Terrestrial Biological Report

Humboldt Bay Offshore Wind Heavy Lift Marine Terminal

New Navy Base Road
Samoa, California

Prepared for:

Moffat and Nichol

January 2024

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Abbreviations and Acronyms

Terms of Measure

°C	degrees Celsius
cm	centimeter
°F	degrees Fahrenheit
ft	feet
ha	hectare
km	kilometer
mm	millimeter

Additional Terms

BIOS	Biogeographical Information and Observation System
C	candidate species status
CALFIRE	California Department of Forestry and Fire Protections
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CRPR	California Rare Plant Rank
CT	candidate threatened species status
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
D	delisted species status
DPS	Distinct population segment/species status
E	endangered species status
EPA	United States Environmental Protection Agency
ESHA	Environmentally Sensitive Habitat Area
ESU	evolutionarily significant unit/species status
FESA	Federal Endangered Species Act
FP	fully protected species status
FRAP	Fire and Resource Assessment Program
G	global rank
G1/S1	critically imperiled species heritage rank
G2/S2	imperiled species heritage rank
G3/S3	vulnerable species heritage rank
G4/S4	apparently secure species heritage rank
G5/S5	secure species heritage rank
GIS	Geographic Information System
GPS	Global Positioning System
HBAP	Humboldt Bay Area Plan
IPaC	Information for Planning and Conservation
MBTA	Migratory Bird Treaty Act
MF	manufacturing/fabrication
MHHW	Mean Higher High Water
MLLW	mean lower low water
NAD	North American Datum
NAVD	North American Vertical Datum 1988
NCCP	Natural Community Conservation Planning
NCDC	National Climatic Data Center
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPPA	Native Plant Protection Act
O&M	operation and maintenance
PCS	projected coordinate system
PT	proposed threatened species status

Abbreviations and Acronyms, Continued

RA	rapid assessment
RSL	Remote Sensing Laboratory
RWQCB	Regional Water Quality Control Board
S	state rank
S&I	staging and integration
SSC	species of special concern
SWRCB	State Water Resources Control Board
T	threatened species status
UAV	unoccupied aerial vehicle
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTM	Universal Transverse Marcator
VegCAMP	Vegetation Classification and Mapping Program
WDR	Waste Discharge Requirement
WGS	World Geodetic System
WHSRN	Western Hemisphere Shorebird Reserve Network
WL	watch list species status
WTD	Wind Turbine Devices

1.0 Introduction

This report presents the methods and results of the botanical and wildlife surveys conducted for special-status plants, special-status wildlife species, sensitive natural communities, and other non-wetland ESHA for the Humboldt Bay Offshore Wind Heavy Lift Marine Terminal (Project) in Samoa, California. SHN has conducted literature review, seasonally appropriate surveys, and habitat assessments to determine habitat conditions and terrestrial biological resources present within the study area of the Project. The results of this Terrestrial Biological Report will support permitting and CEQA, inform planning for the proposed Project and is intended as baseline information. This report does not include aquatic species or marine mammals which are addressed in other studies being completed concurrently for this Project. Impact analysis and recommendations for avoiding and minimizing impacts due to proposed Project activities are not part of this report.

1.1 Project Location

The Project is located on the Samoa Peninsula, a narrow peninsula that separates Humboldt Bay from the Pacific Ocean (Appendix 1, Figure 1). It is less than one mile west of the City of Eureka and is located on the west shore of Humboldt Bay, facing the City.

The Project is in the Eureka Geological Survey (USGS) 7.5-minute quadrangle Sections 15, 16, and 21 Township 5 North, and Range 01 West (USGS, 2023). The Project extends from approximately 40.804109°, -124.190579° in the south to 40.824341°, -124.173410° in the north. The Project area is accessed via multiple entry points off New Navy Base Road, which is accessed via CA 255 from U.S. Highway 101 in Eureka from the south or Arcata from the north.

