of this sanctuary and is the base for a large seasonal commercial fishing fleet including salmon vessels operating throughout California. The 800 square-foot West Trail Phase 1 project area, situated on the west side of Pillar Point Harbor, is located within the outer breakwater of the harbor, at 11-12 feet in elevation. The Harbor is fed by Denniston Creek, which flows from Montara Mountain, located northeast of the study area. The outflow of Denniston Creek into the harbor is located 0.75 miles east of the study area and there is no hydrologic connection.

The project area is adjacent to the 41-acre Pillar Point Marsh, part of James V. Fitzgerald Marine Reserve. Pillar Point Marsh consists of 23.5 acres of upper freshwater marsh to the north of West Point Avenue and 17.5 acres of lower salt marsh and beach on the south side of the avenue. The freshwater marsh is fed by the surface flows from Seal Cover, the Half Moon Bay Airport and the unincorporated village of Princeton. As stated in the Master Plan (Brady/LSA 2002), West Point Avenue serves as both a physical constraint to tidal inflow to the freshwater wetlands, and perhaps more importantly, as a sediment trap that has gradually caused aggradation of the freshwater habitats to the north.

4.1 Wetlands and Waters of the U.S. and State

A formal delineation of wetlands and waters of the U.S. and state, including those areas subject to the California Coastal Commission (CCC) definition of wetland, was conducted on May 28, 2014 (Jane Valerius Environmental Consulting 2014). Within the project study area, two wetland areas were identified: northern coastal salt marsh and freshwater marsh. The northern coastal salt marsh is the Pillar Point Marsh (Appendix A, Figure 5) and the freshwater marsh is a narrow, linear wetland feature located on the west side of the trail and occurs south of the parking area (Appendix A, Figure 6).

The beach on the east side of the trail south of the parking area and Pillar Point Marsh slopes to the harbor with the high tide line (i.e., mean high water) at approximately 8-foot elevation and the mean high tide at 5.5 feet elevation. The U. S. Army Corps of Engineers (Corps) takes jurisdiction over the territorial seas. The limit in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. For tidal waters, the Corps jurisdiction extends to the high tide line or when adjacent non-tidal waters of the U.S. are present, the jurisdiction extends to the limits identified for non-tidal waters of the U.S. Under Section 10 of the Rivers and Harbors Act of 1899, the Corps regulates all structures and work within tidal waters and freshwaters that involve dredging, marinas, piers, wharves, floats, intake and outtake pipes, pilings, bulkheads, ramps, fills, overhead transmission lines, etc.

One area that did not meet the Corps three-parameter test for wetland, but meets the California Coastal Commission (CCC) one-parameter test, was also mapped. This area is adjacent to the Pillar Point Marsh but is on a sand terrace. This area was dominated by creeping wildrye (*Elymus triticoides*), a facultative (FAC) wetland plant. It was co-dominant with iceplant (*Carpobrotus edulis*), which is not listed as a wetland plant although *Carprobrotus chilensis* is a FAC species and *C. edulis* and *C. chilensis* are known to hybridize. The iceplant within the project area was determined to be *C. edulis* based on the floral characteristics but there is likely some hybridization.

4.2 Vegetation Communities

Several vegetation communities occur along the 2,300-linear foot trail, but not within the project area; as a result these communities will not be discussed in this report. The communities described below refer to those that are located within and adjacent to the project area.

4.2.1 Northern Coastal Salt Marsh

The northern coastal salt marsh community is a CNDDB G3, S3 special status community type. This vegetation community is comprised of a complex and variable mosaic of a variety of species with pickleweed (*Salicornia pacifica*) as the dominant plant species and also includes inland saltgrass (*Distichlis spicata*), jaumea (*Jaumea carnosa*), alkali heath (*Frankenia salina*) and marsh gumplant (*Grindelina stricta* var. *angustilfoia*). The salt marsh located within the study area is also known as the Pillar Point Marsh.

Within the Biological Study Area, saltmarsh occurs in on the east side of the trail and parking lot (Appendix A, Figure 5). There is no salt marsh in the Phase 1 construction work area.

4.2.2 Freshwater Marsh

The freshwater marsh community within the project area includes cattails (*Typha latifolia*) along with poison hemlock (*Conium maculatum*), spreading rush (*Juncus patens*), bog rush (*Juncus effusus var. brunneus)* and pacific silverweed or cinquefoil (*Potentilla anserina* ssp. *pacifica*). This is a relatively disturbed community type which also includes weedy species such as black mustard (*Brassica nigra*) and wild radish (*Raphanus sativus*), which are upland species. Poison hemlock is a non-native wetland plant species associated with disturbed areas. Although this type does not have special status designation, all wetland habitats are considered to be sensitive habitat types and are regulated by federal and state agencies.

Within the Biological Study Area, freshwater marsh occurs in on the west side of the trail and parking lot (Appendix A, Figure 6). There is no freshwater marsh in the Phase 1 construction work area.

4.2.3 Northern Coastal Scrub

The northern coastal scrub vegetation community is dominated by coyote bush (*Baccharis pilularis*) and can include other shrub species such as coffeeberry (*Frangula californica*), California blackberry (*Rubus ursinus*), California sagebrush (*Artemisia californica*), sticky monkeyflower (*Mimulus aurantiacus*), and California wax myrtle (*Morella californica*). A variety of herbaceous mostly non-native grasses also occur as understory including soft chess (*Bromus hordaeceus*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum* ssp. *leporinum*), wild oats (*Avena barbata*) and ryegrass (*Festuca perennis*). Native herbaceous forbs noted in this type include yarrow (*Achillea millefolium*), Douglas aster (*Symphytotrichum subspicatum*), pearly everlasting (*Anaphallis margaritacea)*, soap root (*Chlorogalum pomeridianum*) and native beach strawberry *(Fragaria chiloensis*).

Within the Biological Study Area, northern coastal scrub occurs on the west side of the trail and parking lot (Appendix A, Figure 7). There is no northern coastal scrub in the Phase 1 construction work area.

4.2.4 Non-Native Grassland/Monterey Cypress Grove Mosaic

This vegetation community consists of a mosaic of non-native grassland with Monterey cypress (*Hesperocyparis macrocarpa*) trees which is considered to be a non-native species for this location. Where there is dense canopy cover by the cypress there is little to no understory. Within the study area the non-native grassland occurs as understory and along the openings at the edge of the tree canopy. Plants associated with the non-native grassland ryegrass, ripgut brome, soft chess, wild oats, and hare barley along with a variety of non-native and native forb species.

Within the Biological Study Area, the non-native grassland/Monterey cypress grove mosaic occurs in on the west of the trail. The western portion of the Phase 1 culvert repair encroaches upon this non-native vegetation type.

4.2.5 Coastal Strand

The coastal strand community type includes non-native iceplant (*Carpobrotus edulis*) and native species such as sea rock (*Cakile maritima*), beach evening primrose (*Camissoniopsis cheiranthifolia*), and yellow sand verbena (*Abronia latifolia*). This type also includes native grasses such as creeping wildrye (*Elymus triticoides*) and dune grass (*Elymus mollis*). Native beach strawberry (*Fragaria chiloensis*) was also found in this community type in the bulb out area.

Within the Biological Study Area, coastal strand occurs primarily on the east of the trail. There is no coastal strand in the Phase 1 construction work area. The east side of the Phase 1 project area is mostly devoid of any vegetation with the coastal strand community occurring further south along the trail.

4.3 Wildlife Habitats

Wildlife habitat classifications for this report are based on the California Department of Fish and Wildlife's Wildlife Habitat Relationships (WHR) System (CDFG 1988), with electronic updates (www.dfg.ca.gov/biogeodata/cwhr), which places an emphasis on dominant vegetation, vegetation diversity and physiographic character of the habitat. The value of a site to wildlife is influenced by a combination of the physical and biological components of the immediate environment, and includes such features as type, size, and diversity of vegetation communities present and their degree of disturbance. As a plant community is degraded by loss of understory species, creation of openings, and a reduction in canopy area, a loss of structural diversity generally results. Degradation of the structural diversity of a community typically diminishes wildlife habitat quality, often resulting in a reduction of wildlife species diversity.

Vegetation communities are often classified based on the dominant plant species within the community. Wildlife habitats are typically distinguished by vegetation type, with varying combinations of plant species providing different resources for use by wildlife. As a result, wildlife habitats are often classified on a more inclusive manner of the structure of the habitat rather than the specifics of the plant species, resulting in several vegetation communities occurring under one type of wildlife habitat (Table 1).

Table 1: Vegetation Communities and Wildlife Habitat Corollary

Vegetation Community	Wildlife Habitat (WHR)
Non-native Grassland/Monterey Cypress Grove	Monterey Cypress
Northern Coastal Scrub	Coastal Scrub
Northern Coastal Saltmarsh	Saline Emergent Wetland
Freshwater Marsh	Fresh Emergent Wetland
Coastal Strand	Coastal Shoreline
	Marine

The following is a discussion of existing wildlife habitats found on site and the wildlife species they support.

4.3.1 Monterey Cypress

This habitat is usually monotypic, with only one species providing canopy. Structurally, these forests offer perching and cover for a variety of avian species, including Anna's hummingbird (*Calypte anna*) and band-tailed pigeons (*Patagioenas fasciata*). House finch (*Carpodacus mexicanus*), chestnut-backed chickadee (*Poecile rufescens*), and several others, will also forage in these stands. Monterey trees of the size adjacent to the project area may provide key nest sites for raptors, such as red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*).

4.3.2 Fresh Emergent Wetland

The wildlife habitat type is the analogous freshwater marsh that runs along the western portion of the trail is small and characterized by the plant species that are found there; it does not contain ponded water. Therefore, this area does not provide the wildlife value that is normally associated with freshwater marshes, or riparian drainages.

4.3.3 Saline Emergent Wetland

This wildlife habitat type is analogous to coastal salt marsh, located adjacent to the West Trail on the east side, lacks areas of cord grass which can be used by nesting rails (*Laterallus jamaicensis*) and Virginia sora (*Porzana carolina*). The pickleweed cover in the marsh provides abundant habitat for the California meadow mouse (*Microtus californicus*). The upper coastal salt marsh zone provides habitat for western harvest mice (*Reithrodontomy megalotis*), brush rabbits (*Sylvilagus bachmani*), and deer mice (*Peromyscus maniculatus*), which provide a prey base for raptors, such as foraging white-tailed kites (*Elanus caeruleus*), northern harrier hawks (*Circus cyaneus*), and red-shouldered hawks .

Great blue herons (*Ardea herodius*), great egrets (*A. alba*) and garter snakes (*Thamnophis* sp.) will also hunt rodents in the coastal salt marsh habitats. Shorebirds, such as black-necked stilts (*Himantopus mexicanus*), willets (*Tringa semipalmata*) and American avocets (*Recurvirostra americana*), use the mud flats of the salt marshes for foraging on crustaceans and arthropods. Species observed during the survey in 2014 include wading birds, such as black-crowned night heron (*Nycticorax nycticorax*), and passerines, such as red-winged blackbirds (*Agelaius*

phoenicius), Bewick's wrens (*Thryomanes bewickii*), and sparrows, including song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*), golden-crowned sparrow (*Z. atricapilla*), and saltmarsh common yellowthroat (*Geothylpis trichas sinuosa*), likely nest in the adjacent shrubs and forage in the adjacent freshwater marsh and coastal scrub in this area. Medium-sized mammals expected to occur include raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), bobcats (*Lynxs rufus*), and foxes (*Vulpes vulpes* and *Urocyon cinereoagenteus*).

4.3.4 Coastal Scrub

This habitat occurs along the western edge of the West Trail on a south-facing slope. The steepness of the slope provides excellent vantage for nesting birds, such as song sparrow, white-crowned sparrow, and golden-crowned sparrow, that can avoid predation by feral cats. It is unlikely that deer will frequent this area except for specific trails along the southern and northern end of the trail, due to the steepness of the hillside.

4.3.5 Coast Shoreline (Coastal Strand)

The habitat located between the saltmarsh emergent wetland and the marine habitat of Pillar Point Harbor is classified as coastal shoreline habitat, or coastal strand. As described in the Master Plan (Brady/LSA 2002) this habitat is likely used as a resting location for shorebirds, but not for nesting as the area is actively used by pedestrians and dog walkers. The barren/sandy patches of the dunes provide basking places for northern alligator lizards (*Elgaria coerulea*) and other reptiles. However, because of foot traffic and its location in the Pillar Point Harbor, which obstructs the immediate passage to the open ocean, it is unlikely that this area is utilized by marine mammals.

4.3.6 Marine

This habitat includes the open water of Pillar Point Harbor. This type of habitat occurs along the shoreline where intertidal effects include seawater inundation and exposure to moderate effects of wind and wave energy and complete exposure to air (CDFG 1988). Seasonally, the freshwater influence on many of California's estuaries is interrupted by sand bars, with the movement of water occurring through infusion. However, these sandbars do not allow for wildlife movement and can change the structure of the associated plant species. Within the project area, which is located in the Northern California Marine Ecological Region, marine habitat occurs at the culvert replacement area.

4.4 Wildlife Movement Corridors

Wildlife movement includes migration (*i.e.*, usually one way per season), inter-population movement (*i.e.*, long-term genetic flow) and small travel pathways (*i.e.*, daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow between populations.

These linkages between habitat types can extend for miles between primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found within a large-scale landscape results in wildlife populations that consist of discrete sub-populations comprising a large single population, often referred to as a meta-population. Even where patches of pristine habitat are fragmented, such as occurs with coastal scrub, the movement between wildlife populations is facilitated through habitat linkages, migration corridors and movement corridors. Depending on the condition of the corridor, genetic

flow between populations may be high in frequency, thus allowing high genetic diversity within the population, or may below in frequency. Potentially low frequency genetic flow may lead to complete isolation and, if pressures are strong, potential extinction (McCullough 1996; Whittaker 1998).

As described in the *California Essential Connectivity Project* (Spencer, et al. 2010), the study area is located in Central Coast Ecoregion (Fig. 3.4, Spencer, et al. 2010). The natural drainages in the area (e.g., Denniston Creek) flow west into the Pacific Ocean. The Study Area is considered to be within the #411 Natural Landscape Block (defined as relatively natural habitat blocks that support native biodiversity). The study area is not located in an Essential Connectivity Area (defined as areas that are essential for ecological connectivity between blocks) (Fig. 3.4, Spencer, et al. 2010).

Barriers to movement include those structures that impede such movements, such as large scale development or major highways with no under crossings. Roads cause habitat fragmentation because they break large habitat areas into smaller habitat patches that support fewer individuals, which can increase loss of genetic diversity and risk of local extinction. Additionally, roads may prevent access to essential physical or biological features necessary for breeding, feeding, or sheltering.

As stated in the USFWS *Designation of Critical Habitat for California red-legged frog* (2010), impassible barriers that impact dispersal of the CRF include wide or fast-flowing rivers and streams, lakes greater than 50 ac (20 ha), and heavily traveled roads (such as highways or freeways) without underpasses or culverts (Reh and Seitz 1990, Fahrig, et al. 1995). Biological barriers include those for which the physiology of the animal cannot endure, such as 5 ppt of salt (Reis 1999), which is less than that found in a typical saltmarsh. Although CRF are reported from Pillar Point Marsh, they are located in the freshwater portion that is located north of West Point Avenue. There is no freshwater hydrologic connectivity between the marsh and the project area.

Within the study area, movement corridors for large and small mammals occur between the saltmarsh and freshwater marsh across West Point Avenue. Wildlife may opportunistically move along the trail at night, but it is not considered a movement corridor. Small passerines likely take refuge in the cypress trees to escape the buffeting winds. There are no ponds on the point of Pillar Point. As a result, it is highly unlikely that amphibians and reptiles are using the trails and associated fresh emergent wetlands as a movement corridor.

5.0 SPECIAL-STATUS SPECIES AND NATURAL COMMUNITIES

5.1 Regulatory Requirements

5.1.1 Federal Endangered Species Act

To determine whether the proposed project may result in adverse effects to federally listed species, the criteria used was based on guidelines established by the USFW under Section 7(a) of the FESA, in which a project that may have an adverse effect on listed biological resources must be assessed. FESA (16 U.S. Code [USC 1531–1544) provides for the conservation of species that are Endangered or Threatened throughout all or a significant portion of their range, as well as the protection of habitats on which they depend.

Section 7 requires federal agencies to consult with USFWS or NMFS, or both, before performing any action (including actions such as funding a program or issuing a permit) that may affect listed species or designated Critical Habitat. The section 7 consultations are designed to assist Federal agencies in fulfilling their duty to ensure federal actions "do not jeopardize" the continued existence of a species or destroy or adversely modify Critical Habitat.

The USFWS defines temporary and permanent effects as areas denuded, manipulated, or otherwise modified from their pre-project conditions, thereby removing one or more essential components of a listed species' habitat as a result of project activities that include, but are not limited to, construction, staging, storage, lay down, vehicle access, parking, etc. According to the USFWS, temporary effects are limited to one construction season and, at a minimum, are fully restored to baseline habitat values or better within one year following initial disturbance. Permanent effects are not temporally limited and include all effects not fulfilling the criteria for temporary effects.

5.1.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (Title 16, United States Code [USC], Part 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the [former] Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 Code of Federal Regulations [CFR] 21, 50 CFR 10). Most actions that result in taking of, or the permanent or temporary possession of, a protected species constitute violations of the MBTA. The MBTA also prohibits destruction of occupied nests. The Migratory Bird Permit Memorandum (MBPM-2) dated April 15, 2003, clarifies that destruction of most unoccupied bird nests (without eggs or nestlings) is permissible under the MBTA; exceptions include nests of federally threatened or endangered migratory birds, bald eagles (*Haliaeetus leucocephalus*), and golden eagles (*Aquila chrysaetos*). USFWS is responsible for overseeing compliance with the MBTA

5.1.3 Army Corps of Engineers

The Corps takes jurisdiction over the territorial seas. The limit in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.

For tidal waters, the Corps jurisdiction extends to the high tide line or when adjacent non-tidal waters of the U.S. are present, the jurisdiction extends to the limits identified for non-tidal waters of the U.S.

For non-tidal waters, the Corps jurisdiction extends to the ordinary high water mark or, if wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands. When the water of the U.S. consists only of wetlands the jurisdiction extends to the limit of the wetland.

Under Section 404 of the Clean Water Act the Corps regulates the disposal of dredge or fill material into waters of the U.S. This includes all filling activities such as utility lines, outfall structures, road crossings, beach nourishment, riprap, jetties, and some excavation activities.

Under Section 10 of the Rivers and Harbors Act of 1899 the Corps regulates all structures and work within tidal waters and freshwaters that involve dredging, marinas, piers, wharves, floats, intake and outtake pipes, pilings, bulkheads, ramps, fills, overhead transmission lines, etc.

Under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 the Corps regulates ocean discharge of dredged material.

5.1.4 California Endangered Species Act

The California Endangered Species Act (CESA, FGC §§ 2050–2116) is administered by DFW. The CESA prohibits the "taking" of listed species except as otherwise provided in state law. The CESA includes FGC Sections 2050–2116, and policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat. The CESA requires mitigation measures or alternatives to a proposed project to address impacts to any State listed endangered, threatened or candidate species, or if a project would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy. Section 86 of the FGC defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Unlike the FESA, CESA applies the take prohibitions to species under petition for listing (state candidates) in addition to listed species. Section 2081 of the FGC expressly allows CDFW to authorize the incidental take of endangered, threatened, and candidate species if all of the following conditions are met:

- The take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- Issuance of the permit will not jeopardize the continued existence of the species.
- The permit is consistent with any regulations adopted in accordance with §§ 2112 and 2114 (legislature-funded recovery strategy pilot programs in the affected area).
- The applicant ensures that adequate funding is provided for implementing mitigation measures and monitoring compliance with these measures and their effectiveness.

The CESA provides that if a person obtains an incidental take permit under specified provisions of the FESA for species also listed under the CESA, no further authorization is necessary under CESA if the federal permit satisfies all the requirements of CESA and the person follows specified steps (FGC § 2080.1).

5.1.5 California Fish and Game Code

The California Constitution establishes the California Fish and Game Commission (Commission) (CA Constitution Article 4, § 20). The California Fish and Game Code (FGC) delegates the power to the Commission to regulate the taking or possession of birds, mammals, fish, amphibian

and reptiles (FGC § 200). The Commission has adopted regulations setting forth the manner and method of the take of certain fish and wildlife in the California Code of Regulations, Title 14

The FGC establishes DFG (FGC § 700) and states that the fish and wildlife resources of the state are held in trust for the people of the state by and through DFG (FGC § 711.7(a)). All licenses, permits, tag reservations and other entitlements for the take of fish and game authorized by FGC are prepared and issued by DFG (FGC § 1050 (a)).

Provisions of the FGC provide special protection to certain enumerated species such as:

§ 3503 protects eggs and nests of all birds.
§ 3503.5 protects birds of prey and their nests.
§ 3511 lists fully protected birds.
§ 3513 protects all birds covered under the federal Migratory Bird Treaty Act.
§ 3800 defines nongame birds.
§ 4150 defines nongame mammals.
§ 4700 lists fully protected mammals.
§ 5050 lists fully protected amphibians and reptiles.
§ 5515 lists fully protected fish species.

5.1.6 Regional Water Quality Control Board

The nine state Regional Water Quality Control Boards regulate Section 401 of the Federal Clean Water Act (CWA). CWA Section 401(a)(1) specifies that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters shall provide the federal licensing or permitting agency with a certification that any such discharge will not violate state water quality standards. The Regional Water Quality Control Boards (RWQCB) administer the Section 401 program with the intent of prescribing measures for projects that are necessary to avoid, minimize, and mitigate adverse impacts on water quality and ecosystems. The jurisdictional extent of Section 401 water quality regulation is typically the top-of-bank for creeks and streams.

The RWQCB has jurisdiction under the State Porter-Cologne Water Quality Control Act which provides the basis for water quality regulation within the state of California. This act allows the State Water Resources Control Board (SWRCB) to adopt statewide water quality control plans or basin plans. The purpose of the plans is to establish water quality objectives for specific water bodies. Most of the implementation of SWRCB's responsibilities is delegated to the nine regional boards.

The SWRCB, acting through the RWQCBs, must certify that a federal wetland permit action (i.e. Section 404 CWA permit or Section 10 of the Rivers and Harbors Act, described above) meets state water quality objectives. Under the Porter-Cologne Water Quality Control Act, wetlands and drainages that are considered waters of the United States by USACE are also classified by the state as “waters of the state”. The jurisdictional extent for creeks and streams is typically the top-of-bank; however, it can be extended to also include a buffer in riparian settings. No standard buffer distance is described in this law, and is usually at the discretion of the regulator assigned to each case. The selected minimum buffer distance is usually the minimum distance necessary to protect the creek from nearby construction effects, based on proposed type of construction activities and proximity of the creek, type, stability, and depth of creek channel, and overall potential for adverse effects (including protective measures).