1.2 Study Area

The study area encompasses 228.367 acres of land located on the Samoa peninsula and the western shore of Humboldt Bay (Appendix 1, Figures 1 and 2). This area includes (1) the proposed 180-acre development footprint, (2) a potential mitigation area, (3) a proposed solar array location atop a former ash landfill, (4) a mariculture relocation area on Woodley Island, and (5) a buffer area around the Project for analysis of coastal resources and potential impact areas for ingress/egress and supporting infrastructure. The majority of the study area has a long industrial history of forest product manufacturing that has resulted in significant grading, infilling, and expansion over previous intertidal and dune lands along the Humboldt Bay shoreline. Most of the study area has been previously developed with paved surfaces, foundations, drainageways, and compacted soils remaining, following demolitions of structures and industrial facilities. Consequently, much of the site is dominated by non-native, ruderal species or is unvegetated, where concrete and asphalt remain. Natural vegetation still occurs within the study area, but it is sparse and intermittent, separated by large, formerly developed areas. Intact native vegetation occurs along the periphery of the study area, especially along Humboldt Bay in the northern portion of the study area and along Vance Avenue in the southwestern portion of the study area. A 25.879-acre portion of the study area within the 180-acre development footprint was not surveyed due to a lack of permission to access. This area is shown on figures as not surveyed (see Appendix 1, Figure 2).

1.3 Executive Summary

Special-status plants, animals, and habitats occur within the study area. Three special-status plant species occur within the study area, with additional species observed just outside of the study area. Nine special-status wildlife species were observed or detected within, adjacent, or flying over the study area.

Ten Sensitive Natural Communities occur and are mapped within the study area, totaling 10.62 acres. These results are discussed in detail in Section 6 and are shown in Appendix 1, Figures 2 through 14.

2.0 Project Description

The proposed Project will include the redevelopment of the approximate 180-acre site on the Samoa Peninsula, which will provide a new multipurpose, heavy-lift marine terminal facility to support the offshore wind energy industry and other coastal-dependent industries.

The Project will include the facilities required to service the offshore wind industry, including:

a. Onsite manufacturing/fabrication (MF) facilities that:

i. Receive deliveries of raw materials and large offshore wind components primarily via waterborne transport.

ii. Create larger components in the offshore wind supply chain, such as blades, towers, nacelles (turbine hubs), mooring lines, anchors, transmission cables, and/or floating foundations.

iii. Include a range of buildings, including manufacturing facilities, transit sheds, offices, and/or warehouse buildings.

iv. Provide space for storage of completed components.

b. Staging and integration (SandI) facilities that include:

i. Wharf/terminal/yard facilities designed to receive, stage, and store offshore wind components, including ship-to-shore unloading capability, fixed position ring crane unloading capability, crawler crane unloading capability, and/or roll-on / roll-off capability.

ii. Heavy-lift wharfs with high-bearing capacities that can support large cranes capable of:

1. Conducting the final assembly of floating foundations.

2. Vertically integrating the various offshore wind components into deployment-ready fully-constructed floating offshore Wind Turbine Devices (WTDs).

3. Performing major maintenance on previously-deployed WTDs that must be towed back to port for repairs that cannot otherwise be performed in the offshore wind area, such as replacement of a nacelle or blade.

4. Decommissioning, disassembling, recycling, and disposing of WTDs that are at end of life.

iii. Berths adjacent to the heavy-lift wharfs within which:

1. Floating foundations can be launched, potentially with a sinking basin.

2. All components can be vertically integrated together on top of a floating foundation.

3. WTDs can be repaired, maintained, and/or decommissioned.

4. WTDs can be towed out of the bay and into the ocean.

c. Operation and Maintenance (O&M) facilities that can serve as a base of wind farm operations with warehouses/offices, spare part storage, and marine facility to support vessel provisioning and refueling/charging for O&M vessels during the operational period of the offshore wind farm.

d. Wet storage space in which floating foundations or WTDs can be temporarily moored to mitigate the risk of weather downtime, vessel traffic, entrance channel congestion, and other transportation risks. These will take two forms:

    i. On-terminal wet storage occurs immediately offshore of the site and is accessed via small piers and gangways in which workers and small wheeled equipment can access floating turbines, typically fully-integrated WTDs that are near-ready to deploy to the ocean.

    ii. Off-terminal wet storage occurs away from the immediate site, but also outside of the Federal navigation channels.

In order to accomplish the above, the Project includes demolition of existing structures, site preparation, marine terminal construction, dredging, establishment of wet storage sites, and habitat restoration. Project activities that may impact wetlands documented in this report are described below:

Demolition and Construction Upland Development Subarea

The following activities may occur within the Upland Development Subarea, which is the 180-acre Project area analyzed in this report.