5.1.7 California Coastal Commission

The California Coastal Commission (CCC) November 16, 2006 workshop on the Definition and Delineation of Wetlands in the Coastal Zone (California Coastal Commission 2006) provides the following guidance related to the CCC definition of wetlands:

Coastal Act Section 30121 defines the term "wetland" as: "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. The Coastal Commission's regulations (California Code of Regulations Title 14 (14 CCR)) establish a "one parameter definition" that only requires evidence of a single parameter to establish wetland conditions:

> *Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577)*

The Commission's one parameter definition is similar to the USFWS wetlands classification system, which states that wetlands must have one or more of the following three attributes: (1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

As opposed to wetlands definitions, which describe the general parameters that must be shown to establish wetland conditions (hydrology, soils, and vegetation), the delineation of wetlands in the field typically requires substantial evidence of indicators, which are the physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter; and methodologies that guide the process of distinguishing wetland from non-wetland conditions. Such field tools are needed because the various characteristics of wetlands typically occur on physical gradients (i.e., wet to dry conditions, hydric to nonhydric soils, and hydrophytic to meso/xerophytic vegetation). The Coastal Commission's regulations acknowledge these distinctions by specifying some general decision rules for establishing the upland boundary of wetlands:

> *…the upland limit of a wetland shall be defined as:*
>
> *a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
>
> *b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
>
> *c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not. (14 CCR Section 13577).*

The CCC and the local coastal plan typically requires a 100-foot setback from areas designated as wetlands or waters. This includes all riparian areas.

5.2 Special Status Plant Species

For the purposes of this Biological Resources Assessment for the Pillar Point West Trail culvert repair project, special-status species include those that are federally listed as Endangered, Threatened or Proposed for federal listing (candidate) under the USFWS. Other species also evaluated in this Biological Assessment include non-listed federal and California Species of Special Concern species (SSC) and those species that fall under the jurisdiction of the USFWS such as the Migratory Bird Treaty Act (MBTA) and the CDFW, such as CEQA Section 15380(d).

Impacts to special-status plant species were assessed if: (1) those species occurred in habitats similar to those of the West Trail Creek project area, and (2) were known to occur within the project area represented by Half Moon Bay and Montara Mountain 7.5-minute topographic quadrangle and within 3 miles, a distance which includes both topographic quadrangles.

5.2.1 Federally Listed Plant Species

Review of the USFWS (USFWS 2014), and the CNDDB (CNDDB 2014) revealed that three (3) federally listed plant species have potential to occur in the area. Please refer to Appendix B for a list of these species.

None of the three federally listed plant species are expected to occur within the BSA due to lack of habitat. There is no cismontane woodland, closed-cone coniferous forest, meadows and seeps, valley and foothill grassland or serpentinite within the project area. In addition microhabitat for Hickman's cinquefoil of freshwater marshes, seep and small streams in open or forested areas is lacking within the project area. One species of cinquefoil was observed in the Pillar Point salt marsh and in the freshwater marsh. This is the common Pacific silverweed (*Potentilla anserina* ssp. *pacifica*).

5.2.2 State Special-Status Plant Species

One CNPS Rank 3 species, San Mateo tree lupine (*Lupinus arboreus* var. *eximius*) was observed within the study area at the southeast portion of the trail within the coastal strand community type. The Jepson Manual does not recognize the variety *eximius* and therefore the taxonomy for this species is questionable. CNPS Rank 3 species are plants about which more information is needed or a watch list. Some of the plants constituting California Rare Plant Rank 3 meet the definitions of Secs. 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code, and are eligible for state listing. CNPS strongly recommends that California Rare Plant Rank 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA, however they do not have any formal protection status.

One locally unique plant species, native beach strawberry (*Fragaria chiloensis*) was observed at several locations along the trail with one large area on the southwest side of the parking area and one smaller population at the bulb out area. This species was also found in scattered small areas within openings within the northern coastal scrub community.

Sixteen (16) additional special status plant species have the potential to occur within the study area based on the presence of potential habitat. These are: bent-flowered fiddleneck (*Amsinckia lunaris*), ocean bluff milk-vetch (*Astragalus nuttallii* var. *nuttallii*), coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*), pappose tarplant (*Centromadia parryi* ssp. *parryi*), San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*), Franciscan thistle

(*Cirsium andrewsii*), San Francisco wallflower (*Erysimum franciscanum*), San Francisco gumplant (*Grindelia hirsutula* var. *maritima*), short leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), Kelloggi's horkelia (*Horkelia cuneata* var. *sericea*), Point Reyes horkelia (*Horkelia marinensis*), coast yellow leptosiphon (*Leptosiphon croceus*), rose leptosiphon (*Leptosiphon rosaceus*), Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*), Oregon polemonium (*Polemonium carneum*), and coastal triquetrella (*Triquetrella californica*). However, none of these species were observed at the time of the May 28 and July 25, 2014 site visits, which was within the flowering period for all of the plant species that have the potential to occur in the area (which is noted in each of the descriptions below).

Below is a description of those species that have been reported within or adjacent to the West Point Trail BSA and their expected occurrence in the study area.

Bent-flowered fiddleneck (*Amsinckia lunaris)*
Status: CNPS Rank 1B- plants rare, threatened or endangered in California and elsewhere.

Description: This is an annual herbaceous plant in the Borage Family or Boraginaceae. It has orange flowers with 2 orange-red marks on the limbs of the corolla. The corolla is bilateral and the tube is bent, hence the name bent-flowered fiddleneck, and it blooms from March to June. It occurs in coastal bluff scrub, cismontane woodland and valley and foothill grassland communities.

Occurrence: The species has a low potential to occur within the project area within the coastal scrub and open grassland areas. There are no CNDDB records for this species within the search area but the CNPS shows this species are potentially occurring (CNPS 2014) based on the presence of potential habitat. This species was not observed within the project area during the May and July 2014 surveys.

Ocean bluff milk-vetch (*Astragalus nuttallii* var. *nuttallii*)
Status: CNPS Rank 4- plants of limited distribution – a watch list.

Description: This is a perennial herbaceous plant in the Legume Family or Fabaceae. It has cream colored flowers, sometimes lavender tinged and the stems are generally prostrate or decumbent and it blooms from January to November. It occurs in coastal bluff scrub and coastal dune communities.

Occurrence: The species has a low potential to occur within the project area within the coastal scrub and coastal strand areas. There are no CNDDB records for this species within the search area but the CNPS shows this species are potentially occurring (CNPS 2014) based on the presence of potential habitat. This species was not observed within the project area during the May and July 2014 surveys.

Coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*)
Status: CNPS Rank 1B.

Description: This is a perennial herbaceous plant in the Legume Family or Fabaceae. It has greenish-white or cream colored flowers, erect stems and it blooms from April to October. It occurs in mesic coastal dunes, coastal scrub, coastal salt marshes and swamps, and streamsides.

Occurrence: The species has a high potential to occur within the project area within the coastal scrub and coastal strand areas. There is only one CNDDB occurrence recorded and it is a 1902

occurrence for Pillar Point Marsh. This species was not observed in the project area during the May 28 and July 2014 surveys.

Pappose tarplant (*Centromadia parryi* ssp. *parryi*)
Status: CNPS Rank 1B

Description: This is an annual herbaceous plant in the Aster Family or Asteraceae. It has yellow flowers, erect stems and it blooms from May to November. It occurs in chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps and vernally mesic valley and foothill grasslands, often in alkaline areas.

Occurrence: The species has a moderate potential to occur within the project area within Pillar Point Marsh and coastal strand areas. There is only one CNDDB record for this species from near Rockaway Beach. This species was not observed within the project area during the May 28 and July 2014 surveys.

San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*)
Status: CNPS Rank 1B

Description: This is an annual herbaceous plant in the Buckwheat Family or Polygonaceae. It has pinkish-white flowers with decumbent to prostrate stems and it blooms from April to July, sometimes to August. It occurs in coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub in sandy soils.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub and coastal strand areas. There is only one 1925 CNDDB record for this species from Salada. This species was not observed within the project area during the May 28 and July 2014 surveys.

Franciscan thistle (*Cirsium andrewsii*)
Status: CNPS Rank 1B

Description: This is a perennial herbaceous plant in the Aster Family or Asteraceae. It has white to red or purple flowers with erect stems and it blooms from March to July. It occurs in broadleafed upland forest, coastal bluff scrub, coastal prairie, mesic coastal scrub, sometimes on serpentinite.

Occurrence: The species has a low potential to occur within the project area within the coastal scrub areas. There are two CNDDB record for this species, one from east side of San Pedro Point and one from the Green Valley coastal drainage of Montara Mountain, south of San Pedro Point. This species was not observed within the project area during the May 28 and July 2014 surveys.

San Francisco wallflower (*Erysimum franciscanum*)
Status: CNPS Rank 4

Description: This is an annual herbaceous plant in the Mustard Family or Brassicaceae It has yellow flowers with erect stems and it blooms from March to June. It occurs in chaparral, coastal dunes, coastal scrub, and valley and foothill grassland, often on serpentintie or granitic soils, sometimes on roadsides.

Occurrence: The species has a low potential to occur within the project area within the coastal scrub areas. There are no CNDDB records for this species within the search area but the CNPS shows this species are potentially occurring (CNPS 2014) based on the presence of potential habitat. This species was not observed within the project area during the May 28 and July 2014 surveys.

San Francisco gumplant (*Grindelia hirsutula* var. *maritima*)
Status: CNPS Rank 3 – plants about which more information is needed – a watch list

Description: This is a perennial herbaceous plant in the Aster Family or Asteraceae. It has yellow flowers with erect stems and it blooms from June to September. It occurs in coastal bluff scrub, coastal scrub, valley and foothill grassland on sandy or serpentinite soils and sea bluffs.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There is one CNDDB record for Ocean Bluff, 7.5 miles north of Half Moon Bay. Another species of gumplant was observed in the project area but not this species.

Short leaved evax (*Hesperevax sparsiflora* var. *brevifolia*)
Status: CNPS Rank 1B

Description: This is a perennial herbaceous plant in the Aster Family or Asteraceae. It has inconspicuous green to white flowers with erect stems and it blooms from March to June. It occurs in coastal bluff scrub (sandy), coastal dunes and coastal prairie.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There are no CNDDB records for this species within the search area but the CNPS shows this species are potentially occurring (CNPS 2014) based on the presence of potential habitat. This species was not observed within the project area during the May 28 and July 2014 surveys.

Kelloggi's horkelia (*Horkelia cuneata* var. *sericea*)
Status: CNPS Rank 1B

Description: This is a perennial herbaceous plant in the Rose Family or Rosaceae. It has white flowers with erect stems and it blooms from April to September. It occurs in closed-cone coniferous forest, maritime chaparral, coastal scrub and coastal dunes on sandy or gravelly soils in openings. The mircrohabitat for this species is old dunes and coastal sandhills.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub and coastal strand areas. There is one CNCCB occurrence 1.5 miles east of Half Moon Bay. This species was not observed within the project area during the May 28 and July 2014 surveys.

Point Reyes horkelia (*Horkelia marinensis*)
Status: CNPS Rank 1B

Description: This is a perennial herbaceous plant in the Rose Family or Rosaceae. It has white flowers with decumbent to ascending stems and it blooms from May to September. It occurs in coastal dunes, coastal prairie and coastal scrub on sandy flats and dunes near coast.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub and coastal strand areas. There is one CNDDB record for this species recorded from Junipero Serra Park, 1.2 miles west of San Bruno. This species was not observed within the project area during the May 28 and July 2014 surveys.

Coast yellow leptosiphon (*Leptosiphon croceus*)
Status: CNPS Rank 1B

Description: This is an annual herbaceous plant in the Phlox Family or Polemoniaceae. It has small pink or yellow flowers with the floral throat tube yellow and erect stems. This species blooms from April to July and it occurs in coastal bluff scrub.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There are three CNDDB occurrences for this species: one at Mori Point in Pacifica; one at Moss Beach; and one near Montara Point. This species was not observed within the project area during the May 28 and July 2014 surveys.

Rose leptosiphon (*Leptosiphon rosaceus*)
Status: CNPS Rank 1B

Description: This is an annual herbaceous plant in the Phlox Family or Polemoniaceae. It has small yellow to red flowers with the floral throat tube yellow-orange and erect stems. This species blooms from April to May and it occurs in coastal bluff scrub and coastal prairie.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There are two CNDDB occurrences for this species: one at Moss Beach and one near Point San Pedro. This species was not observed within the project area during the May 28 and July 2014 surveys.

Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*)
Status: CNPS Rank 1B

Description: This is an annual herbaceous plant in the Borage Family or Boraginaceae. It has small white flowers and prostrate to decumbent stems. This species blooms from March to June and it occurs in chaparral, coastal bluff scrub and coastal prairie in mesic areas.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There are no CNDDB records for this species within the search area but the CNPS shows this species are potentially occurring (CNPS 2014) based on the presence of potential habitat. This species was not observed within the project area during the May and July 2014 surveys.

Oregon polemonium (*Polemonium carneum*)
Status: CNPS Rank 2B – Plants rare, threatened or endangered in California but more common elsewhere

Description: This is an annual herbaceous plant in the Phlox Family or Polemoniaceae. It has white flowers and decumbent or erect stems. This species blooms from April to September and it occurs in lower montane coniferous forest, coastal scrub and coastal prairie.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There are no CNDDB records for this species within the search area but the CNPS shows this species are potentially occurring (CNPS 2014) based on the presence of potential habitat. This species was not observed within the project area during the May and July 2014 surveys.

Coastal triquetrella (*Triquetrella californica*)
Status: CNPS Rank 1B

Description: This is a species of moss that grows within 30 meters from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides and rocky slopes.

Occurrence: The species has a moderate potential to occur within the project area within the coastal scrub areas. There is one CNDDB occurrence for the search area located at Sweeney Ridge in the GGNRA. It is known from fewer than 10 small coastal occurrences in California. This species was not observed within the project area during the May 28 and July 2014 surveys.

5.2.3 Special Status Natural Communities

The northern coastal salt marsh community is a CNDDB G3 S3 special status community type. Vegetation communities with a G3 S3 ranking have 21 to 100 viable occurrences worldwide and statewide. These community types are considered to be rare and threatened throughout their range (Sawyer et. al. 2009). In addition this is a wetland type which is regulated by the U.S. Army Corps of Engineers (Corps) and the RWQCB. The northern coastal salt marsh community within the study area is designated as the Pillar Point Marsh, is within the Fitzgerald Marine Reserve, and within the coastal zone so that it is also protected by the California Coastal Commission (CCC). This marsh is protected on several levels and by multiple agencies.

The freshwater marsh wetland type does not have a special status designation but all wetlands are considered to be sensitive habitat types due to their functions and values as habitat and also for sediment and toxicant reduction. Wetlands along the coast are regulated by the Corps, RWQCB and CCC.

5.3 Special-Status Wildlife Species

Special-status animal species include those listed by the USFWS (2014) and the CDFW (2014). The USFWS officially lists species as either Threatened or Endangered, and as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act *(e.g.*, bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA) and state protection under CEQA Section 15380(d). In addition, many other species are considered by the CDFW to be species of special concern; these are listed in Remsen (1978), Williams (1986), and Jennings and Hayes (1994). Although such species are afforded no official legal status, they may receive special consideration during the planning stages of certain development projects. The CDFW further classifies some species under the following categories: "fully protected", "protected fur-bearer", "protected amphibian", and "protected reptile". The designation "protected" indicates that a species may not be taken or possessed except under special permit from the CDFW; "fully protected" indicates that a species can be taken for scientific purposes by permit only.

A total of 25 special-status animal species have been recorded in the region or may be present within the project area. A complete list of wildlife species, including their potential to occur on site, their legal status and habitat affinities, is included in Appendix C. Of these, one species was

detected on-site, one species has a high potential to occur, and three species have a low potential to occur adjacent to the site, based on habitats present, proximity of known populations within the region and the observed presence on site.

The following is a discussion of species having potential to occur on site and/or are species that are prominent in today's regulatory environment, such as the CRF. This document does not address impacts to species that may occur in the region but for which no habitat occurs on site, and include the species listed in Appendix D.

5.3.1 Federally Listed Wildlife Species

Mission blue butterfly (*Icaricia icarioides missionensis*)
Status: listed as a Federal Endangered Species on June 1, 1976 (Federal Register: 41:22044)
San Bruno Elfin and Mission Blue Butterflies Recovery Plan, approved, 10/10/84

Description: Wingspan is 1 to 1.5 inches. Mission blue females are usually brown with some basal blue over-scaling. Black spotting on the ventral surface of all wings is a diagnostic characteristic. In males, the ventral surfaces of the wings are whitish with small circular gray spots in the submarginal areas and larger circular black spots located on the outer areas of the fore and hind wings.

General Ecology and Distribution: Inhabits coastal grasslands and coastal sage scrub habitats, where its larval food plants, silver bush lupine (*Lupinus albifrons*), varied lupine (*Lupinus variicolor*) and summer lupine (*Lupinus formosus*), occur (Arnold 1993). As described by the USFWS Species Account for the Mission blue butterfly, primary nectar plants for adults is coast buckwheat (*Eriogonum latifolium*), but adults will also visit golden asters (*Chrysopsis [Heterotheca] villosa), Brodiaea pulchella* and *Brodiaea laxa*. Adult butterflies can be observed from late March to early July (Scott 1986). Single eggs are deposited above ground parts of the lupine host plant, usually on new growth. Caterpillars hatch six to 10 days later, and feed on leaves of the host plant. Dormancy occurs three weeks later with adults emerging the following spring.

Occurrence in the project area: The lupines observed on site were not the lupines favored by this species. Only coast buckwheat (*Eriogonum latifolium*) was observed on the south-facing slopes, on the north-side of the trail from the pipeline replacement area going west. No lupines were observed within the Phase 1 project area.

Myrtle's silverspot butterfly (*Speyeria zerenne myrtleae*)
Status. Federally listed Endangered in 1992 and Recovery Plan adopted in 1998 (USFWS 1998) and is included in a Recovery Plan with Seven Coastal Plants, which covers the Point Reyes National Seashore, from Drakes Estero north to the Bodega Headlands (USFWS 1998).

Description: Myrtle's silverspot butterfly is a medium sized butterfly with an average wingspan of the 55 to 60 millimeters (2.1 to 2.3 inches) (USFWS 2009). The upper surface of both hind and fore wings are golden brown to fulvous with many conspicuous black spots, lines, and other markings (USFWS 2009). The undersides of the wings are light tan, reddish brown, and brown with black lines and distinctive silver spots and black spots (USFWS 2009).

General Ecology and Distribution: Adult Myrtle's silverspot butterfly emerge from the pupae between mid-June and mid-July (USFWS 2009). They feed on a variety of other flowering plants, including Italian thistle (*Carduus pycnocephalus*), gumweed (*Grindelia* sp.), seaside daisy (*Erigeron glaucus*), common yarrow (*Achillea millefollium*), as well as brownie thistle (*Cirsium*

quercetorum) and groundsel (*Senecio* sp.), among others, that serve as nectar sources for the adults (USFWS 2009). After their 2-3 month flight period, the female oviposits a single egg onto western dog violet (*Viola adunca*), solely on the dried leaves and stems. The western dog violet is the only known host plant for the species (USFWS 2009). New larvae migrate a short distance into suitable foliage or leaf litter and spin a silk web where they remain in a suspended and inactive state, known as diapause, through the fall and winter (USFWS 2009). In spring, the larvae feed for 7 to 10 weeks and then form a pupal chamber from leaf debris and silk which lasts for about two weeks before adult emergence (USFWS 2009).

Typical habitat supporting the Myrtle's silverspot butterfly and its host plant are coastal dunes, coastal scrub, or coastal prairie at elevations ranging from sea level to 300 meters (1,000 feet) and as far as 5 kilometers (3 miles) inland. Two populations inhabit Point Reyes National Seashore within coastal dune habitat (USFWS 2009).

Occurrence in the project area: The proposed project site is located outside the range for Myrtle's silverspot butterfly, and populations in San Mateo County have been extirpated (USFWS 2009). Although several of the nectar plant species were observed within the BSA, including yarrow (*Achillea millefolium*), aster (*Aster chilensis*), Italian thistle (*Carduus pycnocephalis*), and coastal gumweed (*Grindelia sticta*), these plants were located outside the Phase 1 project area.

San Bruno elfin butterfly (*Callophrys mossii bayensis*)
Status: Federally Listed Endangered in 1976; San Bruno Elfin and Mission Blue Butterflies Recovery Plan, approved, 10/10/84.

Description: San Bruno elfin butterfly is a small brownish butterfly. The adult flight period is late February to mid-April, with the peak flight period occurring between March and early April. Eggs are laid in small clusters or stings on the upper and lower surfaces of stonecrop (*Sedum spathulifolim*).

General Ecology and Distribution: This species of elfin butterfly is found in the coastal mountains, in the fog belt on steep north-facing slopes that receive little direct sunlight. All known populations are restricted to San Mateo County, where several populations are known from San Bruno Mountain, Milagra Ridge, the San Francisco Peninsula Watershed and Montara Mountain.

Occurrence in the project area: No focused surveys were conducted for this species. The majority of the project site is at the foot of a south facing slope. Although Pillar Point receives less sunshine that other coastal areas, the amount of stonecrop observed at the site would not support this butterfly. As a result, this species is not expected to occur in this area.

Steelhead (*Oncorhynchus mykiss irideus*) Central California Coast Distinct Population Segment
Status: Federally listed Threatened in 1997. Critical Habitat was designated in 2005.

Description: The steelhead, also known as coastal rainbow trout, has a more rounded snout, with a bright pink stripe along the lateral line with spotted dorsal fins and a square or slightly forked caudal fin (Behnke 2002).

General Ecology and Distribution: Winter steelhead enter streams from the ocean when rains have increased the stream flows (Moyle 2002). Spawning typically occurs in tributaries to mainstream rivers, after which they return to the ocean. A key characteristic of all breeding

streams is cool temperatures, typically between 0° C (winter) and 26°-27° C (summer) (Moyle 2002). Higher temperatures may reduce oxygen levels that are not population sustaining. Different size classes require different microhabitats that are defined by depth, water velocity, substrate and cover (Moyle 2002).

The *O. mykiss irideus* includes coastal populations from Alaska to California (including the Sacramento River). Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. In a given river basin there may be one or more peaks in migration activity; because these runs are usually named for the season in which the peak occurs, some rivers may have runs known as winter-, spring-, summer-, or fall-run steelhead. The stream-maturing type (summer-run steelhead in the Pacific Northwest and northern California) enters freshwater in a sexually immature condition between May and October and requires several months to mature and spawn. The ocean-maturing type (winter-run steelhead in the Pacific Northwest and northern California) enters freshwater between November and April, with well-developed gonads, and spawns shortly thereafter. Coastal streams are dominated by winter-run steelhead.

Occurrence in the project area: Steelhead habitat once occurred along Denniston Creek, but with dams and culverts (effective barriers to movement) placed in the creek by 1992, the steelhead remaining in the creek upstream are now considered rainbow trout (Titus, et al. 2011). No suitable habitat occurs within Pillar Point Marsh.

California red-legged frog (*Rana draytonii*)(CRF)
Status: federally listed by as Threatened with associated critical habitat and is classified by the CDFW as a State Special Concern species.

General Ecology and Distribution: Breeding habitat for this frog is primarily in ponds, but they will also breed in slow moving streams, or deep pools in intermittent streams. Inhabited ponds are typically permanent and contain emergent and shoreline vegetation. Sufficient pond depth and shoreline cover are both critical, because they provide means of escape from predators for the frogs (Stebbins 1985, CDFG 1988, Tatarian 2008). Additionally, emergent vegetation is necessary for the deposition of eggs. The breeding period begins during heavy rains, from early to late winter, usually November through early May. The larvae mature in 11 to 20 weeks. Salinity is also a factor in determining egg laying along the coast, with egg deposition occurring in marshes, such as Pescadero Marsh, San Mateo County, in areas where salinity was below 5.0 parts per thousand (ppt) (Reis 1999).