1. Vegetation clearing and grubbing.
2. Demolition.
    a. Demolish and remove existing buildings and structures.
    b. Demolish existing asphalt, concrete, and remnant foundations of previously demolished buildings/structures. Some of these materials may be ground onsite and re-used as fill material. Unused material will be disposed of at an appropriately permitted location.
3. Remove, reuse, relocate, update, and/or modernize existing utilities including:
    a. Water storage tanks.
    b. Power poles and lines.
    c. Underground industrial water lines.
    d. Underground domestic water lines.
    e. Underground baywater water lines.
    f. Telecommunication lines.
    g. Gas lines.
    h. Sanitary sewer.
    i. Stormwater systems.

4. Cut, fill, and site regrading in anticipation of sea level rise to obtain final ground elevations between +13 to +17 feet North American Vertical Datum 1988 (NAVD88; such as: +12.66 to +16.66 Mean Lower Low Water [MLLW]). Dredge material and/or upland sources may be used as imported fill.
5. Import and install compacted gravel throughout the site for a finished wear surface.
6. Asphalt roads and parking areas in certain discrete areas (for example, a 200-space parking lot and areas near buildings).
7. Construct approximately 650,000 square feet of building space for manufacturing, repairs, offices, restrooms, and storage.
8. Construct internal transportation network of paved and/or compacted gravel roads.
9. If needed, improve up to two intersections on New Navy Base Road and the intersection of Cookhouse Road and Vance Avenue.
10. Install high mast terminal lighting (approximately 150 feet [ft] high) around the perimeter of the site and other, shorter lighting as needed.
11. Make drainage improvements for stormwater, which may include retention ponds, detention ponds, bioswales, and subsurface detention.
12. Install charging infrastructure for electric vehicles and electrified construction equipment such as forklifts.
13. Install fueling stations for land-based vehicles.
14. Install connection to electricity substation currently located directly south of the Project site.
15. Install solar panels on ash landfill and connect to substation.

Marine Development Subarea

The following activities may occur within the Marine Development Subarea.

1. Demolish an existing approximate 6-acre wooden dock at Terminal I and No Name Dock.
2. Construct up to three wharfs totaling a maximum of approximately 2,500 ft along the shoreline. The wharfs will consist of pile supported, vessel berth structures. This will include installation of steel and/or concrete piles. These wharfs could be discontinuous from one another or cojoined to one another.
3. Dredge berths between the newly constructed wharfs and the federal navigation channel to approximately – 40 ft Mean Low Lower Water (MLLW) for deep draft cargo vessel access and WTD construction activities.
4. Dredge a sinking basin to approximately -60 ft MLLW to accommodate semi-submersible vessel operations for device float off.
5. Construct a pier and associated gangways to an on-terminal wet storage facility. An on-terminal wet storage berth will be dredged between the pier/gangways and the federal navigation channel to a depth of up to -40 ft MLLW. The pier and gangways will allow land-based access of workers and small wheeled equipment to these temporarily-stored units.

3.0 Methods

3.1 Literature Review

This Terrestrial Biological Report includes a review of pertinent literature on habitat characteristics of the site, and a review of information related to special-status plant and animal species that could potentially use the described habitats. "Special-status species" are defined by the California Department of Fish and Wildlife (2023) as those "species, subspecies, or Evolutionarily Significant Units (ESU) where at least one of the following conditions applies:

- Officially listed or proposed for listing under the State and/or Federal Endangered Species Acts;
- Taxa considered by the Department to be a Species of Special Concern (SSC); - Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act Guidelines;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g. wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.);
- Taxa designated as a special-status, sensitive, or declining species by other state or federal agencies, or a non-governmental organization (NGO) and determined by the California Natural Diversity Database to be rare, restricted, declining, or threatened across their range in California."

The findings for this report are the result of several sources, including a review of existing literature regarding sensitive resources that have the potential to occur within the site. Resources for this determination included:

- California Natural Diversity Database (CNDDB) query for the Eureka and surrounding USGS 7.5-minute topographic quadrangles (Tyee City, Arcata North, Arcata South, Cannibal Island, Fields Landing, and McWhinney Creek; California Department of Fish and Wildlife [CDFW], 2023a)
- Biogeographical Information and Observation System (BIOS; CDFW, 2023b)
- Electronic Inventory of Rare and Endangered Vascular Plants of California (California Native Plant Society (CNPS), 2023a) queried for a list of all plant species reported for the Eureka and surrounding USGS 7.5-minute topographic quadrangles
- Special Vascular Plants, Bryophytes, and Lichens of California List (CDFW, 2023c)
- Special Animals of California List (CDFW, 2023d)
- Vegetation Classification and Mapping Program (VegCAMP), "Natural Communities List" (CDFW, 2023e)
- California Wildlife Habitat Relationships (CWHR) system (CDFW, 2023f)

- United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) query for threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the study area, and/or may be affected by, the proposed Project (USFWS, 2023a)
- USFWS Threatened and Endangered Species Active Critical Habitat Report Geographic Information System (GIS) database (USFWS, 2023b)
- eBird: An online database of bird distribution and abundance (eBird, 2023)

From the database queries, a list of species potentially occurring within the study area was compiled. Tables 2-1 and 2-2 in Appendix 2 include species reported by the CNDDB and USFWS, and species listed in the CNPS inventory of rare plants. Federally protected species on the IPaC list (Appendix 3) are included in the comprehensive database query list.

The scoping list includes a total of 49 sensitive botanical species documented within the Eureka and surrounding quadrangle assessment area (Appendix 2, Table 2-1). The potential for each special-status plant taxon to occur within the study area was rated as low, moderate, high, or none depending on the evaluation of the following factors: current geographic and elevational distribution, documented database (CNDDB, CNPS, and IPaC) occurrence information, known habitat associations, and vegetation and soil type preferences. Potential to occur ratings were defined as:

- *None*: No suitable habitat present within the study area; study area is outside of species documented distribution and elevation range, species primarily occurs on serpentine soils, and/or species has generally not been documented within 10 miles of the study area.
- *Low*: Low-quality suitable habitat present within study area; study area is within the species documented distribution and elevation range and/or species has generally (with some exceptions) been documented within 10 miles of the study area.
- *Moderate*: Moderate-quality suitable habitat present within study area; study area is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within 5 miles of the study area.
- *High*: High-quality suitable habitat present within study area; study area is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within the study area or within 1 mile of the study area.

Based on the evaluation of the factors discussed above, 26 of the plant taxa on the scoping list had the potential to occur within the study area:

- 12 special-status plant taxa with high potential to occur[1];
- 6 special-status plant taxa with moderate potential to occur;
- 8 special-status plant taxa with low potential to occur; and
- 23 special-status plant taxa with no potential to occur due to lack of habitat.

Ten of the special-status plant taxa on the scoping list with moderate or high potential to occur were previously documented either within or adjacent to the study area as reported by the CNDDB.

The scoping list includes a total of 51 special-status animal species documented within the Eureka and surrounding quadrangle assessment area (Appendix 2. Table 2-2). The potential for each special-status animal species to occur within the study area was rated as low, moderate, high, or none depending on

[1] Includes 7 plant taxa recorded as present in Appendix 2. Table 2-1.

the evaluation of the following factors: current geographic distribution, documented database (CNDDB and IPaC) occurrence information, as well as known habitat associations and preferences. Potential to occur ratings were defined as:

- *None*: No suitable habitat present within the study area, study area is outside of species documented distribution, and/or species has generally not been documented within 10 miles of the study area.
- *Low*: Low-quality or minimal suitable habitat present within study area, study area is within the species documented distribution, and/or species has generally (with some exceptions) been documented within 10 miles of the study area.
- *Moderate*: Moderate quality or quantity of suitable habitat present within study area, study area is within the species documented distribution, and/or species has generally (with some exceptions) been documented within 5 miles of the study area.
- *High*: High-quality and adequate amount of suitable habitat present within study area, study area is within the species documented distribution and elevation range, and/or species has generally (with some exceptions) been documented within the study area or within 1 mile of the study area.

Based on the evaluation of the factors discussed above, 32 of the animals on the scoping list had the potential to occur within the study area:

- 10 special-status animals with high potential to occur;
- 6 special-status animals with moderate potential to occur;
- 16 special-status animals with low potential to occur; and
- 19 special-status animals with no potential to occur due to lack of habitat.