Non-breeding CRF have been found in both aquatic and upland habitats. The majority of individuals prefer dense, shrubby or emergent vegetation, closely associated with deep (>0.7 meters) still, or slow moving water. However, some individuals use habitats that are removed from aquatic habitats, seeking cover in ground squirrel burrows, under boulders and logs and in non-native grasslands (Tatarian 2008). Upland refugia habitat includes areas up to 90 meters from a stream corridor and includes natural features, such as boulders, rocks, trees, shrubs, and logs. Incised stream channels with portions narrower than 18 inches and depths greater than 18 inches may also provide habitat. In general, densely vegetated terrestrial areas within the riparian corridor provide important sheltering habitat during the winter flooding of the streams (Tatarian 2008).

Occurrence in the project area: The closest reported sighting of CRF is approximately 1,435 ft, north of the Phase 1 project site, on the freshwater side of Pillar Point Marsh on the north side of West Point Avenue (CNDDB 2014). No suitable breeding habitat for CRF occurs within the

project area. There is no barrier to movement of CRF from Pillar Point Marsh into the freshwater marsh; however, it is unlikely that CRF would move into the freshwater marsh on the west side of the trail due to the lack of suitable aquatic habitat and the existing parking lot and West Point Drive. Nevertheless, there is a low potential for CRF to occur within the Phase 1 project area.

San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) (SFGS)
Status: a Federal Endangered and State Fully Protected species

General Ecology and Distribution: The preferred habitat of the species is standing water, chiefly ponds, lakes, marshes and sloughs although temporary ponds and seasonal wetlands are also used. Emergent vegetation, such as cattails, bulrushes and spike rushes, is used for cover. The interface between stream and pond habitats and grasslands is used for basking, while nearby dense vegetation, along the stream or pond, and water provide escape cover. Algal or rush mats are also used for basking sites. The reproductive cycle of the SFGS occurs in either spring or fall but is mostly concentrated in the first few warm days in March. Mating aggregations have been observed in late October and early November on grassy sunny slopes on warm mornings. Birth occurs in July or August (USFWS 2006). The range of the species is largely restricted to the San Francisco Peninsula, stretching south from near the San Francisco-San Mateo County border along the eastern and western base of the Santa Cruz Mountains (USFWS 2006).

Occurrence in project area: The proposed project site is located within the northern range of the species and has been reported in Denniston Creek, east of Hwy 1 (USFWS 2006). An unconfirmed sighting was made in Pillar Point Marsh in 1976 (Brady/LSA 2002). Although there is no barrier to movement of SFGS from Pillar Point Marsh into the freshwater marsh, it is unlikely that SFGS would move into the freshwater marsh on the west side of the trail due to the lack of suitable aquatic habitat and the existing parking lot and West Point Drive.

5.3.2 Critical Habitat

Steelhead (California Central Coast) – the project area is located within the San Mateo Hydrologic Unit 2202 (NOAA 2005).

California Red-legged Frog – the project area is located outside the San Mateo County SNM-1 Critical Habitat Unit (USFWS 2010).

5.3.3 Other Special-Status Wildlife Species

Western Pond Turtle (*Actinemys marmorata*) (WPT)
Status: State Species of Concern

General Ecology and Distribution: This medium sized turtle ranges in size to just over 8 inches (21cm) with a low carapace that is generally olive, brownish or blackish (Stebbins 1985, Jennings and Hayes 1994). Primary habits include permanent water sources such as ponds, streams and rivers. It is often seen basking on logs, mud banks or mats of vegetation, although wild populations are wary and individuals will often plunge for cover after detecting movement from a considerable distance. Although it is an aquatic species with webbed feet, it can move across land in response to fluctuating water level, an apparent adaptation to the variable rainfall and unpredictable flows that occur in many coastal California drainage basins (Rathbun, *et al.* 1993). In addition, it can over-winter on land or in water or remain active in the winter, depending on environmental conditions (Rathbun, *et al.* 1993; Jennings and Hayes 1994). Females travel from aquatic sites into open, grassy areas to lay eggs in a shallow nest (Holland 1992; Rathbun, *et al.*

1993). Nests have been reported from 2-400 meters or more away from water bodies (Jennings and Hayes 1994).

Project Area Occurrence: No individuals were detected during the one half day site visit for this biological resource assessment. The closest reported sighting is more than 653 feet north from the parking lot in the freshwater portion of Pillar Point Marsh (CNDDB 2014). This species is not expected to occur within the Phase 1 project area.

Nesting Passerines – including saltmarsh common yellowthroat (*Geothylpis trichas sinuosa*), white-crowned sparrows (*Zonotrichia leucophrys*) and song sparrow (*Melospiza melodia*), among others
Status: Protected under the Federal Migratory Bird Treaty Act and Fish and Game Code 3503.

General Ecology and Distribution: As early as February, passerines begin courtship and once paired, they begin nest building, often around the beginning of March. Nest structures vary in shapes, sizes and composition and can include stick nests, mud nests, matted reeds and cavity nests. Depending on environmental conditions, young birds may fledge from the nest as early as May and, if the prey base is large, the adults may lay a second clutch of eggs.

Project Area Occurrence: No surveys were conducted for these species as part of this biological resource assessment. Several passerine (perching birds) species may nest on the site in the various habitats, including, but not limited to, saltmarsh common yellowthroat and song sparrows along coyote bushes along the marsh and in the coastal scrub. Several species could occur adjacent to the phase 1 project area.

Nesting Raptors – Cooper's hawk (*Accipiter cooperii*)
Status: Protected under the Federal Migratory Bird Treaty Act and Fish and Game Code 3503.5

General Ecology and Distribution: Raptors nest in a variety of substrates including cavities, ledges and stick nests. For example, Cooper's hawks are small bird hunters, hunting on the edges of forests and in broken forest where passerines forage for seeds and insects. In general, the breeding season for raptors occurs in late March through June, depending on the climate, with young fledging by early August.

Project Area Occurrence: No surveys were conducted for these species as part of this biological resource assessment. This species or red-tailed hawk may nest in the cypress trees located upslope of the Phase 1 project area.

6.0 EFFECTS ANALYSIS AND MITIGATION MEASURES

This section summarizes the potential temporary biological effects from construction activities within the Phase 1 study area. The analysis of these effects is based on a single reconnaissance-level survey of the study area, a review of existing databases and literature, and personal professional experience with biological resources of the region. Potential effects to federally-listed special-status animal species may occur from the proposed project. Based on the timing and duration of the construction activities, no long term effects are expected to occur. Mitigations for these biological effects are provided below.

In addition, impacts to state protected special status species are also included in this section and mitigation measures are proposed to reduce the impacts to less than significant.

6.1 Wetlands and Waters of the U.S. and State

The northern coastal salt marsh of Pillar Point Marsh, the freshwater marsh, and the bay and ocean side of the project area are all under the jurisdiction of the Corps, RWQB and CCC. In addition, a small area dominated by creeping wildrye, located within the iceplant near the coastal strand, meets the CCC wetland definition although it does not meet the Corps wetland definition. None of the wetland communities will be impacted by the Phase 1 culvert repair.

Phase 1 Potential Impact: The Phase 1 culvert repair work will impact 0.005 acres (205 sq. ft.) of the mean high water and mean high-high water line of the bay.

Mitigation Measure: A Section 10 permit from the Corps will be required for work within the mean high water and mean high-high water. A permit from the CCC may also be required for work within the coastal zone. Since no vegetation is being impacted compensatory mitigation may not be required. However, the BMPs to protect aquatic life must be implemented.

6.2 Vegetation Communities

The Phase 1 culvert repair will not impact the northern coastal salt marsh or the freshwater marsh community so there would have no impacts to special status vegetation communities for this phase of the project.

6.3 Plants

Phase 1 Potential Impact: There is no habitat for any special status plants within the Phase 1 construction work area. As a result the project will not impact any special status plants. Therefore, no mitigation is required.

6.4 Wildlife

6.4.1 California red-legged frog

Phase 1 Direct Effects: Implementation of the avoidance and minimization measures described in Section 2.8 will prevent mortality to individual CRF. No direct effects, such as loss of habitat or take of individuals, will occur from the proposed Phase 1 project.

Indirect Effects: Implementation of the avoidance and minimization measures described in Section 2.8 will avoid indirect effects to CRF. The proposed project will not result in an increase in the human population nor will it increase the number of vehicles on West Point Avenue.

No increased predation will occur from the proposed project.

No degradation to water quality will occur from the proposed project, as the SWPP and erosion control methods will minimize and contain sedimentation that would have potential effects to downstream resources. In addition, the project will return the on-the-ground condition to pre-construction function within one season.

Compensatory Mitigation: There are no direct effects from this project to CRF or CRF habitat. Therefore, no compensatory mitigation is proposed.

6.4.2 San Francisco garter snake (SFGS)

Phase 1 Direct Effects: Implementation of the avoidance and minimization measures described in Section 2.8 will prevent mortality to individual SFGS. No direct effects, such as loss of habitat or take of individuals, will occur from the proposed project.

Indirect Effects: Implementation of the avoidance and minimization measures described in Section 2.8 will avoid indirect effects to SFGS. The proposed project will not result in an increase in the human population nor will it increase the number of vehicles on West Point Avenue.

No increased predation will occur from the proposed project.

No degradation to water quality will occur from the proposed project as the SWPP and erosion control measures that would be required for the project, will minimize and contain sedimentation that would have potential effects to downstream resources. In addition, the project will return the on-the-ground condition to pre-construction function within one season.

Compensatory Mitigation: There are no direct effects from this project to SFGS or SFGS habitat. Therefore, no compensatory mitigation is proposed.

6.5 State Protected Resources

6.5.1 Passerines and Raptors

Phase 1 Potential Impact: Replacement of the existing culvert and pipeline along the existing paved trail will not impact nesting birds. However, cypress trees occur adjacent to the project site, and, although they are higher in elevation than the project, nesting birds maybe disturbed by the proposed construction if it occurs within the nesting season (March 1-August 31). With incorporation of the following mitigation measure, the potential impact to these species would be less than significant.

Phase 1 Mitigation Measure: To avoid "take" and/or further evaluate presence or absence of passerines, and raptors, the following measures are recommended:

- Grading or removal of nesting trees should be conducted outside the nesting season, which occurs between approximately March 1 and August 31.

- If grading between August 31and March 1 is infeasible and groundbreaking must occur within the breeding season, a pre-construction nesting bird (both passerine and raptor) survey of the grasslands and adjacent trees shall be performed by a qualified biologist

- If bird nests (either passerine and/or raptor) are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest tree(s) until the young have fledged, as determined by a qualified biologist.

- The radius of the required buffer zone can vary depending on the species, (i.e., 75-100 feet for passerines and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFG.

- To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude.

7.0 LITERATURE CITED

BAICICH, P. AND C. HARRISON. 1997. A GUIDE TO NESTS, EGGS AND NESTLINGS OF NORTH AMERICAN BIRDS. SECOND EDITION. NATURAL WORLD ACADEMIC PRESS. SAN DIEGO. 347 PP.

BALDWIN, B. G. (CONVENING EDITOR); EDITORS, D. H. GOLDMAN, D.J. KEIL, R. PATTERSON, T.J. ROSATTI, D.H. WILKEN. 2012. THE JEPSON MANUAL: VASCULAR PLANTS OF CALIFORNIA. UNIVERSITY OF CALIFORNIA PRESS, BERKELEY AND LOS ANGELES, CA.

BEHNKE, R. 2002. TROUT AND SALMON OF NORTH AMERICA. THE FREE PRESS, NEW YORK. 360 PP.

BRADY/LSA. 2002. FITZGERALD MARINE RESERVE MASTER PLAN. PARTS 1 AND 2. MAY.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW). 2014. SPECIAL ANIMALS. NATURAL DIVERSITY DATA BASE, WILDLIFE AND HABITAT DATA ANALYSIS BRANCH. FEBRUARY.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW). 2014. STATE AND FEDERALLY LISTED ENDANGERED AND THREATENED ANIMALS OF CALIFORNIA. NATURAL DIVERSITY DATA BASE, WILDLIFE AND HABITAT DATA ANALYSIS BRANCH. JANUARY.

CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG). 1994. ENVIRONMENTAL SERVICES DIVISION (ESD). A FIELD GUIDE TO LAKE AND STREAMBED ALTERATION AGREEMENTS, SECTIONS 1600-1607, CALIFORNIA FISH AND GAME CODE.

CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG). 1988B. CALIFORNIA'S WILDLIFE - AMPHIBIANS AND REPTILE. VOLUME I. CALIFORNIA DEPARTMENT OF FISH AND GAME. EDITORS, ZEINER, D.C., W.F. LAUDENSLAYER, JR., AND K.E. MAYER.

CALIFORNIA NATIVE PLANT SOCIETY. 2014. ELECTRONIC INVENTORY OF RARE AND ENDANGERED VASCULAR PLANTS OF CALIFORNIA. CALIFORNIA NATIVE PLANT SOCIETY, SACRAMENTO, CALIFORNIA.

CALIFORNIA NATURAL DIVERSITY DATA BASE (CNDDB). 2014. REPORTED OCCURRENCES FOR MONTARA MOUNTAIN AND HALF MOON BAY 7.5-MINUTE TOPOGRAPHIC QUADRANGLES. WILDLIFE CONSERVATION DIVISION. SACRAMENTO, CALIFORNIA. MAY.

CALL, MAYO W. 1978. NEST SURVEYS. TECHNICAL NOTES-316. BUREAU OF LAND MANAGEMENT

CHARRY, B. AND J. JONES. 2009. TRAFFIC VOLUMES AS A PRIMARY ROAD CHARACTERISTIC IMPACTING WILDLIFE: A TOOL FOR LAND USE AND TRANSPORTATION PLANNING. ROAD ECOLOGY CENTER, JOHN MUIR INSTITUTE OF THE ENVIRONMENT, UC DAVIS.

ENVIRONMENTAL LABORATORY. 1987. CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. DEPARTMENT OF THE ARMY, WATERWAYS EXPERIMENT STATION, VICKSBURG, MISSISSIPPI 39180-0631.

FAHRIG, L., J.H. PEDLAR, S.E. POPE, P.D. TAYLOR AND J.F. WEGNER. 1995. EFFECT OF ROAD TRAFFIC ON AMPHIBIAN DENSITY. BIOLOGICAL CONSERVATION 73:177–182.

FELLERS, G. AND P. KLEEMAN. 2007. CALIFORNIA RED-LEGGED FROG (RANA DRAYTONII) MOVEMENT AND HABITAT USE: IMPLICATIONS FOR CONSERVATION. J. OF HERPETOLOGY VOL .41 (2): 271-281.

GLISTA, D., T. DEVAULT AND A. DEWOODY. 2008. VERTEBRATE ROAD MORTALITY PREDOMINANTLY IMPACTS AMPHIBIANS. HERPETOLOGICAL CONSERVATION AND BIOLOGY 3(1):77-87

GRINNELL, J. AND A. MILLER. 1944. THE DISTRIBUTION OF THE BIRDS OF CALIFORNIA. ARTEMESIA PRESS, LEE VINING, CALIFORNIA.

HOLLAND, D.C. 1992. A SYNOPSIS OF THE DISTRIBUTION AND CURRENT STATUS OF THE WESTERN POND TURTLE (CLEMMYS MARMORATA) IN OREGON. REPORT PREPARED FOR NON-GAME DIVISION OREGON DEPARTMENT OF FISH AND WILDLIFE.

JANE VALERIUS ENVIRONMENTAL CONSULTING. 2014. DELINEATION OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS, AND INCLUDING CALIFORNIA COASTAL COMMISSION WETLANDS, FOR THE PILLAR POINT HARBOR WEST TRAIL REPAIR PROJECT, SAN MATEO COUNTY, CA. JUNE.

JENNINGS, M.R. AND M.P. HAYES. 1994. AMPHIBIAN AND REPTILE SPECIES OF SPECIAL CONCERN IN CALIFORNIA. PREPARED FOR THE CALIF. DEPT. OF FISH AND GAME INLAND FISHERIES DIV. RANCHO CORDOVA, CALIF. NOVEMBER 1. 255 PP.

MAYER, K.E. AND W. F. LAUDENSLAYER, JR. EDS. 1988. A GUIDE TO WILDLIFE HABITATS OF CALIFORNIA. CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION. SACRAMENTO. 166 PP.

MCCULLOUGH, D. 1996. METAPOPULATIONS AND WILDLIFE CONSERVATION. ISLAND PRESS. 429PP.

MOYLE, P.B. 2002. INLAND FISHES OF CALIFORNIA. UNIVERSITY OF CALIFORNIA PRESS, BERKELEY, CALIFORNIA.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA). 2005. DESIGNATION OF CRITICAL HABITAT FOR SEVEN EVOLUTIONARILY SIGNIFICANT UNITS OF PACIFIC SALMON AND STEELHEAD IN CALIFORNIA. FEDERAL REGISTER VOL. 70(170): 52488-52626.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA). 1999. CENTRAL CALIFORNIA COAST COHO SALMON ESA MAP.

RATHBUN, G.B., M.R. JENNINGS, T.G. MURPHEY AND N.R. SIEPEL. 1993. STATUS AND ECOLOGY OF SENSITIVE AQUATIC VERTEBRATES IN LOWER SAN SIMEON AND PICO CREEKS, SAN LUIS OBISPO COUNTY, CALIFORNIA. UNPUBLISHED REPORT, NATIONAL ECOLOGY RESEARCH CENTER, PIEDRAS BLANCAS RESEARCH STATION, SAN SIMEON, CALIFORNIA. UNDER COOPERATIVE AGREEMENT (14-16-0009-91-1909).

REH, W. AND A. SEITZ. 1990. THE INFLUENCE OF LAND USE ON GENETIC STRUCTURE OF POPULATIONS OF THE COMMON FROG RANA TEMPORARIA. BIOLOGICAL CONSERVATION 54:239-249.

REIS, D. 1999. HABITAT CHARACTERISTICS OF CALIFORNIA RED-LEGGED FROG (RANA AURORA DRAYTONII): ECOLOGICAL DIFFERENCES BETWEEN EGGS, TADPOLES, AND ADULTS IN A COASTAL BRACKISH AND FRESHWATER SYSTEM. MASTERS THESIS. DECEMBER.

REMSEN, H.V. 1988. BIRD SPECIES OF SPECIAL CONCERN IN CALIFORNIA: AN ANNOTATED LIST OF DECLINING OR VULNERABLE BIRD SPECIES. CALIFORNIA DEPARTMENT OF FISH AND GAME, THE RESOURCES AGENCY.

SAN MATEO COUNTY. 2001. VEGETATIVE, WATER, FISH AND WILDLIFE RESOURCES. UPDATED GENERAL PLAN. (HTTP://WWW.CO.SANMATEO.CA.US/PLANNING/GENPLAN/PDF/GP/GP%20CH%2001_VWF&W.PDF)

SAWYER, JOHN O., TODD KEELER-WOLF, JULIE M EVENS. 2009. A MANUAL OF CALIFORNIA VEGETATION. SECOND EDITION. CALIFORNIA NATIVE PLANT SOCIETY PRESS, SACRAMENTO, CA. 1300 PAGES.

SCOTT, J.A. 1986. THE BUTTERFLIES OF NORTH AMERICA: A NATURAL HISTORY AND FIELD GUIDE. STANFORD UNIVERSITY PRESS, STANFORD, CALIFORNIA.

SPENCER, W.D., P. BEIER, K. PENROD, K. WINTERS, C. PAULMAN, H. RUSTIGIAN-ROMSOS, J. STRITTHOLT, M. PARISI, AND A. PETTLER. 2010. CALIFORNIA ESSENTIAL HABITAT CONNECTIVITY PROJECT: A STRATEGY FOR CONSERVING A CONNECTED CALIFORNIA. PREPARED FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION, CALIFORNIA DEPARTMENT OF FISH AND GAME, AND FEDERAL HIGHWAYS ADMINISTRATION.

STEBBINS, R. C. 1985. A FIELD GUIDE TO WESTERN REPTILES AND AMPHIBIANS. HOUGHTON MIFFLIN COMPANY.

TATARIAN, P. 2008. MOVEMENT PATTERNS OF CALIFORNIA RED-LEGGED FROG (RANA DRAYTONII) IN AN INLAND CALIFORNIA ENVIRONMENT. HERPETOLOGICAL CONSERVATION AND BIOLOGY 3(2):155-169

TITUS, R., D. ERMAN AND W. SNIDER. 2011. HISTORY AND STATUS OF STEELHEAD IN CALIFORNIA COASTAL DRAINAGES SOUTH OF SAN FRANCISCO BAY. CALIFORNIA DEPARTMENT OF FISH AND GAME FISH BULLETIN. ESR 33. IN PREPARATION.

U.S. FISH AND WILDLIFE SERVICE (USFWS). 2012. THREATENED AND ENDANGERED SPECIES SYSTEM (TESS) AND CANDIDATE SPECIES AS OF 10/2010.

U.S. FISH AND WILDLIFE SERVICE (USFWS). 2006. SAN FRANCISCO GARTER SNAKE (*THAMNOPHIS SIRTALIS TETRATAENIA*) A 5-YEAR REVIEW: SUMMARY AND EVALUATION. SEPTEMBER.

WELSH, H. 1994. BIOREGIONS: AN ECOLOGICAL AND EVOLUTIONARY PERSPECTIVE AND A PROPOSAL FOR CALIFORNIA. CALIFORNIA FISH AND GAME (80) 3:97-124.

WHITTAKER, R. 1998. ISLAND BIOGEOGRAPHY: ECOLOGY, EVOLUTION AND CONSERVATION. OXFORD UNIVERSITY PRESS. 285PP.

WILLIAMS, D.F. 1986. MAMMALIAN SPECIES OF SPECIAL CONCERN IN CALIFORNIA. CALIFORNIA DEPARTMENT OF FISH AND GAME. WILDLIFE MANAGEMENT DIVISION ADMINISTRATIVE REPORT 86-1. 112 PP.

APPENDIX A – PROJECT FIGURES

Name: HALF MOON BAY
Date: 06/10/14
Scale: 1 inch = 2,000 ft.

Location: 10 0544897 E, 4150278 N
Figure 1: Project Location

Figure 2: Looking at culvert.

Figure 3: Culvert on harbor side.

Figure 4: Culvert coming down from hillside.

Figure 5: Northern coastal saltmarsh.

Figure 6: Freshwater marsh on west side of trail.

Figure 7: Coastal Scrub on hillside.

APPENDIX B – POTENTIALLY OCCURRING SPECIAL STATUS PLANT SPECIES IN THE PILLAR POINT HARBOR WEST TRAIL STUDY AREA

Appendix B
Potentially Occurring Special-Status Plant Species in the Pillar Point Harbor West Trail Study Area.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
FEDERAL AND STATE LISTED SPECIES AND FEDERAL SPECIES OF CONCERN				
Eriophyllum latilobum San Mateo woolly sunflower	FE/CE/1B	Cismontane woodland; only on serpentinite, often on steep slopes on road cuts. Blooms May to June. Elevation: 45-150m.	Absent	None. No habitat in study area. Not observed during May survey.
Pentachaeta bellidiflora White-rayed pentachaeta	FE/CE/1B	Cismontane woodland, valley and foothill grassland, often on serpentinite. Blooms March to May. Elevation:35-620m.	Absent	None. No habitat in study area. Not observed during May survey.
Potentilla hickmanii Hickman's cinquefoil	FE/CE/1B	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic), freshwater marshes and swamps. Microhabitat is freshwater marshes, seeps, and small streams in open or forested areas along the coast. Blooms April to August. Elevation: 10-149m.	Absent	None. Typical habitat not present in study area. Not observed during May survey. The common *Potentilla anserina* ssp. *pacifica* was present.
CNPS RANKED SPECIES				
Allium peninsulare var. *franciscanum* Franciscan onion	-/-/1B	Cismontane woodland, valley and foothill grassland on clay or volcanic soils, often on serpentinite. Blooms May to June. Elevation 52-300m.	Absent	None. Typical habitat not in study area. Not observed during May survey.
Amsinckia lunaris Bent-flowered fiddleneck	-/-/1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Blooms March to June. Elevation: 3-500m.	Present	**Low.** Potential habitat in study area. Not observed during May and July surveys.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
Arabis blepharophylla Coast rockcress	-/-/4	Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub in rocky areas. Blooms February to May. Elevation: 3-1100m.	Absent	None. Typical habitat not present in study area. Not observed during May and July surveys.
Arctostaphylos andersonii Anderson's manzanita	-/-/1B	Broadleaved upland forest, chaparral, North Coast coniferous forest in openings and edges and redwood forest. Blooms November to May. Elevation: 60-760m.	Absent	None. No habitat in study area. Not observed during May and July surveys. No species of manzanita were observed in the study area during surveys.
Arctostaphylos montaraensis Montara manzanita	-/-/1B	Maritime chaparral, costal scrub. Blooms January to March. Elevation 150-500m.	Absent	None. No habitat in study area. No species of manzanita were observed in the study area during surveys.
Arctostaphylos regismontana Kings Mountain manzanita	-/-/1B	Broadleafed upland forest, chaparral, North Coast coniferous forest on granitic or sandstone. Blooms January to April. Elevation: 305-730m.	Absent	None. No habitat in study area. No species of manzanita were observed in the study area during surveys.
Astragalus nuttalli var. *nuttallii* Ocean bluff milk-vetch	-/-/4	Coastal bluff scrub, coastal dunes. Blooms January to November. Elevation: 3-120m.	Present	**Low.** Potential habitat in study area. Not observed in study area during May and July surveys.
Astragalus pycnostachyus var. *pycnostachyus* Coastal marsh milk-vetch	-/-/1B	Coastal dunes (mesic), costal scrub, coastal salt marshes and swamps, streamsides. Blooms April to October. Elevation: 0-30m.	Present	**High.** Potential habitat in study area. Not observed in study area during May and July surveys. The CNDDB record is from Pillar Point Marsh but has not been seen since 1902.
Centromadia parryi ssp. *parryi* Pappose tarplant	-/-/1B	Chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps. Blooms May to November. Elevation: 2-420m.	Present	**Moderate.** Potential habitat in study area. Not observed in study area during May and July surveys.
Chorizanthe cuspidata var. *cuspidata* San Francisco Bay spineflower	-/-/1B	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub/sandy. Blooms April to July (August). Elevation: 3-215m.	Present	**Moderate.** Potential habitat in study area. Not observed in study area during May and July surveys.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
Cirsium andrewsii Franciscan thistle	-/-/1B	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub/mesic, sometimes serpentinite. Blooms March to July. Elevation: 0-150m.	Present	**Low**. Potential habitat in study area but no serpentinite. Not observed during May and July surveys.
Collinsia multicolor San Francisco collinsia	-/-/1B	Closed-cone coniferous forest, coastal scrub, on decomposed shale (mudstone) mixed with humus; sometimes on serpentinite. Blooms March to May. Elevation: 30-250m.	Absent	None. Outside of elevational range of species and no decomposed shale or serpentinite. Not observed during May and July surveys.
Dirca occidentalis Western leatherwood	-/-/1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland/mesic. On brushy slopes, mesic sites, mostly in mixed evergreen and foothill woodland communities. Blooms January to March (April). Elevation: 25-425m.	Absent	None. Typical habitat not present in study area. Not observed during May and July surveys. This is a shrub species and would have been potentially identifiable.
Elymus californicus California bottle-brush grass	-/-/4	Broadleafed upland forest, cismontane woodland, North Coast coniferous forest, riparian woodland. Blooms May to November. Elevation: 15-470m.	Absent	None. Typical habitat not present in study area. Not observed during May and July surveys.
Erysimum franciscanum San Francisco wallflower	-/-/4	Chaparral, coastal dunes, coastal scrub, valley and foothill grasslands, often on serpentinite or granitic soils, sometimes on roadsides. Blooms March to June. Elevation: 0-550m.	Present	**Low**. Potential habitat present in study area. Not observed during May and July surveys.
Fritillaria biflora var. *ineziana* Hillsborough chocolate lily	-/-/1B	Cismontane woodland, valley and foothill grassland on serpentinite. Blooms March to April. Elevation: 150-150m.	Absent	None. No habitat present in study area.
Fritillaria lanceolata var. *tristulis* Marin checker lily	-/-/1B	Coastal bluff scrub, coastal prairie, coastal scrub. Blooms February to May. Elevation: 15-150m.	Absent	None. Study area not in elevation range of species. Not observed during May and July surveys.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
Fritillaria liliacea Fragrant fritillary	-/-/1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland often on serpentine, or on clay soils. Blooms February to April. Elevation: 3-410m.	Absent	None. No clay or serpentinite soils in study area. Typical habitat not present.
Grindelia hirsutula var. *maritima* San Francisco gumplant	-/-/3	Coastal bluff scrub, coastal scrub, valley and foothill grassland on sandy or serpentinite soils and sea bluffs. Blooms June to September. Elevation: 15-400m.	Present	**Moderate.** Potential habitat in study area. *Grindelia stricta* ssp. *stricta* found in project area adjacent to salt marsh. Not observed in study area during May and July surveys.
Hesperevax sparsiflora var. *brevifolia* Short leaved evax	-/-/1B	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Blooms March to June. Elevation: 0-215m.	Present	**Moderate.** Potential habitat in study area. Not observed during May and July surveys.
Horkelia cuneata var. *sericea* Kelloggi's horkelia	-/-/1B	Closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal scrub on sandy or gravelly soils in openings. Blooms April to September. Elevation: 10-200m.	Present	**High.** Potential habitat in study area. CNDDB recorded occurrence 1.5 miles east of Half Moon Bay. Not observed during May and July surveys.
Horkelia marinensis Point Reyes horkelia	-/-/1B	Coastal dunes, coastal prairie, coastal scrub on sandy flats and dunes near coast. Blooms May to September. Elevation: 5-350m.	Present.	**Moderate**. Potential habitat in study area. Not observed during May and July surveys. Closest known occurrence 1.2 miles west of San Bruno.
Iris longipetala Coast iris	-/-/4	Coastal prairie, lower montane coniferous forest, meadows and seeps in mesic sites. Blooms March to May. Elevation: 0-600m.	Absent	None. No habitat in study area. Not observed during May and July surveys.
Leptosiphon croceus Coast yellow leptosiphon	-/-/1B	Coastal bluff scrub, coastal prairie. Blooms April to May. Elevation: 10-150m.	Present	**Moderate.** Potential habitat in study area. Known occurrences from Moss Beach. Not observed during May and July surveys.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
Leptosiphon rosaceus Rose leptosiphon	-/-/1B	Coastal bluff scrub. Blooms April to July. Elevation 0-100m.	Present	**Moderate.** Potential habitat in study area. Known occurrences from Montara Point, Moss Beach and Pacifica. Not observed during May and July surveys.
Lessingia arachnoidea Crystal Springs lessingia	-/-/1B	Cismontane woodland, coastal scrub, valley and foothill grassland on serpentinite, often roadsides. Blooms July to October. Elevation: 60-200m.	Absent	None. No habitat in study area.
Lessingia hololeuca Woolly-headed Lessingia	-/-/3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland on clay or serpentinite. Blooms June to October. Elevation: 15-305m.	Absent	None. No habitat in study area – no clay or serpentine.
Lupinus arboreus var. *eximius* San Mateo tree lupine	-/-/3	Chaparral, coastal scrub. Blooms April to July. Elevation: 90-550m.	Present	**Present.** This species was observed within the study area. The Jepson Manual does not recognize this subspecies.
Malacothamnus aboriginum Indian Valley bush-mallow	-/-/1B	Chaparral, cismontane woodland on rocky, granitic soils often in burned areas. Blooms April to October. Elevation: 150-1700m	Absent	None. No habitat in study area. Not observed during May and July surveys.
Malacothamnus arcuatus Arcuate bush-mallow	-/-/1B	Chaparral, cismontane woodland on gravelly alluvium. Blooms April to September. Elevation: 15-355m.	Absent	None. No habitat in study area. Not observed during May and July surveys.
Malacothamnus davidsonii Davison's bush-mallow	-/-/1B	Chaparral, cismontane woodland, coastal scrub, riparian woodland in sandy washes. Blooms June to January. Elevation: 185-855m.	Absent	None. No habitat in study area.
Malacothamnus hallii Hall's bush-mallow	-/-/1B	Chaparral, coastal scrub; some populations on serpentinite. Blooms May to September (October). Elevation: 10-760m.	Absent.	None. No habitat in study area. Not observed during May and July surveys.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
Monolopia gracilens Woodland woollythreads	-/-/1B	Openings in broadleafed upland forest, chaparral, cismontane woodland, North Coast Coniferous forest, valley and foothill grassland on serpentinite soils. Blooms February to May. Elevation: 100-1200m	Absent	None. No habitat in study area (no serpentinite). Study not in elevation range of species.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcornflower	-/-/1B	Chaparral, coastal prairie, coastal scrub in mesic areas. Blooms March to June. Elevation: 15-160m.	Present	**Moderate.** Potential habitat present in project area. Known occurrence from Half Moon Bay. Not observed during May and July surveys.
Polemonium carneum Oregon polemonium	-/-/2	Coastal prairie, coastal scrub, lower montane coniferous forest. Blooms April to September Elevation: 0-1830m.	Present	**Low.** Potential habitat in study are but not observed during May and July surveys. No known close occurrences.
Silene verecunda ssp. *Verecunda* San Francisco campioin	-/-/1B	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland, often on mudstone or shale, one site on serpentinite. Blooms March to June (August). Elevation: 30-645m.	Absent	None. Typical habitat not present in study area. Not observed during May and July surveys.
Triphysaria floribunda San Francisco owl's-clover	-/-/1B	Coastal prairie, coastal scrub, valley and foothill grassland usually on serpentinite. Blooms April to June. Elevation: 10-160m.	Absent	None. Typical habitat not present in study area. Not observed during May and July surveys.
Triquetrella californica Coastal triquetrella	-/-/1B	Coastal bluff scrub, coastal scrub. Grows within 30 meters from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides and rocky slopes. Elevation: 10-100m.	Present	**Moderate.** Potential habitat present in study area. Not observed during May and July surveys.
SAN MATEO LOCALLY UNIQUE SPECIES				
Fragaria chiloensis Beach strawberry	-/-/-	Coastal strand, coastal scrub. Blooms March to August.	Present	**Present**. This species occurs within the study area.

Scientific Name Common Name	Status USFWS/ CDFG/ CNPS Rank	Habitat Affinities and Blooming Period	Habitat Present/Absent	Occurrence Potential
SENSITIVE NATURAL COMMUNITIES				
Northern Coastal Salt Marsh	CNDDB G3, S3	A complex and variable mosaic of a variety of species including cordgrass, pickleweed, inland saltgrass, jaumea, and gumplant.	Present	**Present.** Habitat present in study area. Recorded in the CNDDB.
Northern Maritime Chaparral	CNDDB G1, S1	Scrub oak sole or dominant shrub; blue blossom, California coffeeberry, chamise, chaparral pea, chaparral whitethorn, hollyleaf redberry, interior live oak manzanita, poison oak, red shank and/or toyon may be present.	Absent	None. No habitat in project area.
Serpentine Bunchgrass	CNDDB G2, S2	Bunchgrass grassland on serpentine soils. Species associated include Nasella pulchra, Elymus multisetus, Melica californica and Koeleria macrantha.	Absent	None. No habitat in project area
Valley Needlegrass Grassland	CNDDB G3, S3	Grassland dominanted by needlegrass (*Nasella s*pp.)	Absent	None. No habitat in project area

U.S. Fish and Wildlife Service

FE = federally Ranked Endangered
FT = federally Ranked Threatened
FPE = federally proposed Endangered
SC[1] = federally Species of Concern

California Department of Fish and Wildlife

CE = California Ranked Endangered
CR = California Ranked as Rare
CT = California Ranked as Threatened

California Native Plant Society

Rank 1:	Plants of highest priority
Rank 1B:	Plants rare and endangered in California and elsewhere
Rank 2:	Plants rare and endangered in California but more common elsewhere

APPENDIX C – POTENTIALLY OCCURRING SPECIAL STATUS ANIMAL SPECIES IN THE PILLAR POINT HARBOR WEST TRAIL STUDY AREA

Appendix C
Potentially Occurring Special-Status Animal Species in the Pillar Point Harbor West Trail Study Area

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
FEDERAL				
Invertebrates				
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE	The adult flight period is late February to mid-April, with the peak flight period occurring in March and early April. Eggs are laid in small clusters or strings on the upper or lower surface of broadleaf stonecrop (*Sedum spathulifolium*). Larvae hatch from the eggs within 5-7 days of being laid.	Absent	None: no host plants were observed.
Monarch butterfly *Danaus plexippus*	-/-	Roosts during winter migration in dense stands of large trees such as eucalyptus and Monterey pines that provide shelter from the wind. Roosts in groves close to nectar and water sources.	Present	**Low**: Monarchs may use the cypress trees located adjacent to the proposed project area.
Mission blue butterfly *Icaricia icarioides missionensis*	FE	Larvae host plants include bush lupine (*Lupinus albifrons),* varied lupine (*Lupinus variicolor*) and summer lupine. Adult nectar plants include coast buckwheat (*Eriogonum latifolium*), *Chrysopsis villosa, Brodiaea pulchella,* and *Brodiaea taxa*), hairy false golden aster (*Heterotheca villosa*), ookow (*Dichelostemma congestum*) and Ithuriel's spear (*Triteleia laxa*)	Present	None: no nectar plants observed
Myrtles silverspot butterfly *Speyeria zerene myrtleae*	FE	Restricted to the foggy, coastal dunes of the Point Reyes peninsula. Larval food plant is *Viola adunca*, with nectar sources of thistles and gum weed (*Grindelia rubicaulis*).	Absent	None: no nectar plants observed.
Fish				
Coho salmon - Central California Coast ESU *Onchorhynchus kisutch*	FE/SE	Occurs from Punta Gorda, in northern California, to the San Lorenzo River, in Santa Cruz County, and includes coho salmon populations from several tributaries of San Francisco Bay (e.g., Corte Madera and Mill Valley Creek).	Absent	**Low**: No spawning habitat present. Adults may come into the harbor.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
steelhead - Central California Coast ESU *Onchorhynchus mykiss*	FT/SSC	Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen. Occurs in 3 tributaries to Monterey Bay (Pajaro, Salinas and Carmel Rivers), in the small streams of the Big Sur Coast and small intermittent streams in San Luis Obispo County, south to Point Conception.	Absent	**Low**: No spawning habitat present. Adults may come into the harbor.
Amphibians				
California red-legged frog *Rana draytonii*	FT/ SSC	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation. Occupies upland habitat especially during the wet winter months. Reported from the freshwater Marsh of Pillar Point Marsh on the north side of West Point Avenue (CNDDB 2014)	Absent	None: No hydrologic connection between fresh emergent wetland of Pillar Point Marsh and project site
Reptiles				
San Francisco garter snake *Thamnophis sirtalis tetrataenia*	FE/SE	Inhabits areas in vicinity of freshwater marshes, ponds and slow moving streams with dense cover and a minimum water depth of 12 inches. Occurs in San Mateo County and extreme northern Santa Cruz County. Reported from the freshwater Marsh of Pillar Point Marsh on the north side of West Point Avenue (CNDDB 2014)	Absent	None: No hydrologic connection between fresh emergent wetland of Pillar Point Marsh and project site.
Birds				
California clapper rail *Rallus longirostris obsoletus*	FE/SE	Occur in south and central San Francisco Bay and along the perimeter of San Pablo Bay. Occupies salt and brackish marshes dominated by pickleweed (*Salicornia virginica*) and Pacific cordgrass (*Spartina foliosa*). In the north Bay (Petaluma Marsh, Napa-Sonoma marshes, Suisun Marsh), rails occupy tidal brackish marshes but are largely restricted to major sloughs and rivers of San Pablo Bay and Suisun Marsh, and along Coyote Creek in south San Francisco Bay.	Absent	None: outside species range.
STATE				
Invertebrates				

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
monarch butterfly *Danaus plexippus*	-/*	Roosts during winter migration in dense stands of large trees such as eucalyptus and Monterey pines that provide shelter from the wind. Roosts in groves close to nectar and water sources.	Absent	**Low**: may use cypress trees as winter refugia.
San Francisco fork-tail damselfly *Ischnura gemina*	-/-	Occurs in weedy ditches; often near salt water. Flight period is March through early November. Eggs laid on stem and leaves of aquatic plans. Needs still water.	Present	**High**: likely occurs in Pillar Point Marsh and forages in saltmarsh.
Bumblebee scarab beetle *Lichnanthe ursina*	FSC	Sand dunes along outer coast.	Absent	None: potential habitat too disturbed.
Fish				
longfin smelt *Spirinchus thaleichthys*	SC/SSC	Pacific coast of North America from Sacramento-San Joaquin estuary. Well documented declines in California. Spawns in sandy-gravel, rock, or aquatic plants, Dec. – Feb. in CA, in coastal waters near shore, bays, estuaries, and rivers. Some populations anadromous close to ocean.	Absent	None: no breeding habitat present.
Reptiles				
Northern western pond turtle *Emys marmorata marmorata*	SC/ SSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Requires upland sites for egg-laying.	Absent	None: no suitable freshwater habitat.
Birds				
California yellow warbler *Dendroica petechia brewsteri*	MB/SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores or alders and in mature chaparral. May also inhabit oak and coniferous woodlands and urban areas near stream courses.	Absent	None: no suitable nesting habitat.
Pacific-slope flycatcher *Empidonax difficilis*	SC, MB/SSC	Found in a variety of habitats including cliff, conifer, forest, hardwood, mixed, and woodland. Nests along streams, in tree cavities, in cliffs, crotch of branch, earth banks, or buildings.	Absent	None: no suitable nesting habitat.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
Merlin *Falco columbarius*	-/WL	Only winters in California.	Absent	None: no nesting in California.
saltmarsh common yellowthroat *Geothylpis trichas sinuosa*	MB/SSC	Nests in fresh and salt marshes in tall grasses, tule patches and willows and forages in thick, continuous cover down to the water surface.	Present	**Heard**: males signing from coyote bush in saltmarsh.
Alameda song sparrow *Melospiza melodia pusilla*	MB/SSC	Inhabits tidal sloughs in the Salicornia marshes, nesting in Grindelia bordering slough channels, primarily in the southern portion of San Francisco bay.	Absent	None: outside species range.
Mammals				
pallid bat *Antrozous pallidus*	-/SSC	Day roosts in crevices and cavities in rock outcrops, mines, caves, buildings, bridges, as well as hollows and cavities in a wide variety of tree species. May roost alone, in small groups (2 to 20 bats), or in 100s in maternity roosts, with males and non-reproductive subadults in other, smaller roosts. High reliance on oak woodland habitat in many portions of its range in California, but uses a wide variety of vegetative habitat for foraging.	Absent	None: no trees or buildings will be removed.
Hoary bat *Lasiurus cinereus*	-/-	Roosts singly (except female-young association) in dense foliage of medium to large coniferous and deciduous trees. Highly migratory, but occurs year-round in California, overwintering in S.F. Bay Area. Forages over tree canopy, often high altitude, often long distances from day roost.	Absent	None: no trees or buildings will be removed
fringed myotis *Myotis thysanodes*	-/-	Roosts in colonies in caves, cliffs and attics of old buildings. Will also use trees as day roosts.	Absent	None: no trees or buildings will be removed
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	-/SSC	Found throughout the San Francisco Bay area in brushy and forested areas, this species is a generalist herbivore. Houses are typically placed on the ground against or straddling a log or exposed roots of a standing tree, and, are often located in dense brush. Nests are also placed in the crotches and cavities of trees and in hollow logs	Absent	None: no suitable habitat.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
Big-free-tailed bat *Nyctinomops macrotis*	-/SSC	Roosts in buildings, caves and tree cavities. A probable vagrant was collected in Alameda Co., but is highly unusual. Reported from 1916 (CNDDB 2011).	Absent	None: no trees or buildings will be removed
American badger *Taxidea taxus*	-/SSC	Inhabits open grasslands, savannas and mountain meadows near timberline. Requires abundant burrowing mammals, their principal food source, and loose, friable soils.	Absent	None: no suitable habitat

U.S. Fish and Wildlife Service

FE = federally listed Endangered
FT = federally listed Threatened
FC = federal candidate for listing
MB = Migratory Bird Treaty Act.

California Department of Fish and Wildlife

SE = State listed Endangered
ST = State listed as Threatened
SSC = State Special Concern species

APPENDIX D – LIST OF PLANT SPECIES OBSERVED ON MAY 28, 2014 FOR THE PILLAR POINT WEST TRAIL CULVERT REPAIR PROJECT

Appendix D

List of plant species observed on May 28 and July 24, 2014 for the Pillar Point West Trail Culvert Repair project.