One of the special-status animals on the scoping list with potential to occur was previously documented either within or adjacent to the study area as reported by the CNDDB.

3.2 Field Observations and Studies

SHN's senior biologists conducted site visits on April 28 and 30, 2020; April 5-8, 13, 19, 21, and 28, May 3, 6, and 11, June 4, July 7, 11, 13, 18, and 28, 2022; and June 28, 2023 for biological surveys and habitat assessments within the study area (Appendix 1, Figures 1 and 2). Wetland delineations (SHN, 2023; 2024) were done concurrently with the surveys in order to better analyze the habitats found within the study area.

3.2.1 Botanical Surveys

Comprehensive, systematic botanical surveys were conducted from April-August by a senior botanist/wetland ecologist with 10 years of experience and conducted according to CDFW protocol as outlined in *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018a). All special-status plant species which could potentially occur within the study area were in their blooming period during the range of dates that surveys were conducted or were otherwise evident and identifiable.

The survey encompassed 228.367 acres of land located on the Samoa peninsula and the western shore of Humboldt Bay including a 1-acre area on Woodley Island (see Appendix 1, Figure 1). This study area includes (1) the proposed 180-acre development footprint, (2) a potential mitigation area, (3) a proposed

solar array location atop a former ash landfill, (4) a mariculture relocation area on Woodley Island and (5) a buffer area around the Project for analysis of coastal resources and potential impact areas for ingress/egress and supporting infrastructure. A 25.879-acre portion of the study area within the 180-acre development footprint was not surveyed due to a lack of permission to access. To ensure thorough coverage of the remaining areas, surveyors documented plant taxa while traversing the study area by following parallel transects.

Surveys were conducted with an attempt to identify all species present within the Project-related study areas, including possible SSC. In addition to surveying for target species, a list of all botanical species encountered was compiled and is included in Appendix 4, Table 4-1. Plants were identified to the lowest taxonomic level possible to distinguish special-status species from others. Botanical nomenclature of species in this assessment follows the *Jepson Manual* (Baldwin et al., 2012) and subsequent online revisions. Non-vascular plants (mosses) and lichens were identified with *Macrolichens of the Pacific northwest* (McCune et al., 2009) and *California Mosses* (Malcolm et al., 2009), in addition to online resources. Moss nomenclature follows Malcolm et al., 2009 and lichen nomenclature follows McCune et al., 2009.

Global Positioning System (GPS) point and polygon features were created for special-status, California Rare Plant Rank (CRPR), and special plants and natural communities found within the Project area with a Trimble R1 and Trimble DA2 external antenna with submeter accuracy and a Samsung tablet user interface. GPS data was collected in the World Geodetic System (WGS) of 1984 and projected in a GIS with the North American Datum (NAD) 1983 Universal Transverse Marcator (UTM) Zone 10N projected coordinate system (PCS).

Botanical surveys were conducted by SHN employee Joseph Saler (Senior biologist) with assistance from Sam Polly (senior wetland scientist) and Paul Stiles (Biology Intern). Joseph Saler meets the required qualifications to conduct botanical surveys and is familiar with the vegetation and flora of the region. Survey dates and corresponding personnel are summarized below in Table 1.

Table 1. Botanical Surveys Conducted for the Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project in 2020, 2022, and 2023.

Round #	Year 1 (2020)		Year 2 (2022)		Year 3 (2023)	
	Dates	Personnel	Dates	Personnel	Dates	Personnel
Early Season	4/28/2020	Joseph Saler	4/5-8/2022	Joseph Saler	---	---
	4/30/2020	Joseph Saler	4/13/2022	Joseph Saler	---	---
	---	---	4/19/2022	Joseph Saler	---	---
	---	---	4/21/2022	Joseph Saler	---	---
Mid-Season	6/4/2020	Joseph Saler, Sam Polly	5/3/2022	Joseph Saler	---	---
	---	---	5/6/2022	Joseph Saler, Paul Stiles	---	---
	---	---	5/11/2022	Joseph Saler, Paul Stiles	6/28/2023	Joseph Saler
	---	---	---	---	6/30/2023	Joseph Saler