Scientific Name	Common Name
Abronia latifolia	Yellow sand verbena
Achillea millefolium	Yarrow
Ambrosia chamissonis	Silver beach-bur
Anagallis arvensis	Scarlet pimpernel*
Anaphallis margariticea	Pearly everlasting
Angelica hendersonii	Coast angelica
Artemisia californica	California sage
Atriplex patula	Spear oracle
Avena barbata	Wild oats*
Baccharis pilularis	Coyote bush
Bolboschoenus maritimus	Seacoast bulrush
Bolboschoenus robustus	Bulrush
Brassica nigra	Black mustard*
Bromus alopecuros	Poverty brome*
Bromus carinatus	California brome
Bromus diandrus	Ripgut brome*
Bromus hordaeceus	Soft chess*
Bromus madritensis ssp. *rubens*	Red brome*
Cakile maritima	Sea rocket
Camissoniopsis cheiranthifolia	Beach evening primrose
Carduus pycnocephalus	Italian thistle*
Carex sp.	Sedge
Carpobrotus chilensis	Sea fig*
Carpobrotus edulis	Iceplant or Hottentot fig*
Castilleja sp.	Indian paintbrush
Chloragalum pomeridianum	Soap root
Cirsium vulgare	Bull thistle*
Conium maculatum	Poison hemlock*
Cortaderia jubata	Pampas grass*
Cynodon dactylon	Bermuda grass*
Delairea odorata	German ivy*
Distichlis spicata	Inland saltgrass
Dudleya farinosa	Bluff lettuce
Eleocharis sp.	Spikerush
Elymus mollis	American dune grass
Elymus triticoides	Creeping wildrye
Epilobium sp.	Willow herb
Erigeron canadensis	Horseweed*
Erigeron glaucus	Seaside daisy
Eriogonum latifolium	Coast buckwheat
Eriophyllum staechadifolium	Lizard tail
Erodium cicutarium	Cut-leaf filaree*
Eucalyptus polyanthemos	Silver dollar gum*

Scientific Name	Common Name
Euphorbia sp.	Euphorbia*
Euryops pectinatus	Euryops*
Festuca myuros	Rattail fescue*
Festuca perennis	Ryegrass*
Foeniculum vulgare	Fennel*
Fragaria chiloensis	Beach strawberry
Frangula californica	California coffeeberry
Geranium dissectum	Cut leaf geranium*
Gnaphalium sp.	Cudweed
Grindelia stricta var. *stricta*	Oregon gumweed
Hedera helix	English ivy*
Helenium puberulum	Sneezeweed
Helminthotheca echioides	Bristly ox-tongue*
Hesperocyparis macrocarpa	Monterey cypress
Holcus lanatus	Velvet grass*
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley*
Hordeum murinum ssp. *leporinum*	Hare barley*
Hypochaeris radicata	Rough cat's-ear*
Juncus effusus var. *brunneus*	Bog rush
Juncus patens	Spreading rush
Juniperus sp.	Juniper*
Lepidium latifolium	Perennial pepperweed*
Leucanthemum superbus	Shasta daisy*
Lobularia maritima	Sweet allysum*
Lotus corniculatus	Bird's-foot trefoil*
Lupinus arboreus	Yellow tree lupine
Lupinus littoralis	Seashore lupine
Malva parvilflora	Mallow*
Marah fabaceus	Man-root
Matricaria discoidea	Pineapple weed*
Medicago polymorpha	Bur clover*
Melilotus officinalis	Yellow sweet clover*
Mimulus aurantiacus	Sticky monkeyflower
Morella californica	California wax myrtle
Oxalis pes caprae	Bermuda buttercup*
Plantago coronopus	Cut-leaf plantain*
Plantago lanceolata	English plantain*
Plantago maritima	Succulent plantain
Polygonum aviculare	Knotweed*
Polystichum munitum	Sword fern
Potentilla anserina ssp. *pacifica*	Pacific silverweed
Pteridium aquilinum	Bracken fern
Raphanus sativus	Wild radish*
Rosa californica	California rose
Rubus ursinus	California blackberry
Rumex crispus	Curly dock*
Salix lasiolepis	Arroyo willow
Sanicula sp.	Sanicle

Scientific Name	Common Name
Scrophularia californica	California bee plant
Sonchus asper	Prickly sow thistle*
Stephanomeria sp.	stephanomeria
Symphyotrichum chilense	Common aster
Symphyotrichum subspicatum	Douglas aster
Tetragonia tetragonioides	New Zealand spinach*
Toxicodendron diversilobum	Poison oak
Typha latifolia	Cattail
Urtica dioica	Stinking nettle
Vicia sativa	Spring vetch*

*= Non Native species

APPENDIX E – LIST OF WILDLIFE OBSERVED ON MAY 28, 2014 FOR THE PILLAR POINT WEST TRAIL CULVERT REPAIR PROJECT

Appendix E

List of wildlife observed on May 28, 2014 for the Pillar Point West Trail Culvert Repair project (Taxonomic order).

Scientific Name	Common Name
Branta canadensis	Canada goose
Anas platyrhynchos	Mallard
Phalacrocorax penicillatus	Brandt's cormorant
Ardea herodias	Great blue heron
Nycticorax nycticorax	Black-crowned night heron
Larus californicus	California gull
Sterna forsteri	Forester's tern
Columbia livia	Rock pigeon
Zenaida macroura	Mourning dove
Calypte anna	Anna's hummingbird
Hirundo rustica	Barn swallow
Thryomanes bewickii	Bewick's wren
Geothlypis trichas	Common saltmarsh yellowthroat
Pipilo maculatus	Spotted towhee
Melozone crissalis	California towhee
Melospiza melodia	Song sparrow
Zonotrichia leucophrys	White-crowned sparrow
Zonotrichia atricapilla	Golden-crowned sparrow
Agelaius phoeniceus	Red-winged blackbird
Euphagus cyanocephalus	Brewer's blackbird
Molothrus ater	Brown-headed cowbird
Carpodacus purpureus	Purple finch

Appendix C
Wetland Delineation Report

DELINEATION OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS, AND CALIFORNIA COASTAL COMMISSION WETLANDS, FOR THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT, SAN MATEO COUNTY, CALIFORNIA

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APRIL 2020

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DELINEATION OF WATERS OF THE U.S., INCLUDING WETLANDS, FOR THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT, SAN MATEO COUNTY, CA

INTRODUCTION AND BACKGROUND INFORMATION

This report and attachments present findings based on a delineation of potential U.S. Army Corps of Engineers (Corps) jurisdictional waters of the U.S., including wetlands, for the Pillar Point Harbor West Trail Living Shoreline Project. In addition, since the project area is located along the coast the delineation also identifies areas that may be subject to jurisdiction under the California Coastal Commission (CCC), including wetlands. This work was conducted on behalf of the San Mateo County Harbor District (District), who is the project proponent or applicant.

The delineation study area is located in San Mateo County just north of the City of Half Moon Bay. The project area is located in the unsectioned portion of the Corral de Tierra (Palomares) Rancheria of the Montara Mountain 7.5-minute topographic quadrangle, within Township 5S and Range 6W (Figure 1). Approximate location coordinates are 37°29'58.69"N; 122°29'45.09"W.

The Project entails the construction of a living shoreline to protect and restore the severely eroded segment of Pillar Point Harbor's (PPH) West Trail. It also addresses drainage issues in the vicinity of the project. The overall project purpose is to provide multiple ecological and community benefits by implementing a nature-based shoreline solution that increases the resilience of the West Trail to coastal erosion, extreme storms, and sea level rise. The proposed project also includes storm water improvements needed to address the aesthetics, function and maintenance needs of the existing storm drain system

Data sheets are provided in Appendix A. Soils information from the on-line web soil survey is provided in Appendix B and site photographs from the delineation are provided in Appendix C.

This delineation was conducted according to the 1987 Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers (2010), and U.S. Army Corps of Engineers, San Francisco District (2007) guidelines. The delineation should be considered preliminary until the U.S. Army Corps of Engineers, San Francisco District, issues a jurisdictional determination of the extent of jurisdictional waters, including wetlands, in the project area. The delineation should also be considered preliminary until the California Coastal Commission (CCC) issues a jurisdictional determination of the extent of coastal wetlands for the project area.

Figure 2 shows the areas delineated for the 4.905-acre study area. There are 3.596 acres of tidal waters that occur below the mean high water (MHW) elevation that fall under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act and these are also State waters. There are 0.065 acres of tidal waters that fall between the high tide line (HTL) and MHW and these fall under Section 404 of the Clean Water Act only and are also State waters. Areas below the HTL and MHW are unvegetated areas along the sandy beach and rocky shoreline within the delineation study area, that qualify as waters of the U.S. and State of California, but do not meet the criteria to be considered wetlands because they lack vegetation. Section 404 non-tidal waters

in the study area also include a 0.008 acre drainage feature located on the west side of the trail (Figure 2). This drainage feature does meet Corps criteria for wetlands as there were no hydric soils, but does not meet CCC criteria to qualify as CCC or state wetlands. A small area of Section 404 freshwater wetlands also was mapped for a total of 0.014 acres (Figure 2), which meets both state and federal criteria.

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REGULATORY BACKGROUND

U.S. Army Corps of Engineers (Corps)

The Corps takes jurisdiction over the territorial seas. The limit in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.

For tidal waters, the Corps jurisdiction extends to the High Tide Line under Section 404 of the Clean Water Act. Areas below Mean Higher High Water fall under both Section 404 and under Section 10 of the Rivers and Harbors Act.

Section 404 waters includes adjacent non-tidal waters of the U.S. where the jurisdiction extends to the limits identified for non-tidal waters of the U.S. For non-tidal waters, the Corps jurisdiction extends to the Ordinary High Water Mark (OHWM) or, if wetlands are present, the jurisdiction extends beyond the OHWM to the limit of the adjacent wetlands. When the water of the US consists only of wetlands the jurisdiction extends to the limit of the wetland.

Under Section 404 of the Clean Water Act the Corps regulates the disposal of dredge or fill material into waters of the U.S. This includes all filling activities such as utility lines, outfall structures, road crossings, beach nourishment, riprap, jetties, and some excavation activities.

Under Section 10 of the Rivers and Harbors Act of 1899 the Corps regulates all structures and work within tidal waters and freshwaters that involve dredging, marinas, piers, wharves, floats, intake and outtake pipes, pilings, bulkheads, ramps, fills, overhead transmission lines, etc.

Under Section 4040, an area qualifies as a wetland if it meets three criteria: there is a dominance of wetland plants, presence of wetland soils, and presence of wetland hydrology. If one of those parameters is not met the site does not qualify as a wetland unless it is a problem area or there are extenuating circumstances as allowed for in the 1987 Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers (2010).

California Coastal Commission (CCC)

All waters and wetlands of the U.S. are also considered to be waters and wetlands of the State. However, for areas along the coast that fall under the jurisdiction of the California Coastal Commission (CCC) the criteria for wetlands is modified. The following information was extracted from the California Coastal Commission November 16, 2006 workshop on the Definition and Delineation of Wetlands in the Coastal Zone (California Coastal Commission 2006).

Coastal Act Section 30121 defines the term "wetland" as: "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. The Coastal Commission's regulations (California Code of Regulations Title 14 (14 CCR)) establish a "one parameter definition" that only requires evidence of a single parameter to establish wetland conditions:

> *Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577)*

The Commission's one parameter definition is similar to the USFWS wetlands classification system, which states that wetlands must have one or more of the following three attributes: (1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

As opposed to wetlands definitions, which describe the general parameters that must be shown to establish wetland conditions (hydrology, soils, and vegetation), the delineation of wetlands in the field typically requires substantial evidence of indicators, which are the physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter; and methodologies that guide the process of distinguishing wetland from non-wetland conditions. Such field tools are needed because the various characteristics of wetlands typically occur on physical gradients (i.e., wet to dry conditions, hydric to nonhydric soils, and hydrophytic to meso/xerophytic vegetation). The Coastal Commission's regulations acknowledge these distinctions by specifying some general decision rules for establishing the upland boundary of wetlands:

> *…the upland limit of a wetland shall be defined as:*
> *a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
> *b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
> *c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not. (14 CCR Section 13577)*

DESCRIPTION OF SITE CHARACTERISTICS

General Description

The Pillar Point Harbor West Trail Living Shoreline Project, located south of West Point Avenue, on the west side of Pillar Point Marsh, is situated on the northwest side of Pillar Point Harbor in the coastal area of San Mateo County, California. Pillar Point Harbor is situated on the east side of Pillar Point, west of Highway 1, south of the James V. Fitzgerald Marine Reserve and west of Granada Beach in El Granada. Surrounding land uses consist of mainly open space lands

The West Trail is a north-south oriented trail located along the western edge of Pillar Point Harbor. It provides a pedestrian pathway from the West Point Avenue access and parking area to the Pillar Point outer harbor and Maverick's Beach. It is a popular public access area that is used on a daily basis by pedestrians, dog owners, surfers and other recreationists.

The trail extends approximately 2,300 feet (ft) and is an unpaved, unvegetated, densely compacted dirt pathway, varying in width from 8 to 18 ft. The edges of the trail are generally well-defined and is bounded by rock and sand beach to the east of the trail and a steep hillside on the west side.

The coastal shoreline consists of rock and sand located to the east of the trail. Within the Project area, the path is generally at or near the harbor's edge, varying in elevation from 5 to 10 ft above mean higher high water (MHHW). A steep hillside is located to the west of the trail with a dense strand of cypress trees, but little to no low growing vegetation. The hillside is generally steep and reaches an elevation of over 100 ft above the trail. The Pillar Point Air Force Station (AFS) is located at the top of the hill

Topography

The trail is mostly flat at 8 to 12-feet elevation. The adjacent hillslope ranges from 12 feet at the trail to 80 feet at the top of the hill. From the trail to the harbor the elevation goes from 12 to 2 feet.

Hydrology

The project is adjacent to Pillar Point Harbor and the Pacific Ocean. The High Tide Line (HTL) is at 7.28 feet elevation. The Mean Higher High Water (MHHW) is at 5.64 feet elevation. These measurements were derived from the Monterey (Station ID 9413450), the nearest National Oceanic and Atmospheric Administration (NOAA) datum station to Pillar Point Harbor (U.S. Department of Commerce, 2011b)..

Water drains from the adjacent hill slope to the harbor through a culvert under the trail.

Soils

Soils within the study area have been classified by the Natural Resources Conservation Service based on the web soil survey (NRCS 2020). Soil types that occur within the West Trail (Appendix B) area include: coastal beaches; Dennison clay loam, nearly level, imperfectly drained; Dennison loam, sloping; Elkhorn sandy loam, sloping, eroded; Elkhorn sandy loam, moderately steep and steep, severely eroded; gullied land(Tierra and Watsonville soil materials); and stabilized dune land.

Soil sample points were recorded in the Dennison loam, sloping; Dennison clay loam, nearly level, imperfectly drained, and stabilized sand dune. Data points W1-T1 and W1-T1U were clay loam located in and adjacent to a small drainage feature on the west side of the trail (Figure 2). Data point W2-T1 is a wetland located in the freshwater marsh community and data point W2-T1U is located in an area dominated by iceplant (*Carpobrotus* spp.) with soils identified as stabilized sand dune.

Vegetation

Vegetation within the overall study area includes a small area (0.014 acres) of freshwater to brackish marsh mapped on the east side of the trail (Figure 2) that is also part of the Pillar Point Marsh. The marsh community within the project area includes cattails (*Typha latifolia*) along with poison hemlock (*Conium maculatum*), spreading rush (*Juncus patens*), bog rush (*Juncus effusus var. brunneus)* and Pacific silverweed or cinquefoil (*Potentilla anserina* ssp. *pacifica*). Brackish marsh species include inland saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), jaumea (*Jaumea carnosa*), and marsh gumplant (*Grindelia stricta* var. *angustifolia*).

A 0.008 drainage ditch feature was mapped on the west side of the trail (Figure 2). This drainage has wetland plants and wetland hydrology but not wetland soils so it does not meet the Corps criteria for Section 404 wetlands but does meet the CCC definition of a wetland. This area was mapped as a Section 404 waters of the U.S. because it has a defined channel and is connected to the harbor via a culvert. Consequently this is a waters of the U.S. and a CCC wetland. Wetland plants noted in this area include rushes (*Juncus effusus, J. patens*), poison hemlock, and Pacific silverweed or cinquefoil. This is a seasonal wetland type.

Two small areas are shown on the east side of the trail that are dominated by iceplant (*Carpobrotus edulis*), which is not listed as a wetland plant although *Carprobrotus chilensis* is a FAC species and *C. edulis* and *C. chilensis* are known to hybridize. The iceplant within the project area was determined to be *C. edulis* based on the floral characteristics but there is likely some hybridization. In addition, this area does not meet the definition for wetlands as set by the CCC in that the water table was not at, near, or above the land surface long enough to promote the formation of hydric soils.

Areas below the HTL lacked any vegetation and consisted of sandy beach and rock. No sample data points were taken in these areas.

Northern coastal scrub vegetation community occurs on the west side of the trail in upland areas and is dominated by coyote bush (*Baccharis pilularis*) and can include other shrub species such as coffeeberry (*Frangula californica*), California blackberry (*Rubus ursinus*), California sagebrush (*Artemisia californica*), sticky monkeyflower (*Mimulus aurantiacus*), and California wax myrtle (*Morella californica*). A variety of herbaceous mostly non-native grasses also occur as understory including soft chess (*Bromus hordaeceus*), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum* ssp. *leporinum*), wild oats (*Avena barbata*) and ryegrass (*Festuca perennis*). Native herbaceous forbs noted in this type include yarrow (*Achillea millefolium*), Douglas aster (*Symphytotrichum subspicatum*), pearly everlasting (*Anaphallis margaritacea),* soap root (*Chlorogalum pomeridianum*) and native beach strawberry *(Fragaria chiloensis*).

A stand of Monterey cypress (*Hesperocyparis macrocarpa*) trees occurs on the west side of the trail. Non-native grassland occurs as an understory to the cypress. Plants associated with the non-native grassland ryegrass, ripgut brome soft chess, wild oats, and hare barley along with a variety of non-native and native forb species.

Table 1: List of plant species observed at the Pillar Point Harbor West Trail Project.

Scientific Name	Common Name
Abronia latifolia	Yellow sand verbena
Achillea millefolium	Yarrow
Ambrosia chamissonis	Silver beach-bur
Anagallis arvensis	Scarlet pimpernel*
Anaphallis margariticea	Pearly everlasting
Angelica hendersonii	Coast angelica
Artemisia californica	California sage
Atriplex patula	Spear oracle
Avena barbata	Wild oats*
Baccharis pilularis	Coyote bush
Bolboschoenus maritimus	Seacoast bulrush
Bolboschoenus robustus	Bulrush
Brassica nigra	Black mustard*
Bromus alopecuros	Poverty brome*
Bromus carinatus	California brome
Bromus diandrus	Ripgut brome*
Bromus hordaeceus	Soft chess*
Bromus madritensis ssp. rubens	Red brome*
Cakile maritima	Sea rocket
Camissoniopsis cheiranthifolia	Beach evening primrose
Carduus pycnocephalus	Italian thistle*
Carex sp.	Sedge
Carpobrotus chilensis	Sea fig*
Carpobrotus edulis	Iceplant or Hottentot fig*
Castilleja sp.	Indian paintbrush
Chloragalum pomeridianum	Soap root
Cirsium vulgare	Bull thistle*
Conium maculatum	Poison hemlock*
Cortaderia jubata	Pampas grass*
Cynodon dactylon	Bermuda grass*
Delairea odorata	German ivy*
Distichlis spicata	Inland saltgrass
Elymus mollis	American dune grass
Elymus triticoides	Creeping wildrye
Erigeron canadensis	Horseweed*
Erigeron glaucus	Seaside daisy
Eriogonum latifolium	Coast buckwheat
Eriophyllum staechadifolium	Lizard tail
Erodium cicutarium	Cut-leaf filaree*

Scientific Name	**Common Name**
Eucalyptus polyanthemos	Silver dollar gum*
Euphorbia sp.	Euphorbia*
Festuca myuros	Rattail fescue*
Festuca perennis	Ryegrass*
Foeniculum vulgare	Fennel*
Fragaria chiloensis	Beach strawberry
Frangula californica	California coffeeberry
Frankenia salina	Alkali heath
Geranium dissectum	Cut leaf geranium*
Gnaphalium sp.	Cudweed
Grindelia stricta var. angustifolia	Marsh gumplant
Hedera helix	English ivy*
Helminthotheca echioides	Bristly ox-tongue*
Hesperocyparis macrocarpa	Monterey cypress
Holcus lanatus	Velvet grass*
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley*
Hordeum murinum ssp. *leporinum*	Hare barley*
Hypochaeris radicata	Rough cat's-ear*
Juncus balticus	Baltic rush
Juncus effusus var. *brunneus*	Bog rush
Juncus patens	Spreading rush
Juniperus sp.	Juniper*
Lepidium latifolium	Perennial pepperweed*
Lobularia maritime	Sweet allysum*
Lotus corniculatus	Bird's-foot trefoil*
Lupinus arboreus	Yellow tree lupine
Lupinus littoralis	Seashore lupine
Malva parvilflora	Mallow*
Marah fabaceus	Man-root
Matricaria discoidea	Pineapple weed*
Medicago polymorpha	Bur clover*
Melilotus officinalis	Yellow sweet clover*
Mimulus aurantiacus	Sticky monkeyflower
Morella californica	California wax myrtle
Oxalis pes caprae	Bermuda buttercup*
Plantago coronopus	Cut-leaf plantain*
Plantago lanceolata	English plantain*
Polygonum aviculare	Knotweed*
Polystichum munitum	Sword fern
Potentilla anserina ssp. *pacifica*	Pacific silverweed
Pteridium aquilinum	Bracken fern

Scientific Name	**Common Name**
Raphanus sativus	Wild radish*
Rosa californica	California rose
Rubus ursinus	California blackberry
Rumex crispus	Curly dock*
Salix lasiolepis	Arroyo willow
Sanicula sp.	Sanicle
Scrophularia californica	California bee plant
Solanum americanum	Solanum
Sonchus asper	Prickly sow thistle*
Symphyotrichum chilense	Common aster
Symphyotrichum subspicatum	Douglas aster
Tetragonia tetragonioides	New Zealand spinach*
Toxicodendron diversilobum	Poison oak
Typha latifolia	Cattail
Urtica dioica	Stinking nettle
Vicia sativa	Spring vetch*

*= Non-native plant species.

METHODS

Literature Review

Prior to the delineation field survey, literature pertinent to identifying potential wetlands and other waters of the United States in the project area was reviewed, including the USGS 7.5 minute topographic quadrangle map for the area, the detailed topographic/aerial photograph base map prepared for the project area, the soil survey report, and the county hydric soils list.

Field Survey and Map Preparation

A formal delineation was originally conducted by Jane Valerius, botanist and wetland specialist May 28, 2014. The project description and delineation study area have changed since the 2014 delineation study and a new delineation was conducted on January 23, 2020 by Jane Valerius and Joslyn Curtis, botanists. Areas in which the topography or vegetation suggested that wetlands could exist were sampled using the routine onsite determination method procedures described in the 1987 Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory 1987). The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* U.S. Army Corps of Engineers (2010), U.S. Army Corps of Engineers San Francisco District (2000) delineation guidelines, and the U.S. Army Corps of Engineers San Francisco District November 2007 *Information Requested for Verification of Corps Jurisdiction* guidance were also used as part of the on-site wetlands analysis and report preparation The wetland indicator status of plants was determined based on Reed (1988) for areas within Corps jurisdiction.

A soil pit was excavated at each of the four (4) delineation sample plots (data points) to a depth of 12 inches. The data points were established in representative wetlands and adjoining non-wetlands. An adjoining nonwetland data point was established near the wetland data point to "bracket" the wetland data point, as a means to identify the wetland-nonwetland boundary. Additionally, supplemental observations (not recorded as data points) of vegetation, soil, and hydrologic characteristics were made at numerous other locations to evaluate candidate wetlands and to extrapolate wetland-nonwetland boundaries. The State of California 2016 Wetland Plant List (USACE 2016), along with the updated 2018 list from the USACE website, was used to determine the wetland status of the plants in the study area.

Data point locations and area boundaries were mapped on an aerial map of the site. Data points and wetland areas were mapped using a Trimble GPS unit.

RESULTS

This section describes the results of the field survey. The preliminary jurisdictional features and data point locations are shown the delineation maps provided as an attachment to this report. Other than the size of the study area, the vegetation and areas mapped as jurisdictional were unchanged from the 2014 delineation study. Table 2 shows the acreages for each feature that was mapped for the 2020 delineation study area.

A 0.008-acre drainage "ditch" feature located on the west side of the trail has been mapped as a non-tidal waters of the U.S. Although there was wetland vegetation within the drainage it did not meet the Corps' three parameter test for a wetland. However, the drainage has a defined channel and is hydrologically connect to the bay, providing a hydrologic connection, and was therefore classified as a waters. The 0.008-acre drainage does meet the one-parameter test for wetlands for the CCC so has been identified as CCC/State wetland because it has both wetland plants and wetland hydrology.

Areas below the HTL fall under Section 404 of the Clean Water Act. Areas below the MHW fall under both Section 404 of the Clean Water Act and under Section 10 of the Rivers and Harbors Act, therefore there is some overlap in this category of tidal waters of the U.S. Because these areas are not vegetated they are mapped as waters of the U.S. and not wetlands. The substrate consists of sandy beach and rock. All waters of the U.S. are also waters of the State so that areas identified as jurisdictional on Figure 2 fall under the jurisdiction of the both the Corps and the State of California.

Table 2. Summary of Jurisdictional Wetlands and Waters

Habitat	Acres
Wetlands	
Wetlands of the U.S. and State (Freshwater Emergent Wetland)	0.014
Wetlands of the State/CCC wetlands only	0.008
Jurisdictional Waters	
Non-tidal Section 404 waters of the U.S. (drainage on west side of trail – overlaps with CCC wetlands above)	0.008
Tidal Waters - Section 404 only (area between HTL and MHW)/waters of the State	0.065
Tidal Waters - Section 404 and Section 10 waters of the U.S./waters of the State	3.596

SECTION 5 – REFERENCES CITED

California Coastal Commission (CCC). 2006. Definition and delineation of wetlands in the Coastal Zone. CCC workshop November 16, 2006.

Soil Survey Staff. 2020. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey for San Mateo, California. Available online at http://websoilsurvey.nrcs.usda.gov/ Accessed January.

U.S. Army Corps of Engineers (USACE). 2018. National Wetland Ratings Update. Federal Register initial notice June 10, 2019. http://wetland-plants.usace.army.mil/nwpl_static/v33/home/home.html

U.S. Army Corps of Engineers (USACE). 2016. State of California 2016 Wetland Plant List prepared by Lichvar, R.W., D.L. Banks, W.N. Kirchner and N.C. Melvin from The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 7333X. http://wetland-plants.usace.army.mil

U. S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. Version 2.0. May. Vicksburg, MS. U. S. Army Engineers Research and Development Center.

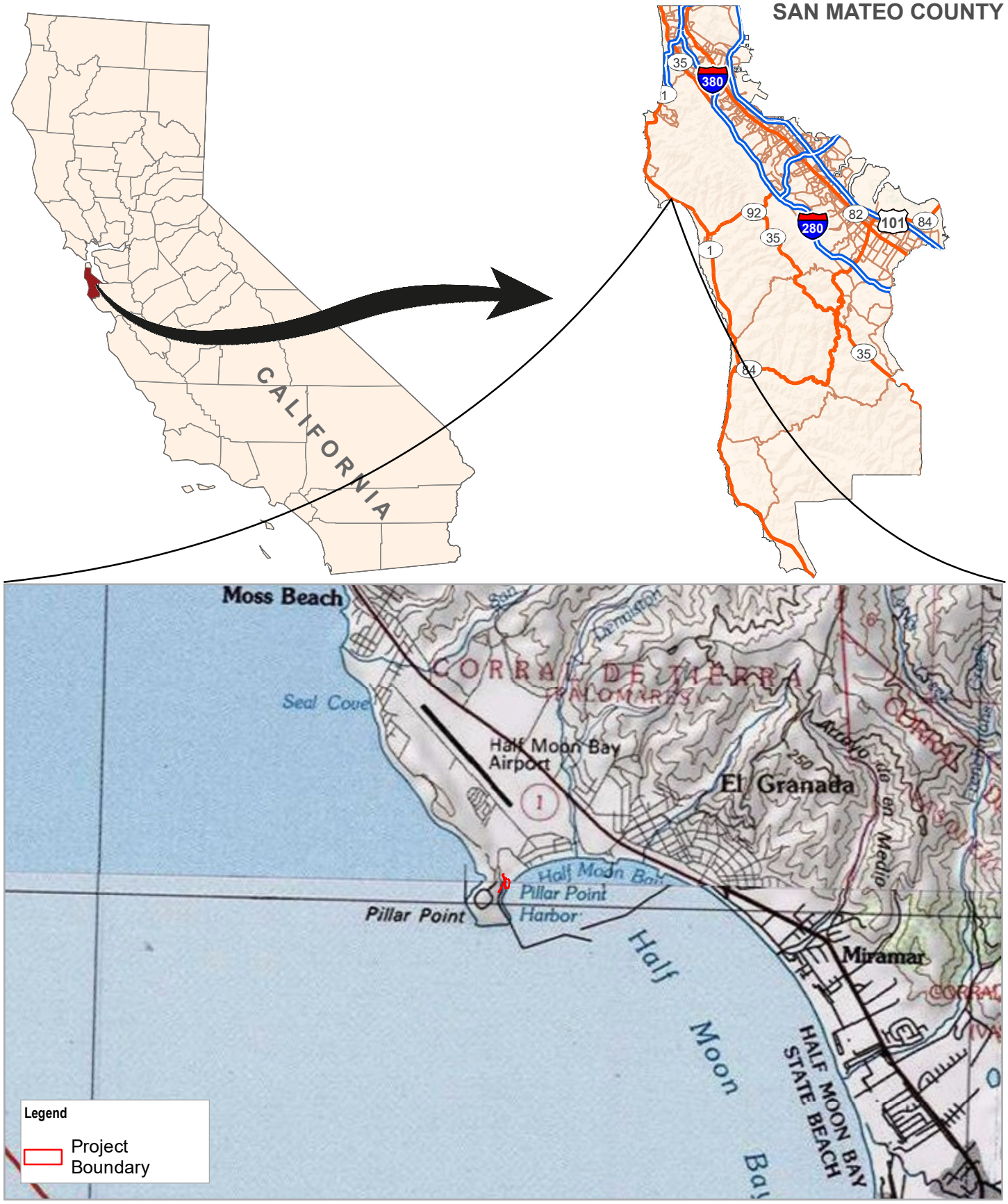
U.S. Army Corps of Engineers (USACE), San Francisco District. 2007. Information requested for verification of Corps jurisdiction. November.

U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency. 2007. Jurisdictional determination handbook. May.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration. 2011a (update). Booklet Chart, Half Moon Bay (NOAA Chart 18682). December (update).

U.S. Department of Commerce, National Oceanic and Atmospheric Administration. 2011b. Tides & Currents, Monterey, CA, Station ID 9413450. Accessed January 30, 2012. http://co-ops.nos.noaa.gov/data_menu.shtml?stn=9413450%20Monterey,%20CA&type=Datums

Wagner, Richard J. and Ralph E. Nelson. 1961. Soil survey of the San Mateo Area, California. United States Department of Agriculture, University of California Agricultural Experiment Station. Series 1954. No. 13. Issued May 1961. 111 pages.



Paper Size ANSI A

0 500 1,000 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

N

GHD

SMCHD
Pillar Point West Trail Living Shoreline

Project No. 11195361
Revision No. -
Date Feb 2020

Vicinity Map

FIGURE 1

N:\US\San Diego\Projects\561\11195361\GIS\Maps\Deliverables\WetDel\11195361_001_Location_RevA.mxd
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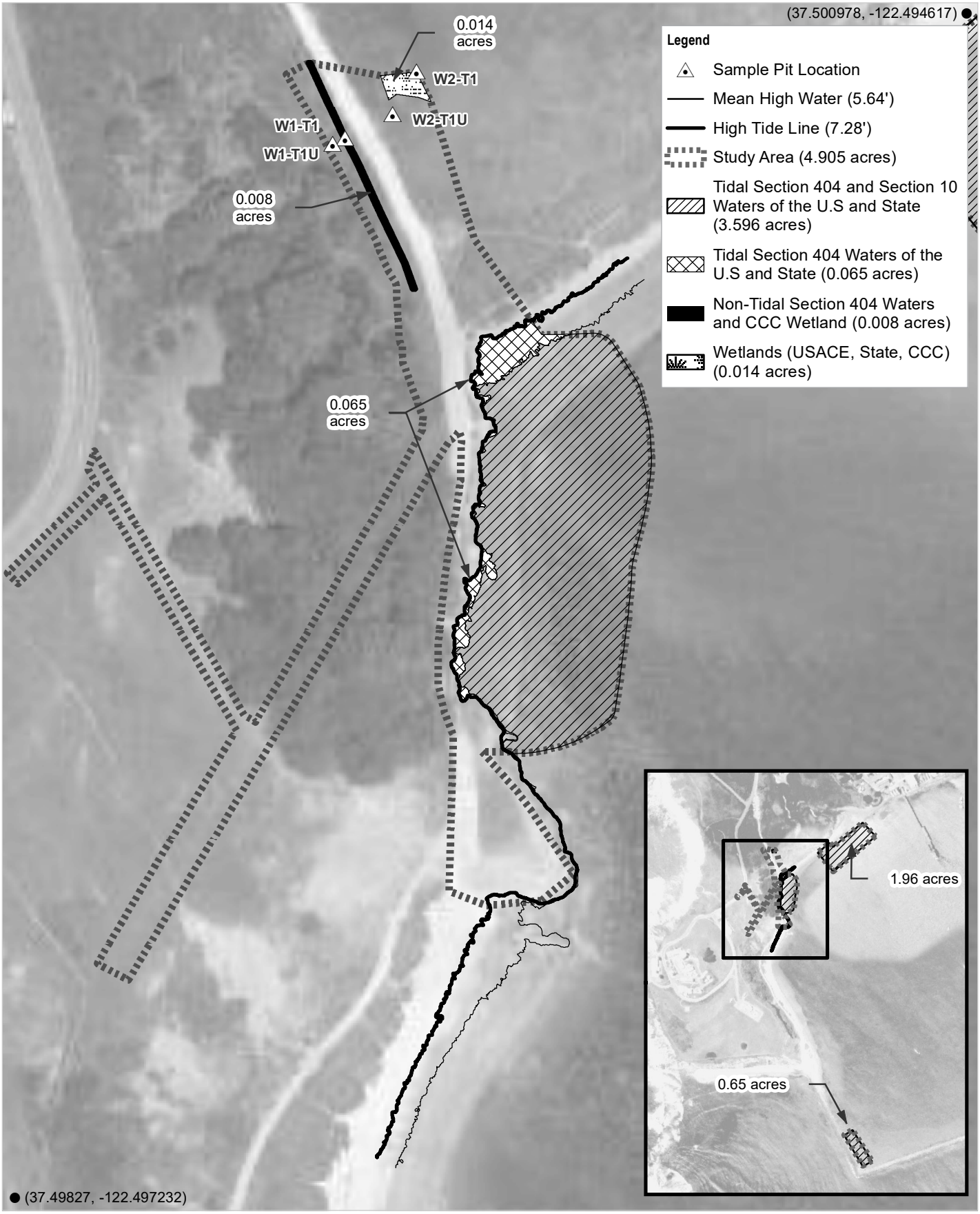

Paper Size ANSI A

0 325 650 975 1,300

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

N

GHD

SMCHD
Pillar Point West Trail Living Shoreline

Delineation of Waters of the U.S. and State, Including Wetlands

Project No. 11195361
Revision No. -
Date April 2020

FIGURE 2

\\ghdnet\ghd\US\San Diego\Projects\561\11195361\GIS\Maps\Deliverables\WetDel\11195361_002_WetDel_Rev_I.mxd
Print date: 21 Apr 2020 - 13:53

Data source: Google Earth imagery; . Created by: emorata

Appendix A - Data Sheets

WETLAND DETERMINATION DATA FORM

Project/Site: Pillar Point West Trail City/County: San Mateo Sampling Date: 01/23/2020

Applicant/Owner: San Mateo Harbor District State: CA Sampling Point: W1 - T1

Investigator(s): Jane Valerius, Joslyn Curtis Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Shoreline Local relief (concave, convex, none): Concave Slope (%): 1-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Denman loam, sloping NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No __ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? no Are "Normal Circumstances" present? Yes X No _

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS –.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Data point located in flow line of culvert.

In drainage with concrete culvert - classified as Waters of U.S. not Wetlands; meets CCC criteria

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Baccharis pilularis	10	Y	UPL
2. Frangula californica	5	Y	UPL
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. Juncus effusus	30	Y	FACW
2. Juncus patens	10	N	FAC
3. Conium maculatum	10	N	FAC
4. Solanum americanum	5	N	FACU
5. Heracleum dissectum	5	N	UPL
6. Ehrigeron glaucus	5	N	FACU
7. Achillea millefolium	10	N	FACU
8. Potentilla anserina	10	N	OBL
	85	= Total Cover	
Woody Vine Stratum (Plot size: 9')			
1. Rubus ursinus	10	Y	FACU
2.			
	10	= Total Cover	

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: NL = No listing status

SOIL

Sampling Point: W1 - T1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	7.5YR 2.5/1	100					silty loam	no redox

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

Data point in a defined drainage channel

WETLAND DETERMINATION DATA FORM

Project/Site: Pillar Point West Trail City/County: San Mateo Sampling Date: 01/23/2020

Applicant/Owner: San Mateo Harbor District State: CA Sampling Point: W1-TIU

Investigator(s): Jane Valerius, Joslyn Curtis Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slope Slope (%): 5-10%

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Denmson loam, sloping NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No __ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? no Are "Normal Circumstances" present? Yes X No _

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS –.

Hydrophytic Vegetation Present? Yes _____ No ✓ Hydric Soil Present? Yes _____ No ✓ Wetland Hydrology Present? Yes _____ No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓

Remarks: Data point located in flow line of culvert.

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Baccharis pilularis	30	Y	UPL
2. Frangula californica	10	Y	NL
3. Eriophyllum stoechadifolium	10	Y	NL
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. Juncus effusus	10	N	FACW
2. Erigeron glaucus	20	Y	FACU
3. Cardus pycnocephalus	10	N	UPL
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. Rubus ursinus	10	Y	FACU
2.			
	10	= Total Cover	

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: NL = No listing status

SOIL

Sampling Point: WI-T1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR2.5/1	100					loam	no redox

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? Yes _____ No ✓ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

on slope in coastal scrub

WETLAND DETERMINATION DATA FORM

Project/Site: Pillar Point West Trail City/County: San Mateo Sampling Date: 01/23/2020

Applicant/Owner: San Mateo Harbor District State: CA Sampling Point: W2 - T1

Investigator(s): Jane Valerius, Joslyn Curtis Section, Township, Range: _____

Landform (hillslope, terrace, etc.): coast Local relief (concave, convex, none): planar Slope (%): 1-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Denman clay loam, nearly level, imperfectly drained NWI classification: Fresh water emergent wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No __ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? (no) Are "Normal Circumstances" present? Yes X No _

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS –.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Data point located in flow line of culvert.

In marsh

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. Juncus balticus / mexicanus	85	Y	FACW
2. Potentilla anserina	5	N	OBL
3. Frankenia salina	5	N	FACW
4. Helminthotheca echioides	5	N	FAC
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: NL = No listing status

SOIL

Sampling Point: W2-T1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 2.5/1	95	7.5YR 4/6	5	C	M	Silty clay loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ✓ No ____ Depth (inches): 8"

Saturation Present? Yes ✓ No ____ Depth (inches): 6"

(includes capillary fringe)

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Data point in marsh

WETLAND DETERMINATION DATA FORM

Project/Site: Pillar Point West Trail City/County: San Mateo Sampling Date: 01/23/2020

Applicant/Owner: San Mateo Harbor District State: CA Sampling Point: W2 - T1V

Investigator(s): Jane Valerius, Joslyn Curtis Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Coast Local relief (concave, convex, none): plane Slope (%): 1-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Stabilized dune land NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No __ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? (no) Are "Normal Circumstances" present? Yes X No __

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS –.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Data point located in flow line of culvert.

VEGETATION

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Baccharis pilularis	5	Y	UPL
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. Carpobrotus edulis / chilensis	95	Y	FAC
2. Frankenia salina	5	N	~~FACW~~
3.			
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: NL = No listing status

Mostly iceplant

SOIL

Sampling Point: W2-TIU

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	7.5YR 2.5/1	100					Clay loam	no redox

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? Yes _____ No ✓ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

Appendix B -
Soils Information


122° 29' 58" W
122° 29' 31" W
544300
544400
544500
544600
544700
544800
544900
37° 30' 10" N
37° 29' 41" N
4150700
4150600
4150500
4150400
4150300
4150200
4150100
4150000
4149900
EhE3
DdA
EhE3
DmC
Sd
Cf
EhE3
EhC2
Cf
EhE3
Gw
Map Scale: 1:4,340 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 50 100 200 300
Feet
0 200 400 800 1200
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N 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 1:15,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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: San Mateo Area, California
Survey Area Data: Version 7, Dec 10, 2013

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

Date(s) aerial images were photographed: Oct 26, 2010—Sep 17, 2011

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

San Mateo Area, California (CA637)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Cf	Coastal beaches	2.8	28.5%
DdA	Denison clay loam, nearly level, imperfectly drained	0.7	7.5%
DmC	Denison loam, sloping	1.3	13.8%
EhC2	Elkhorn sandy loam, sloping, eroded	0.4	4.5%
EhE3	Elkhorn sandy loam, moderately steep and steep, severely eroded	2.0	20.2%
Gw	Gullied land (tierra and watsonville soil materials)	1.0	10.6%
Sd	Stabilized dune land	0.6	6.6%
Subtotals for Soil Survey Area		**8.9**	**91.7%**
Totals for Area of Interest		**9.7**	**100.0%**

Appendix C -
Site Photographs

SITE PHOTOGRAPHS TAKENON JANUARY 23, 2020

Photo 1: Drainage feature on west side of trail.

Photo 2: Freshwater marsh habitat type.

Photo 3: Iceplant in “stabilized dune” next to freshwater marsh.

Photo 4: Tidal waters and culvert repair area.

Appendix D

Special Status Species Database Search Results

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE **RareFind**

Query Summary:
Quad IS (Half Moon Bay (3712244) OR Montara Mountain (3712254))

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Agrostis blasdalei	Blasdale's bent grass	Monocots	PMPOA04060	62	1	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz	Coastal bluff scrub, Coastal dunes, Coastal prairie
Allium peninsulare var. franciscanum	Franciscan onion	Monocots	PMLIL021R1	25	5	None	None	G5T2	S2	1B.2	null	Cismontane woodland, Ultramafic, Valley & foothill grassland
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420	1	None	None	G5	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Arctostaphylos montaraensis	Montara manzanita	Dicots	PDERI042W0	4	3	None	None	G1	S1	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Chaparral, Coastal scrub
Arctostaphylos regismontana	Kings Mountain manzanita	Dicots	PDERI041C0	17	2	None	None	G2	S2	1B.2	null	Broadleaved upland forest, Chaparral, North coast coniferous forest
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	Dicots	PDFAB0F7B2	25	1	None	None	G2T2	S2	1B.2	BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Coastal dunes, Coastal scrub, Marsh & swamp, Wetland
Athene cunicularia	burrowing owl	Birds	ABNSB10010	1989	1	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Bombus caliginosus	obscure bumble bee	Insects	IIHYM24380	181	3	None	None	G4?	S1S2	null	IUCN_VU-Vulnerable	null
Bombus occidentalis	western bumble bee	Insects	IIHYM24250	279	3	None	Candidate Endangered	G2G3	S1	null	USFS_S-Sensitive,	null

											XERCES_IM-Imperiled	
Brachyramphus marmoratus	marbled murrelet	Birds	ABNNN06010	110	1	Threatened	Endangered	G3G4	S1	null	CDF_S-Sensitive, IUCN_EN-Endangered, NABCI_RWL-Red Watch List	Lower montane coniferous forest, Oldgrowth, Redwood
Callophrys mossii bayensis	San Bruno elfin butterfly	Insects	IILEPE2202	6	4	Endangered	None	G4T1	S1	null	XERCES_CI-Critically Imperiled	Valley & foothill grassland
Centromadia parryi ssp. parryi	pappose tarplant	Dicots	PDAST4R0P2	39	2	None	None	G3T2	S2	1B.2	BLM_S-Sensitive	Chaparral, Coastal prairie, Marsh & swamp, Meadow & seep, Valley & foothill grassland
Charadrius alexandrinus nivosus	western snowy plover	Birds	ABNNB03031	138	1	Threatened	None	G3T3	S2S3	null	CDFW_SSC-Species of Special Concern, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Great Basin standing waters, Sand shore, Wetland
Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	Dicots	PDPGN04081	17	1	None	None	G2T1	S1	1B.2	null	Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub
Cirsium andrewsii	Franciscan thistle	Dicots	PDAST2E050	31	2	None	None	G3	S3	1B.2	null	Broadleaved upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Ultramafic
Collinsia multicolor	San Francisco collinsia	Dicots	PDSCR0H0B0	36	3	None	None	G2	S2	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden, SB_UCSC-UC Santa Cruz	Closed-cone coniferous forest, Coastal scrub, Ultramafic
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	635	1	None	None	G3G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Broadleaved upland forest, Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland
Danaus plexippus pop. 1	monarch - California overwintering population	Insects	IILEPP2012	383	5	None	None	G4T2T3	S2S3	null	USFS_S-Sensitive	Closed-cone coniferous forest
Dicamptodon ensatus	California giant salamander	Amphibians	AAAAH01020	234	1	None	None	G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	Aquatic, Meadow & seep, North coast coniferous forest, Riparian forest
Dirca occidentalis	western leatherwood	Dicots	PDTHY03010	71	7	None	None	G2	S2	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Chaparral, Cismontane

												woodland, Closed-cone coniferous forest, North coast coniferous forest, Riparian forest, Riparian woodland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1385	3	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Eriophyllum latilobum	San Mateo woolly sunflower	Dicots	PDAST3N060	8	5	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Ultramafic
Falco columbarius	merlin	Birds	ABNKD06030	37	1	None	None	G5	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Estuary, Great Basin grassland, Valley & foothill grassland
Fritillaria biflora var. ineziana	Hillsborough chocolate lily	Monocots	PMLIL0V031	2	1	None	None	G3G4T1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, SB_USDA-US Dept of Agriculture	Cismontane woodland, Ultramafic, Valley & foothill grassland
Fritillaria liliacea	fragrant fritillary	Monocots	PMLIL0V0C0	82	1	None	None	G2	S2	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Cismontane woodland, Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	Birds	ABPBX1201A	112	6	None	None	G5T3	S3	null	CDFW_SSC-Species of Special Concern, USFWS_BCC-Birds of Conservation Concern	Marsh & swamp
Grindelia hirsutula var. maritima	San Francisco gumplant	Dicots	PDAST470D3	15	1	None	None	G5T1Q	S1	3.2	SB_UCSC-UC Santa Cruz	Coastal bluff scrub, Coastal scrub, Ultramafic, Valley & foothill grassland
Horkelia cuneata var. sericea	Kellogg's horkelia	Dicots	PDROS0W043	58	2	None	None	G4T1?	S1?	1B.1	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Closed-cone coniferous forest, Coastal dunes, Coastal scrub
Horkelia marinensis	Point Reyes horkelia	Dicots	PDROS0W0B0	36	1	None	None	G2	S2	1B.2	null	Coastal dunes, Coastal prairie, Coastal scrub
Hypogymnia schizidiata	island tube lichen	Lichens	NLT0032640	10	3	None	None	G2G3	S2	1B.3	null	Chaparral, Closed-cone coniferous forest
Ischnura gemina	San Francisco forktail damselfly	Insects	IIODO72010	7	1	None	None	G2	S2	null	IUCN_VU-Vulnerable	null