Round #	Year 1 (2020)		Year 2 (2022)		Year 3 (2023)	
	Dates	Personnel	Dates	Personnel	Dates	Personnel
Late Season	8/5/2020	Joseph Saler, Sam Polly	7/7/2022	Joseph Saler	---	---
	8/13/2020	Joseph Saler	---	---	---	---

Prior to conducting botanical surveys in 2020 and 2022, reference sites for the following special-status species were visited:

- sea coast angelica (*Angelica lucida*)
- Lyngbye's sedge (*Carex lyngbyei*)
- Humboldt Bay owl's clover (*Castilleja ambigua* var. *humboldtiensis*)
- Point Reyes bird's beak (*Chloropyron maritimum* ssp. *palustre*)
- Menzies' wallflower (*Erysimum menziesii*)
- dark-eyed gilia (*Gilia millefoliata*)
- short-leaved evax (*Hesperevax sparsiflora* var. *breviflora*)
- beach layia (*Layia carnosa*)
- Wolf's evening primrose (*Oenothera wolfii*)
- Western sand spurrey (*Spergularia canadensis* var. *occidentalis*)

3.2.2 Environmentally Sensitive Habitat Area (ESHA) Mapping

Natural communities within the study area were identified and mapped according to the CDFW "Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Sensitive Natural Communities" (CDFW, 2018a). Field work was conducted between April 5 through July 28, 2022 and began with the collection of vegetation data during initial field surveys. The field data was then used to identify natural communities within the study area by keying them out with the online edition of "A Manual of California Vegetation" (CNPS, 2023b) and comparing the data to the CNPS alliance descriptions and membership rules. The entire study area was covered during the surveys and vegetation community composition was assessed through vegetation sampling using the CDFW-CNPS "Combined Rapid Assessment (RA) and Releve'" protocol and additional field surveys (CDFW, 2018b). Natural communities were generally identified to alliance and association. Sensitive associations within non-sensitive alliances were identified, when feasible. Rarity of each vegetation type was determined from CDFW's California Natural Community List (CDFW, 2023e), the current list of vegetation alliances, associations, and special stands. Alliance and association nomenclature follow "A Manual of California Vegetation" (CNPS, 2023b) and CDFW's Natural Communities List (CDFW, 2023e). Those natural communities that met the minimum mapping unit (see below) and could be keyed out or met the membership rules in "A Manual of California Vegetation" were mapped.

A Trimble submeter GPS unit was used to map vegetation assessment points and vegetation community locations. Vegetation community extent was determined on the ground and was then mapped using orthorectified imagery of the site from unoccupied aerial vehicle (UAV) flights, which obtained high-accuracy aerial imagery of the study area in April 2022 immediately preceding the field work. A fine scale map was developed from this mapping effort using ArcGIS as shown in Appendix 1, Figures 3-15.

The minimum mapping unit for natural communities was 1 acre for non-sensitive upland communities and approximately 0.10 acre for sensitive natural communities. Some exceptions to these minimum mapping units were made in cases where a smaller mapping unit was necessary to capture a noteworthy patch of sensitive vegetation or small scale sensitive herbaceous-dominated communities.

3.2.3 Wildlife Surveys

Habitat Availability Assessment

Wildlife and habitat surveys were conducted by SHN Senior Wildlife Biologist, Gretchen O'Brien, with 24 years of experience, Associate Biologist, Brynn Huzzen, with 3 years of experience, and Biology Intern Paul Stiles. The study area for the wildlife habitat and survey effort did not include the proposed fly ash landfill solar array location or Woodley Island mariculture storage relocation area (see Appendix 1, Figure 15). The Project footprint location area (see Appendix 1, Figure 1) was traversed on foot to assess the habitat availability for each special-status species on a comprehensive list resulting from CNDDB, BIOS, and IPaC data sources (see Appendix 2, Table 2-2). Analysis of the habitat present within the study area during the site visits indicates that suitable habitat for several special-status animal species and a number of nesting bird species exists onsite. The habitats within the study area most likely to support special-status animal species include ravines dominated by native vegetation, wet areas, shrubby, early successional vegetation, and structures with existing nests (see Appendix 1, Figures 3-15).