Lasiurus cinereus	hoary bat	Mammals	AMACC05030	238	3	None	None	G5	S4	null	IUCN_LC-Least Concern, WBWG_M-Medium Priority	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
Lasthenia californica ssp. macrantha	perennial goldfields	Dicots	PDAST5L0C5	59	3	None	None	G3T2	S2	1B.2	null	Coastal bluff scrub, Coastal dunes, Coastal scrub
Leptosiphon croceus	coast yellow leptosiphon	Dicots	PDPLM09170	1	1	None	Endangered	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Coastal bluff scrub, Coastal prairie
Leptosiphon rosaceus	rose leptosiphon	Dicots	PDPLM09180	31	3	None	None	G1	S1	1B.1	null	Coastal bluff scrub
Lessingia arachnoidea	Crystal Springs lessingia	Dicots	PDAST5S0C0	11	3	None	None	G2	S2	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden	Cismontane woodland, Coastal scrub, Ultramafic, Valley & foothill grassland
Lichnanthe ursina	bumblebee scarab beetle	Insects	IICOL67020	8	1	None	None	G2	S2	null	null	Coastal dunes
Limnanthes douglasii ssp. ornduffii	Ornduff's meadowfoam	Dicots	PDLIM02039	2	2	None	None	G4T1	S1	1B.1	null	Meadow & seep
Malacothamnus arcuatus	arcuate bush-mallow	Dicots	PDMAL0Q0E0	30	3	None	None	G2Q	S2	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland
Melospiza melodia pusillula	Alameda song sparrow	Birds	ABPBXA301S	38	1	None	None	G5T2?	S2S3	null	CDFW_SSC-Species of Special Concern, USFWS_BCC-Birds of Conservation Concern	Salt marsh
Monolopia gracilens	woodland woollythreads	Dicots	PDAST6G010	68	1	None	None	G3	S3	1B.2	null	Broadleaved upland forest, Chaparral, Cismontane woodland, North coast coniferous forest, Ultramafic, Valley & foothill grassland
Myotis thysanodes	fringed myotis	Mammals	AMACC01090	86	1	None	None	G4	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	null
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	Mammals	AMAFF08082	42	4	None	None	G5T2T3	S2S3	null	CDFW_SSC-Species of Special Concern	Chaparral, Redwood
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	Marsh	CTT52110CA	53	1	None	None	G3	S3.2	null	null	Marsh & swamp, Wetland
Northern Maritime Chaparral	Northern Maritime Chaparral	Scrub	CTT37C10CA	17	2	None	None	G1	S1.2	null	null	Chaparral
Nyctinomops macrotis	big free-tailed bat	Mammals	AMACD04020	32	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, WBWG_MH-Medium-High Priority	null
Oncorhynchus mykiss irideus pop. 8	steelhead - central	Fish	AFCHA0209G	44	3	Threatened	None	G5T2T3Q	S2S3	null	AFS_TH-Threatened	Aquatic, Sacramento/San

	California coast DPS											Joaquin flowing waters
Pentachaeta bellidiflora	white-rayed pentachaeta	Dicots	PDAST6X030	14	2	Endangered	Endangered	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Ultramafic, Valley & foothill grassland
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	Dicots	PDBOR0V061	42	8	None	None	G3T1Q	S1	1B.2	SB_UCSC-UC Santa Cruz	Chaparral, Coastal prairie, Coastal scrub
Plebejus icarioides missionensis	Mission blue butterfly	Insects	IILEPG801A	14	2	Endangered	None	G5T1	S1	null	XERCES_CI-Critically Imperiled	Coastal prairie
Polemonium carneum	Oregon polemonium	Dicots	PDPLM0E050	16	1	None	None	G3G4	S2	2B.2	null	Coastal prairie, Coastal scrub, Lower montane coniferous forest
Potentilla hickmanii	Hickman's cinquefoil	Dicots	PDROS1B0U0	4	2	Endangered	Endangered	G1	S1	1B.1	null	Closed-cone coniferous forest, Coastal bluff scrub, Freshwater marsh, Marsh & swamp, Meadow & seep, Wetland
Rallus obsoletus obsoletus	California Ridgway's rail	Birds	ABNME05011	99	1	Endangered	Endangered	G5T1	S1	null	CDFW_FP-Fully Protected, NABCI_RWL-Red Watch List	Brackish marsh, Marsh & swamp, Salt marsh, Wetland
Rana boylii	foothill yellow-legged frog	Amphibians	AAABH01050	2468	1	None	Candidate Threatened	G3	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive	Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow & seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Amphibians	AAABH01022	1543	39	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable	Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Serpentine Bunchgrass	Serpentine Bunchgrass	Herbaceous	CTT42130CA	22	2	None	None	G2	S2.2	null	null	Valley & foothill grassland
Silene scouleri ssp. scouleri	Scouler's catchfly	Dicots	PDCAR0U1MC	23	4	None	None	G5T4T5	S2S3	2B.2	null	Coastal bluff scrub, Coastal prairie, Valley & foothill grassland
Silene verecunda ssp. verecunda	San Francisco campion	Dicots	PDCAR0U213	20	2	None	None	G5T1	S1	1B.2	SB_RSABG-Rancho Santa Ana Botanic Garden, SB_UCSC-UC Santa Cruz	Chaparral, Coastal bluff scrub, Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland
Speyeria zerene	Myrtle's silverspot	Insects	IILEPJ608C	17	1	Endangered	None	G5T1	S1	null	XERCES_CI-Critically	Coastal dunes

myrtleae	butterfly										Imperiled	
Spirinchus thaleichthys	longfin smelt	Fish	AFCHB03010	46	1	Candidate	Threatened	G5	S1	null	null	Aquatic, Estuary
Taxidea taxus	American badger	Mammals	AMAJF04010	592	3	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, Ione formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	Reptiles	ARADB3613B	66	19	Endangered	Endangered	G5T2Q	S2	null	CDFW_FP-Fully Protected	Artificial standing waters, Marsh & swamp, Sacramento/San Joaquin standing waters, Wetland
Triphysaria floribunda	San Francisco owl's-clover	Dicots	PDSCR2T010	50	4	None	None	G2?	S2?	1B.2	null	Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland
Triquetrella californica	coastal triquetrella	Bryophytes	NBMUS7S010	13	1	None	None	G2	S2	1B.2	USFS_S-Sensitive	Coastal bluff scrub, Coastal scrub
Valley Needlegrass Grassland	Valley Needlegrass Grassland	Herbaceous	CTT42110CA	45	1	None	None	G3	S3.1	null	null	Valley & foothill grassland

CNPS California Native Plant Society

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

47 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3712254 and 3712244;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Agrostis blasdalei	Blasdale's bent grass	Poaceae	perennial rhizomatous herb	May-Jul	1B.2	S2	G2
Allium peninsulare var. franciscanum	Franciscan onion	Alliaceae	perennial bulbiferous herb	(Apr)May-Jun	1B.2	S2	G5T2
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	1B.2	S3	G3
Arabis blepharophylla	coast rockcress	Brassicaceae	perennial herb	Feb-May	4.3	S4	G4
Arctostaphylos montaraensis	Montara manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar	1B.2	S1	G1
Arctostaphylos regismontana	Kings Mountain manzanita	Ericaceae	perennial evergreen shrub	Dec-Apr	1B.2	S2	G2
Astragalus nuttallii var. nuttallii	ocean bluff milk-vetch	Fabaceae	perennial herb	Jan-Nov	4.2	S4	G4T4
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	Fabaceae	perennial herb	(Apr)Jun-Oct	1B.2	S2	G2T2
Castilleja ambigua var. ambigua	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	4.2	S3S4	G4T4
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	1B.2	S2	G3T2
Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	Polygonaceae	annual herb	Apr-Jul(Aug)	1B.2	S1	G2T1
Cirsium andrewsii	Franciscan thistle	Asteraceae	perennial herb	Mar-Jul	1B.2	S3	G3
Collinsia multicolor	San Francisco collinsia	Plantaginaceae	annual herb	(Feb)Mar-May	1B.2	S2	G2
Cypripedium fasciculatum	clustered lady's-slipper	Orchidaceae	perennial rhizomatous herb	Mar-Aug	4.2	S4	G4

Dirca occidentalis	western leatherwood	Thymelaeaceae	perennial deciduous shrub	Jan-Mar(Apr)	1B.2	S2	G2
Elymus californicus	California bottle-brush grass	Poaceae	perennial herb	May-Aug(Nov)	4.3	S4	G4
Eriophyllum latilobum	San Mateo woolly sunflower	Asteraceae	perennial herb	May-Jun	1B.1	S1	G1
Erysimum franciscanum	San Francisco wallflower	Brassicaceae	perennial herb	Mar-Jun	4.2	S3	G3
Fritillaria biflora var. ineziana	Hillsborough chocolate lily	Liliaceae	perennial bulbiferous herb	Mar-Apr	1B.1	S1	G3G4T1
Fritillaria lanceolata var. tristulis	Marin checker lily	Liliaceae	perennial bulbiferous herb	Feb-May	1B.1	S2	G5T2
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2	G2
Grindelia hirsutula var. maritima	San Francisco gumplant	Asteraceae	perennial herb	Jun-Sep	3.2	S1	G5T1Q
Hesperevax sparsiflora var. brevifolia	short-leaved evax	Asteraceae	annual herb	Mar-Jun	1B.2	S2	G4T3
Horkelia cuneata var. sericea	Kellogg's horkelia	Rosaceae	perennial herb	Apr-Sep	1B.1	S1?	G4T1?
Horkelia marinensis	Point Reyes horkelia	Rosaceae	perennial herb	May-Sep	1B.2	S2	G2
Hypogymnia schizidiata	island rock lichen	Parmeliaceae	foliose lichen (null)		1B.3	S1	G2
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May	4.2	S3	G3
Lasthenia californica ssp. macrantha	perennial goldfields	Asteraceae	perennial herb	Jan-Nov	1B.2	S2	G3T2
Leptosiphon croceus	coast yellow leptosiphon	Polemoniaceae	annual herb	Apr-Jun	1B.1	S1	G1
Leptosiphon rosaceus	rose leptosiphon	Polemoniaceae	annual herb	Apr-Jul	1B.1	S1	G1
Lessingia arachnoidea	Crystal Springs lessingia	Asteraceae	annual herb	Jul-Oct	1B.2	S2	G2
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	3	S2S3	G3?
Limnanthes douglasii ssp. ornduffii	Ornduff's meadowfoam	Limnanthaceae	annual herb	Nov-May	1B.1	S1	G4T1
Lupinus arboreus var. eximius	San Mateo tree lupine	Fabaceae	perennial evergreen shrub	Apr-Jul	3.2	S2	G2Q
Malacothamnus aboriginum	Indian Valley bush-mallow	Malvaceae	perennial deciduous shrub	Apr-Oct	1B.2	S3	G3
Malacothamnus arcuatus	arcuate bush-mallow	Malvaceae	perennial evergreen shrub	Apr-Sep	1B.2	S2	G2Q
Malacothamnus davidsonii	Davidson's bush-mallow	Malvaceae	perennial deciduous shrub	Jun-Jan	1B.2	S2	G2
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial evergreen	(Apr)May-Sep(Oct)	1B.2	S2	G2

			shrub				
Monolopia gracilens	woodland woolythreads	Asteraceae	annual herb	(Feb)Mar-Jul	1B.2	S3	G3
Pentachaeta bellidiflora	white-rayed pentachaeta	Asteraceae	annual herb	Mar-May	1B.1	S1	G1
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	Boraginaceae	annual herb	Mar-Jun	1B.2	S1	G3T1Q
Polemonium carneum	Oregon polemonium	Polemoniaceae	perennial herb	Apr-Sep	2B.2	S2	G3G4
Potentilla hickmanii	Hickman's cinquefoil	Rosaceae	perennial herb	Apr-Aug	1B.1	S1	G1
Silene scouleri ssp. scouleri	Scouler's catchfly	Caryophyllaceae	perennial herb	(Mar-May)Jun-Aug(Sep)	2B.2	S2S3	G5T4T5
Silene verecunda ssp. verecunda	San Francisco campion	Caryophyllaceae	perennial herb	(Feb)Mar-Jun(Aug)	1B.2	S1	G5T1
Triphysaria floribunda	San Francisco owl's-clover	Orobanchaceae	annual herb	Apr-Jun	1B.2	S2?	G2?
Triquetrella californica	coastal triquetrella	Pottiaceae	moss		1B.2	S2	G2

Suggested Citation

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: June 09, 2020
Consultation Code: 08ESMF00-2020-SLI-2113
Event Code: 08ESMF00-2020-E-06565
Project Name: Pillar Point Harbor West Trail Living Project

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

To Whom It May Concern:

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

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

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:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-2113

Event Code: 08ESMF00-2020-E-06565

Project Name: Pillar Point Harbor West Trail Living Project

Project Type: SHORELINE / BEACH PROTECTION / RENOURISHMENT

Project Description: The proposed project is located along the western edge of Pillar Point Harbor (Harbor) in western San Mateo County, California. The Pillar Point West Trail (West Trail or trail) varies in width from 0 to 18 feet and connects a pedestrian pathway from West Point Avenue access and parking area to the Pillar Point outer harbor and Mavericks Beach. Pillar Point is a peninsula, just north of the communities of Half Moon Bay and El Granada. Construction staging for the proposed project would take place in a portion of the existing Pillar Point Harbor West Trail Parking Lot. A temporary stockpile area would be placed on the beach adjacent to the trail on its eastern side.

The proposed project area has experienced chronic coastal erosion, resulting in degradation of the existing West Trail and creating hazardous conditions for trail users. The erosion has also exposed the stormwater infrastructure and threatens its structural integrity. In addition, because the trail is the only access point to Mavericks Beach and is a popular trail for visitors, permanent closure of the trail is not favored. The primary objectives of the proposed project are to:

1. Stabilize the trail to maintain access for recreationists for at least 25 years with minimal maintenance.
2. Upgrade the existing stormwater system so it functions adequately for a 50-year design event with minimal maintenance.
3. Incorporate natural design features, including living shoreline design techniques to the maximum extent possible and minimize the use of hard armoring.
4. Enhance the long-term durability of the surrounding ecological systems by planting native vegetation.
5. Conform with the natural aesthetics of the landscape.

The District expects construction to begin in November of 2020 and conclude in February of 2021, pending funding availability.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.49874271241677N122.4960589026442W

Counties: San Mateo, CA

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.

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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
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered
Southern Sea Otter *Enhydra lutris nereis* No critical habitat has been designated for this species. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/8560	Threatened

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
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
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
San Francisco Garter Snake *Thamnophis sirtalis tetrataenia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Mission Blue Butterfly *Icaricia icarioides missionensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6928	Endangered
Myrtle's Silverspot Butterfly *Speyeria zerene myrtleae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6929	Endangered
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered

Flowering Plants

NAME	STATUS
Hickman's Potentilla *Potentilla hickmanii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6343	Endangered
San Mateo Woolly Sunflower *Eriophyllum latilobum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7791	Endangered
White-rayed Pentachaeta *Pentachaeta bellidiflora* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7782	Endangered

Critical habitats

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

Appendix E

Special Status Species with Potential to Occur

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Mammals				
Antrozous pallidus	pallid bat	--/CSC/--	Typically roost in cracks and crevices, which may include tile roofs, exfoliating bark of trees, or rocky outcrops. Prefers arid or semi-arid habitats, often in mountainous or rocky areas near water.	**Low.** The Study Area does not have rocky outcrops and is not the preferred open, dry environment this species prefers. In addition, no buildings and little to no tree trimming will be involved in the Project. The nearest CNDDB occurrence is over 8 miles from the Study Area. Therefore, this species is excluded from further consideration.
Arctocephalus townsendi	Guadalupe Fur Seal	FT/ST, FP/--	Breeds on Isla de Guadalupe off of Mexico, occasionally found on San Miguel, San Nicolas, and San Clemente islands. Prefers shallow, nearshore island water, with cool and sheltered rocky areas for haul-outs.	**No Potential.** This species is not usually found this far north. The Orange County Register (OCR) indicates that it is rare to see one even as far north as Dana Point, which is south of Los Angeles (OCR 2019). Therefore, this species is excluded from further consideration.
Balaenoptera borealis	Sei whale	FE/--/--	Generally in deep water; along edge of continental shelf and in open ocean.	**No Potential.** No proposed work or associated impacts extend into deep water.
Balaenoptera musculus	Blue whale	FE/--/--	Mainly pelagic; generally prefers cold waters and open seas, but young are born in warmer waters of lower latitudes.	**No Potential.** No proposed work or associated impacts extend into deep water.
Balaenoptera physalus	Fin whale	FE/--/--	Pelagic; usually found in largest numbers 25 miles or more from shore. Young are born in the warmer waters of the lower latitudes.	**No Potential.** No proposed work or associated impacts extend into deep water.
Corynorhinus townsendii	Townsend's big-eared bat	--/CSC/--	Ranges throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**Low.** The Study Area does not have open, spacious buildings this species prefers for roosting. In addition, no buildings and little to no tree trimming will be involved in the Project. The nearest CNDDB occurrence is over 8 miles from the Study Area.
Enhydra lutris nereis	Southern Sea Otter	FT/CSC, FP/--	Needs canopies of giant kelp & bull kelp for rafting & feeding. Prefers rocky substrates with abundant invertebrates. Nearshore marine environments from about Ano Nuevo, San Mateo Co. to Point Sal, Santa Barbara Co.	**Low Potential.** There are no canopies of giant or bull kelp within the Project area or Pillar Point Harbor.
Eubalaena japonica	North Pacific Right Whale	FE/--/--	Near shore, Pelagic, Bearing Sea Shelf, Gulf of Alaska	**No Potential.** No proposed work or associated impacts extend into deep water.
Lasiurus cinereus	Hoary bat	--/--/--	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	**Moderate Potential.** This species is widespread and is typically a solitary rooster on tree branches and in leaves. The nearest CNDDB occurrence is over 7 miles from the Action Area and is from 1991. Little or no tree trimming is anticipated for this Project.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Megaptera novaeangliae	Humpback whale	FE/--/--	Habitat includes the open ocean and coastal waters, sometimes including inshore areas such as bays. Summer distribution is in temperate and subpolar waters. In winter, most humpbacks are in tropical/subtropical waters near islands or coasts.	**No Potential.** No proposed work or associated impacts extend into deep water.
Myotis thysanodes	Fringed Myotis	--/--/--	Found in a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer. Uses caves, mines, buildings or crevices for maternity colonies and roosts.	**Low Potential.** The Project area does not have buildings, mines, caves or rock crevices this species prefers for roosting. In addition, no building removal and little to no tree trimming will be involved in the Project. The nearest CNDDB occurrence is reported from 2005 and is over 8 miles from the Study Area.
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	--/CSC/--	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats. Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	**Low Potential.** Project area lacks suitable habitat. The nearest CNDDB occurrence is from 2007 and is more than 6.5 miles from the Study Area.
Nyctinomops macrotis	big free-tailed bat	--/CSC/--	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**No Potential.** Suitable habitat does not exist within the Project area for this species. The nearest CNDDB occurrence is from 1984 and is more than 6.5 miles from the Study Area.
Orcinus orca	Southern Resident Killer Whale	FE/--/--	Mainly in coastal waters, but may occur anywhere in all oceans and major seas at any time of year.	**No Potential.** No proposed work or associated impacts extend into deep water.
Physeter macrocephalus	Sperm Whale	FE/--/--	Tends to occur near productive waters, and often near continental shelves. Females generally restricted to waters with surface temperatures warmer than about 15 degrees C and rarely found in waters less than 1000 m deep. Males, although primarily found in deep water, are sometimes found in waters 200 to 1000 m deep.	**No Potential.** No proposed work or associated impacts extend into deep water.
Taxidea taxus	American badger	--/CSC/--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Low Potential.** The Study Area is a popular walking trail and does not have expansive, open areas to be suitable for this species.

TABLE E-1
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Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Birds				
Athene cunicularia	Burrowing owl	--/CSC/--	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Low Potential.** Species winters in coastal grasslands and bluffs in coastal California. Suitable wintering habitat for this species exists on the coastal bluffs above the project site (near the radar station). However, no suitable foraging or nesting habitat for this species (grassland) is present within the immediate project area.
Brachyramphus marmoratus	Marbled murrelet	FT/ST/--	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	**Moderate Potential.** Species occupies nearby redwood groves in the Santa Cruz mountains. Nearby occupied sites include Pescadero Creek Park, Purisima Creek Redwoods, Butano State Park, and Big Basin among others (CDPR 2017).There are numerous recent records of this species in Pillar Point Harbor, and the species may forage immediately adjacent to the project area (eBird 2020).
Charadrius nivosus	Western snowy plover	FT/CSC/--	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Moderate Potential.** Western Snowy Plovers have been observed at Mavericks Beach (directly adjacent to the project area) during the winter and a regular winter visitor to coastside beaches in San Mateo county (eBird 2020). However, the closest known recent nesting site is several miles to the south at Pescadero State Beach (CSPA, 2015). The species has moderate potential to winter in or directly adjacent to the project area.
Falco columbarius	Merlin	--/WL/--	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.	**Moderate Potential.** Species is a regular winter migrant to the project area, with numerous observations of the species in or directly adjacent to the project area (eBird 2020). The project area likely provides seasonal foraging and roosting habitat for the species.
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	--/CSC/--	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Present.** Adult Salt Marsh Common Yellowthroats were observed feeding juveniles in the marsh adjacent to the West Trail (indicative of successful breeding that year) on the July 29, 2019 (observation occurred during the rookery survey in the project area).
Melospiza melodia pusillula	Alameda song sparrow	--/CSC/--	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	**Low Potential.** Species range includes salt marsh around the edges of south San Francisco Bay (Shuford et al. 2008). Suitable habitat does occur for the species in the project vicinity in Pillar Point Wetlands Salt Marsh (at the northern end of the West Trail). However, there are no recent records from coastal San Mateo County or the project area (eBird 2020, CDFW 2020). Therefore, this species is excluded from further consideration.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Phoebastria (=Diomedea) albatrus	Short-tailed albatross	FE/CSC/--	Forages in near shore and off shore ocean habitats. Breeds on offshore islands in Japan.	**Low Potential.** Species is extremely rare along the west coast of the U.S. (non-breeding season only). Only breeds on offshore islands in Japan and recently Midway atoll. Species has been detected on pelagic trips in offshore waters (eBird 2020). However, the species is unlikely to occur nearshore in Pillar Point Harbor and in the project area.
Rallus obsoletus obsoletus= Rallus longirostris obsoletus	California Ridgway's rail	FE/CE, FP/--	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**No Potential.** Although suitable marsh habitat for the species occurs in the project area at Pillar Point Wetlands Salt Marsh, there are no recent records of Ridgways' Rail from the project area (closest records from salt marshes around south San Francisco Bay) (CDFW 2020, eBird 2020). The rail was extirpated from much of the region following marsh habitat loss in the late 1800s and early 1900s (USFWS 2013). Therefore, this species is excluded from further
Sterna antillarum browni = Sternula antillarum browni	California least tern	FE/CE, FP/--	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**Low Potential.** Extremely rare off the coast of San Mateo. Species currently nests at Alameda Naval Air Station as well as Hayward Regional Seashore and Eden Landing. There are no known nesting colonies in or near the project area.
Reptiles				
Caretta caretta	North Pacific loggerhead sea turtle	FE/--/--	Open sea to more than 500 miles from shore, mostly over continental shelf, and in bays, estuaries, lagoons, creeks, and mouths of rivers; mainly warm temperate and subtropical regions not far from shorelines.	**No Potential.** No proposed work or associated impacts extend into deep water.
Chelonia mydas	East Pacific green sea turtle	FT/--/--	Open ocean. Completely herbivorous; needs adequate supply of seagrasses and algae.	**No Potential.** No proposed work or associated impacts extend into deep water.
Dermochelys coriacea	Leatherback sea turtle	FE/--/--	Open ocean. Also seas, gulfs, bays, and estuaries. Seldom approaches land except for nesting.	**No Potential.** No proposed work or associated impacts extend into deep water. Critical habitat present.
Emys marmorata	western pond turtle	--/CSC/--	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 feet elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Low Potential.** The closest record for this species is <1,000 feet in the freshwater portion of Pillar Point Marsh. No proposed work within marsh or suitable nesting habitat.
Lepidochelys olivacea	Olive Ridley sea turtle	FE/--/--	Tropical and subtropical waters including protected, shallow, marine and estuarine waters, bays and lagoons, to offshore areas. Nesting occurs on upper beaches.	**No Potential.** No proposed work or associated impacts extend into deep water.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Thamnophis sirtalis tetrataenia	San Francisco gartersnake	FE/SE, FP/--	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	**High Potential.** There is suitable habitat near and within the Study Area. There are six occurrences within a quarter-mile of the proposed project area with the most recent occurrence as recently as 2016.
Amphibians				
Dicamptodon ensatus	California giant salamander	--/CSC/--	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	**Low Potential.** There are no cold, clear streams or lakes in or near the Study Area. The nearest CNDDB occurrence is from 1997 and is almost 6 miles from the Study Area.
Rana boylii	foothill yellow-legged frog	--/SC, CSC/--	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**No Potential.** There are no shallow streams with riffles or rocky substrate within or near the Study Area. The nearest CNDDB occurrence for this species from an unknown year sometime between 1914 and 1938 and is over six miles from the proposed project area.
Rana draytonii	California red-legged frog	FT/CSC/--	Lowlands and foothills in or near sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**Moderate Potential**. This species has been documented in the freshwater portion of Pillar Point Marsh.
Fish				
Acipenser medirostris	sDPS Green Sturgeon	FT/CSC/--	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento, Klamath, & Trinity Rivers. Spawns at temps between 8-14 C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	**Low Potential.** Although potentially present offshore, no proposed work or associated impacts extend into deep marine waters.
Eucyclogobius newberryi	Tidewater Goby	FE/CSC/--	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	**Low Potential.** No records in the immediate project vicinity.
Hypomesus transpaci	Delta Smelt	FT/SE/--	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	**No Potential.** Not within the range of the species.

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Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Oncorhynchus kisutch pop. 4	Central California Coast Coho ESU	FT/SE/--	Federal listing includes populations between Punta Gorda & San Lorenzo River. State listing includes populations south of Punta Gorda. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water & sufficient dissolved oxygen.	**Moderate Potential.** Potentially present offshore, however no proposed work or associated impacts extend into deep water.
Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	FT/--/--	DPS includes all naturally spawned populations of steelhead (and their progeny) in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). Also includes the drainages of San Francisco and San Pablo Bays.	**Moderate Potential.** Potentially present offshore, however no proposed work or associated impacts extend into deep water.
Spirinchus thaleichthys	longfin smelt	FC/ST/--	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	**Low Potential.** Potentially present offshore, however no proposed work or associated impacts extend into deep water. No spawning habitat present.
Mollusks				
Haliotis cracherodii	Range Black Abalone	FE/--/--	Mid to low rocky intertidal areas. Ranges from Point Arena, California, to Bahia Tortugas and Isla Guadalupe, Mexico. They are typically not found north of San Francisco or south of Punta Eugenia. Population densities have historically been greatest south of Monterey, especially around the Channel Islands off the coast of southern California. Black abalone live on rocky substrates in intertidal and shallow subtidal reefs (to about 18 feet deep) along the coast. They typically occur in habitats with complex surfaces and deep crevices that provide shelter for juveniles and adults. Because they occur in coastal habitats, black abalone can withstand extreme variations in temperature, salinity, moisture, and wave action.	**Low Potential.** Critical habitat present and extends from MHHW to -6.0 meters in depth. There are no CNDDB occurrences reported in the marine waters off of San Mateo County. The closest record for this species is approximately 33 miles south of the proposed project area.
Insects				
Bombus caliginosus	Obscure bumble bee	--/SC/--	Coastal areas from Santa Barabara county to north to Washington state. Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.	**Low Potential.** Food plants present in Project area. However, this species has not been reported in either the Montara Mountain or Half Moon Bay quadrangles since 1967. The nearest CNDDB occurrence is about 1.5 miles away near Moss Beach in 1929. The most recent occurrence was from more than 6 miles way near Calera Valley. Most of its food plants exist in the Action Area and could attract this pollinator.

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SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Bombus occidentalis	Western bumble bee	--/SC/--	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	**Low Potential.** This species has not been reported in either the Montara Mountain or Half Moon Bay quadrangles since 1968. The nearest CNDDB occurrence is about 4 miles away near Half Moon Bay in 1953. The most recent occurrence was from more than 6 miles way near Calera Valley.
Callophrys mossii bayensis	San Bruno elfin butterfly	FE/--/--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is Sedum spathulifolium.	**Low Potential.** The nearest CNDDB occurrence is almost 4 miles away from the project area. No host plants were seen in the project area.
Danaus plexippus pop. 1	monarch - California overwintering population	--/--/--	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Moderate Potential.** The nearest CNDDB occurrence is within a mile of the project area. If the Project is constructed during the winter, September through March, could encounter overwintering monarchs or dispersing monarchs in the area (Western Association of Fish and Wildlife Agencies 2019).
Ischnura gemina	San Francisco forktail damselfly	--/--/--	Endemic to the San Francisco Bay area. Small, marshy ponds and ditches with emergent and floating aquatic vegetation.	**Low Potential.** There is potential habitat for this species in the Action Area, but the nearest CNDDB occurrence is almost 10 miles away and current range limits are poorly known.
Lichnanthe ursina	Bumblebee scarab beetle	--/--/--	Inhabits coastal sand dunes from Sonoma County south to San Mateo County. Usually flies close to sand surface near the crest of the dunes.	**Low Potential.** The nearest CNDDB occurrence is a little over 7.5 miles away. Most recent sightings are from Marin, near Tomales Bay.
Plebejus icarioides missionensis	Mission blue butterfly	FE/--/--	Inhabits grasslands of the San Francisco Peninsula. Three larval host plants: Lupinus albifrons, L. variicolor, and L. formosus, of which L. albifrons is favored.	**Low Potential.** A bush lupine and potential host plant, Lupinus arboreus, exists in the Action Area. The nearest CNDDB occurrence, however, is over 7 miles away.
Speyeria zerene myrtleae	Myrtle's silverspot butterfly	FE/--/--	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be Viola adunca.	**No Potential.** The nearest CNDDB occurrence is a little over 6.5 miles away but the subspecies is believed extirpated from the county.
Lichens				
Hypogymnia schizidiata	Island rock lichen	--/--/1B.3	Chaparral, closed-cone coniferous forest. On bark and wood of hardwoods and conifers. 255-545 m.	**Low Potential.** Habitat exists in the project area; however, it is outside the elevation range for this species. The nearest CNDDB occurrence is a little over 4 miles away.
Bryophytes				
Triquetrella californica	Coastal triquetrella	--/--/1B.2	Grows within 30m from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. 20-1175 m.	**Moderate Potential.** Habitat exists in the project area, but it was not observed by Jane Valerius during the 2014 May or July surveys.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Plants				
Amsinckia lunaris	bent-flowered fiddleneck	--/--/1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland.	**Low Potential.** Habitat exists in the project area, but it was not observed by Jane Valerius during the 2014 May or July surveys. The nearest CNDDB occurrence is more than 7 miles away. Therefore, this species is excluded from further consideration.
Arabis blepharophylla	coast rockcress	--/--/4.3	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub	**Low Potential.** Habitat exists in the project area, but it was not observed by Jane Valerius during the 2014 May or July surveys. The nearest CCH occurrence is less than 4 miles from the Project Site.
Arctostaphylos montaraensis	Montara manzanita	--/--/1B.2	Chaparral, coastal scrub. Slopes and ridges. 270-460 m.	**Low Potential.** The nearest CNDDB occurrence is less than 4 miles from the Project Site, however, the elevation of the Project Site is outside the range for this species. In addition, no species of manzanita were observed in the study area during the 2014 surveys.
Arctostaphylos regismontana	Kings Mountain manzanita	--/--/1B.2	Broadleafed upland forest, chaparral, north coast coniferous forest. Granitic or sandstone outcrops. 240-705 m.	**Low Potential.** The nearest CNDDB occurrence is less than 4 miles from the Project Site, however, the elevation of the Project Site is outside the range for this species. In addition, no species of manzanita were observed in the study area during the 2014 surveys.
Astragalus nuttallii var. *nuttallii*	ocean bluff milk-vetch	--/--/4.2	Coastal bluff scrub, Coastal dunes	**Low Potential.** Habitat exists in the project area, but it was not observed by Jane Valerius during the 2014 May or July surveys. The nearest CCH occurrence is more than 7 miles from the Project Site.
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	--/--/1B.2	Coastal dunes, marshes and swamps, coastal scrub. Mesic sites in dunes or along streams or coastal salt marshes. 0-155 m.	**High Potential.** Potential habitat exists in the study area and there is a CNDDB record from Pillar Point. It has not been seen since 1902, however, and was not observed in action area by Jane Valerius during the 2014 May and July surveys.
Castilleja ambigua var. *ambigua*	johnny-nip	--/--/4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools margins	**High Potential.** According to Consortium of California Herbaria, the nearest occurrence was located in 1914, 1.5 miles away near El Granada. The most recent collection near the study area is from 2015, 2.4 miles away near Moss Beach. Coastal prairie and scrub habitat are present in the study area and a Castilleja species was observed within the area during the May 28 and July 2014 surveys, but the species was not determined.

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Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Centromadia parryi ssp. *parryi*	pappose tarplant	--/--/1B.2	Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland.	**Low Potential.** Habitat for this species occurs in the project area, however most of the CNDDB occurrences exist north of the San Francisco Bay. Two outlying populations south of it are more than 7.5 miles from the Project Site.
Chorizanthe cuspidata var. *cuspidata*	San Francisco Bay spineflower	--/--/1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Closely related to C. pungens. Sandy soil on terraces and slopes. 2-550 m.	**Low Potential.** Habitat for this species occurs in the project area, however the nearest CNDDB occurrence is more than 8 miles away.
Cirsium andrewsii	Franciscan thistle	--/--/1B.2	Coastal bluff scrub, broadleafed upland forest, coastal scrub, coastal prairie. Sometimes serpentine seeps. 0-295 m.	**Low Potential.** Habitat for this species occurs in the project area, however no serpentine substrate is present nor are there seeps. The nearest CNDDB occurrence is more than 4.5 miles away.
Collinsia multicolor	San Francisco collinsia	--/--/1B.2	Closed-cone coniferous forest, coastal scrub. On decomposed shale (mudstone) mixed with humus; sometimes on serpentine. 10-275 m.	**Low Potential.** The project area does not contain suitable habitat or soil conditions to support this species. The nearest CNDDB occurrence is about 4 miles away.
Dirca occidentalis	western leatherwood	--/--/1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 20-640 m.	**No Potential.** The project area does not contain suitable habitat to support this species and, according to Jepson eFlora, is not known to occur in the same ecoregion zone. The nearest CNDDB occurrence is more than 4.5 miles away.
Eriophyllum latilobum	San Mateo woolly sunflower	FE/SE/1B.1	Cismontane woodland, coastal scrub, lower montane coniferous forest. Often on roadcuts; found on and off of serpentine. 30-610 m.	**Low Potential.** The project area does not contain suitable habitat and is outside the elevation range to support this species. The nearest CNDDB occurrence is more than 6.5 miles away.
Erysimum franciscanum	San Francisco wallflower	--/--/4.2	Chaparral, Coastal dunes, Coastal scrub, Valley and foothill grassland. Often serpentinite or granitic, sometimes roadsides	**Low Potential.** The project area does not contain serpentinite substrate to support this species. The nearest CNDDB occurrence is more than 4 miles north.
Grindelia hirsutula var. *maritima*	San Francisco gumplant	--/--/3.2	Coastal scrub, coastal bluff scrub, valley and foothill grassland. Sandy or serpentine slopes, sea bluffs. 15-305 m.	**Low Potential.** Jepson eFlora no longer recognizes this variety. CNPS Inventory of Rare and Endangered Plants states, "May be a hybrid between G. hirsutula var. hirsutula and G. stricta var. platyphylla or G. stricta var. angustifolia; needs further study." Furthermore, the project area does not contain serpentinite substrate to support this species or variety.
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	--/--/1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie. Sandy bluffs and flats. 0-640 m.	**Low Potential.** The nearest CNDDB occurrences are located about 7.5 miles away. Ideal habitat for this species does not occur in the project area.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Horkelia cuneata var. *sericea*	Kellogg's horkelia	--/--/IB.1	Closed-cone coniferous forest, coastal scrub, coastal dunes, chaparral. Old dunes, coastal sandhills; openings. Sandy or gravelly soils. 5-430 m.	**Low Potential.** The nearest CNDDB occurrences are located about 4 miles away. Ideal habitat for this species does not occur in the project area.
Horkelia marinensis	Point Reyes horkelia	--/--/1B.2	Coastal dunes, coastal prairie, coastal scrub. Sandy flats and dunes near coast; in grassland or scrub plant communities. 2-775 m.	**Low Potential.** The nearest CNDDB occurrence is located more than 8 miles away. Ideal habitat for this species does not occur in the project area.
Lasthenia californica ssp. *macrantha*	perennial goldfields	--/--/1B.2	Coastal bluff scrub, coastal dunes, coastal scrub. 5-185 m.	**Moderate Potential.** The nearest CNDDB occurrences are located 3.5 miles north near the town of Montara and south near the town of Half Moon Bay. Coastal dune and scrub habitat are present in the study area.
Leptosiphon croceus	coast yellow leptosiphon	--/SC/1B.1	Coastal bluff scrub, coastal prairie. 10-150 m.	**Low Potential.** The type locality for this species is located about 2 miles from the project area. There is habitat within the project area, on top of the bluff, where this species could grow. This species is only known to occur on Vallemar Bluff in Moss Beach.
Leptosiphon rosaceus	rose leptosiphon	--/--/1B.1	Coastal bluff scrub. 10-140 m.	**High Potential.** Habitat for this species exists in the project area. There is a CNDDB occurrence reported from the top of the project area's bluff from 2014. There are also occurrences from Montara Point, Moss Beach and Pacifica. Jane Valerius did not observe this species in 2014.
Lessingia arachnoidea	Crystal Springs lessingia	--/--/1B.2	Coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentine; sometimes on roadsides. 90-200 m.	**No Potential.** The project area is outside the elevation range for this species and, according to Jepson eFlora, is not known to occur in the same ecoregion zone. In addition, soils in the Action Area are not clayey or serpentinite. The nearest CCH record is a little over 5 miles from the Project Site.
Lessingia hololeuca	woolly-headed lessingia	--/--/3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland. Clay and serpentine soils. 15 - 305 m.	**No Potential.** The project area is outside the elevation range for this species and, according to Jepson eFlora, is not known to occur in the same ecoregion zone (Jepson eFlora 2020). In addition, soils in the Action Area are not clayey or serpentinite. The nearest CCH record is a little over 5 miles from the Project Site.
Limnanthes douglasii ssp. *ornduffii*	Ornduff's meadowfoam	--/--/1B.1	Meadows and seeps, agricultural fields. 5-15 m.	**Low Potential.** A CNDDB occurrence for this species is within one mile of the study area. However, as it is only known from one agricultural field.
Lupinus arboreus var. *eximius*	San Mateo tree lupine	--/--/3.2	Chaparral, Coastal scrub	**Present.** This species was observed by Jane Valerius in 2014 within the study area.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Malacothamnus aboriginum	Indian Valley bush-mallow	--/--/1B.2	Chaparral, Cismontane woodland. Rocky, granitic, often in burned areas. 150 - 1700 m.	**No Potential.** The project area is outside the elevation range for this species and, according to Jepson eFlora, is not known to occur in the same ecoregion zone (Jepson eFlora 2020). The nearest CCH record is about 5.5 miles from the Project Site.
Malacothamnus arcuatus	arcuate bush-mallow	--/--/1B.2	Chaparral, cismontane woodland. Gravelly alluvium. 1-735 m.	**No Potential.** According to Jepson eFlora, is not known to occur in the same ecoregion zone as the project area. The nearest CNDDB record is about 4.5 miles from the Project Site.
Malacothamnus davidsonii	Davidson's bush-mallow	--/--/1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. Elevation 185 - 1140 m.	**No Potential.** The project area is outside the elevation range for this species and, according to Jepson eFlora, is not known to occur in the same ecoregion zone. The nearest CCH record is about 5.5 miles from the Project Site.
Malacothamnus hallii	Hall's bush-mallow	--/--/1B.2	Chaparral, Coastal scrub. Elevation 10 - 760 m.	**No Potential.** The project area is outside the elevation range for this species and, according to Jepson eFlora, is not known to occur in the same ecoregion zone. The nearest CCH record is about 5.5 miles from the Project Site.
Monolopia gracilens	woodland woolythreads	--/--/1B.2	Chaparral, valley and foothill grassland, cismontane woodland, broadleafed upland forest, North Coast coniferous forest. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine. 120-975 m.	**No Potential.** The project area is outside the elevation range for this species and does contain serpentine substrate. The nearest CNDDB occurrence is more than 4 miles from the Project Site.
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	--/--/1B.2	Chaparral, coastal scrub, coastal prairie. Mesic sites. 5-705 m.	**Moderate Potential.** The nearest CNDDB occurrence is a little over 3 miles from the Project Site, near Half Moon Bay, and grows in similar conditions project area. It was not observed in the project area by Jane Valerius during the 2014 May and July surveys.
Polemonium carneum	Oregon polemonium	--/--/2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. 15-1525 m.	**No Potential.** The Project Site is outside the elevation range for this species. The nearest CNDDB occurrence is a little under 5 miles from the Project Site.
Potentilla hickmanii	Hickman's cinquefoil	FE/SE/1B.1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps. Freshwater marshes, seeps, and small streams in open or forested areas along the coast. 5-125 m.	**Low Potential. Within San Mateo county, only two populations known and are north of the proposed project area.** The nearest CNDDB occurrence is about 1.5 miles from the Project Site, near Moss Beach. It was not observed by Jane Valerius during the 2014 May survey. The common Potentilla anserina ssp. pacifica was present however.
Silene scouleri ssp. *scouleri*	Scouler's catchfly	--/--/2B.2	Coastal bluff scrub, coastal prairie, valley and foothill grassland. 5-315 m.	**Low Potential.** The nearest CNDDB occurrence is more than 4 miles from the Project Site.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Silene verecunda ssp. *verecunda*	San Francisco campion	--/--/1B.2	Coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, coastal prairie. Often on mudstone or shale; one site on serpentine. 30-645 m.	**Moderate Potential.** The nearest CNDDB occurrence is within 3 miles of the Project Site. Coastal prairie habitat is present on top of the plateau.
Triphysaria floribunda	San Francisco owl's-clover	--/--/1B.2	Coastal prairie, coastal scrub, valley and foothill grassland. On serpentine and non-serpentine substrate (such as at Pt. Reyes). 1-150 m.	**Low Potential.** The nearest CNDDB occurrence is within 1 mile of the Project Site, but the CNPS Inventory of Rare and Endangered Plants states this species usually grows on serpentinite. Coastal prairie habitat is present on top of the plateau.
Agrostis blasdalei	Blasdale's bent grass	--/--/1B.2	Coastal dunes, coastal bluff scrub, coastal prairie. Sandy or gravelly soil close to rocks; often in nutrient-poor soil with sparse vegetation. 5-365 m.	**High Potential.** The nearest CNDDB occurrence is from 2015 and within 2.5 miles of the Project Site. Coastal prairie habitat is present on top of the plateau.
Allium peninsulare var. *franciscanum*	Franciscan onion	--/--/1B.2	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine; sometimes on volcanics. Dry hillsides. 5-320 m.	**No Potential.** The nearest CNDDB occurrence is more than 6 miles from the Project Site. In addition, the project area does not have clay soils or serpentine substrate.
Cypripedium fasciculatum	clustered lady's-slipper	--/--/4.2	Lower montane coniferous forest, North Coast coniferous forest, usually serpentinite seeps and streambanks	**No Potential.** The Project Site is outside of this species elevation range and serpentinite substrate does not exist in the project area. Consortium of California Herbaria records shows occurrences of this species in the coastal mountains.
Elymus californicus	California bottle-brush grass	--/--/4.3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland. Elevation range 15 - 470 m.	**No Potential.** The Project Site is outside of this species elevation range. The nearest CNDDB record is about 3 miles away near Montara Mountain.
Fritillaria biflora var. *ineziana*	Hillsborough chocolate lily	--/--/1B.1	Cismontane woodland, valley and foothill grassland. Probably only on serpentine; most recent site is in serpentine grassland. 90-170 m.	**No Potential.** The Project Site is outside of this species elevation range. The nearest CNDDB record is about 7.5 miles away.
Fritillaria lanceolata var. *tristulis*= *Fritillaria affinis*	Marin checker lily	--/--/1B.1	Coastal bluff scrub, Coastal prairie, Coastal scrub. Elevation range 15 - 150 m.	**No Potential.** The Project Site is outside of this species elevation range. There are no CNDDB records in San Mateo County.
Fritillaria liliacea	fragrant fritillary	--/--/1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3-385 m.	**No Potential.** The nearest CNDDB occurrence is more than 4 miles from the Project Site. In addition, the project area does not have clay soils or serpentine substrate.
Iris longipetala	coast iris	--/--/4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps	**Moderate Potential.** The nearest CNDDB occurrence is within 2.5 miles of the Project Site, near Half Moon Bay. Coastal prairie habitat is present on top of the plateau.

TABLE E-1
SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE PILLAR POINT HARBOR WEST TRAIL LIVING SHORELINE PROJECT SITE

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence
Habitats				
Northern Coastal Salt Marsh				**Present.** This habitat is present in study area and is recorded in the CNDDB.
Northern Maritime Chaparral				**No Potential.** This habitat is does not occur in the project area. No species of manzanita were observed in the study area during the 2014 surveys. The nearest CNDDB occurrence is about 6 miles away.
Serpentine Bunchgrass				**No Potential.** There is no serpentine substrate in the project area.
Valley Needlegrass Grassland				**Low Potential.** This habitat is unlikely to occur in the project area. The nearest CNDDB occurrence is about 6 miles away.

KEY:

Federal: (USFWS)

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FC = Candidate for listing by the Federal Government

State: (CDFW)

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SR = Listed as Rare by the State of California (plants only)
SC = Candidate for listing by the State of California
CSC = California Species of Special Concern
FP = CDFW Fully Protected Species
WL = Species on the CDFW Watch List

CRPR: (California Rare Plant Rank)

Rank 1A = Plants presumed extinct in California
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
Rank 2 = Plants rare, threatened, or endangered in California but more common elsewhere
Rank 3 = Need more information
Rank 4 = Limited distribution – a watch list
0.1 = Seriously endangered in California
0.2 = Fairly endangered in California
0.3 = Not very endangered in California
– = No Listing

SOURCES: California Department of Fish and Wildlife, 2020a. California Natural Diversity Database RareFind 5 personal computer program (ver. 5.2.14). Available: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed May 6, 2020; California Native Plant Society, 2019. Rare Plant Program. Inventory of Rare and Endangered Plants (online edition, v8-03 0.39). California Native Plant Society. Sacramento, CA. Available: http://rareplants.cnps.org/. Accessed May 6, 2020; and U.S. Fish and Wildlife Service, 2020a. List of Threatened and Endangered Species that May Occur in the Proposed Project Location, and/or May be Affected by the Proposed Project. Available: https://ecos.fws.gov/ipac/. Accessed May 6, 2020.

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