Osprey

Surveys for locating osprey nests and determining active or inactive status were conducted during the breeding season in 2022 within the Project footprint study area. All potential nesting platforms were inspected visually from the ground for the presence of nests. When a nest structure was located, it was monitored in April, June, and July 2022 to determine if it was currently being used, or if it showed signs of wear and not currently upkept. If osprey were currently using the nest, it was determined if the nest was "active", defined by behavior indicating a pair was either incubating, feeding nestlings, or supporting fledglings. All nest locations regardless of active or inactive status were noted and mapped (see Appendix 1, Figures 2, 6, 8, 9, 11, and 13).

Bats

During an initial wildlife habitat assessment on April 14, 2022, potential bat roost locations were identified as being available within the abandoned buildings onsite as well as possibly within the dense vegetation in the northern section of the study area. Surveys were conducted during the maternity roosting season (generally spring through early fall). Three acoustic monitoring locations were established near these potential roost sites (see Appendix 1, Figures 2, 4, 5, and 12) and surveyed on July 11 and July 18, 2022. On July 11, two observers watched for emergence from buildings at Location 1 beginning one-half hour before sunset and continued to survey the area with a Wildlife Acoustics Echometer Touch 2 ultrasonic bat call detector until 1 hour after sunset. On July 18, 2022, two observers watched for emergence from buildings at Location 2 and one observer surveyed the dense vegetation area at Location 3 beginning one-half hour before sunset and continued to survey the area until 1 hour after sunset, each team using a Wildlife Acoustics Echometer Touch 2 ultrasonic bat call detector attached to a mobile handheld device. This devise records species identified by the bat detector with filter settings for bat species known to occur in Humboldt County.

Trail Cameras

Strike Force HD Pro X trail cameras were deployed in four locations with wildlife habitat features, including water, cover, and potential movement corridors, each for approximately four consecutive days and nights during the July 14-19, 2022 survey period, to gain supplemental information about presence

of wildlife species in the study area (see Appendix 1, Figures 2, 4, 11, and 12). This effort was intended to gain incidental observations and did not conform to a specific protocol. No scent lures or other bait were used.

During all field survey efforts, observed wildlife species were recorded, including habitat use behavior. A list of observed wildlife species is included in Appendix 4, Table 4-2. Nomenclature for special-status animals conforms to CDFW guidelines (CDFW, 2023d).

Photographs from the site visits are included in Appendix 5.

4.0 Environmental Setting

4.1 Land Use

The study area has a long history of industrial lumber production that has resulted in significant grading, infilling, and development of previous intertidal and dune lands along the Humboldt Bay shoreline. This included multiple lumber mill facilities operating concurrently and at different times across the study area. Portions of the study area were used for log storage, milling, lumber drying, and chip storage for pulp. Additionally, a wood-fired power plant supporting one of the mills existed in the northern portion of the study area. Railroad infrastructure including spur tracks, sidings, and mainlines occurred throughout the study area, as did a network of paved access roads, pipelines, overhead powerlines, and other supporting infrastructure. In addition, drains, culverts, and other stormwater capture and conveyance infrastructure occurred throughout the site, reflecting the large expanses of pavement and other impermeable surfaces. Multiple dock facilities were constructed along the Humboldt Bay waterfront for shipping finished products and receiving raw materials, as well as for water intake structures. The history of development and use has greatly influenced the number of wetlands and types of wetlands occurring within the study area.

Currently, the majority of the study area is comprised of vacant industrial land. Most of the lumber mill infrastructure has been demolished and removed, with large expanses of asphalt, concrete, foundations, drainageways, compacted soils, and remnants of supporting infrastructure remaining following demolitions of structures and industrial facilities. Some industrial log storage and sorting activity continues to occur within a portion of the study area, and mariculture activities occur at two of the remaining dock facilities. The other portions of the study area are minimally used with occasional limited light industrial activity and storage of equipment. The remaining vacant industrial buildings or structures located within the study area are in severe disrepair and several are slated for demolition in the near future.

4.2 Climate

The region along the north coast of California generally experiences wet, cool winters and moist, mild, foggy summers. Long-term climate data for the Eureka station, approximately 1.3 miles east of the study area, was reviewed for the climate averages of the study area (National Oceanic and Atmospheric Administration [NOAA], 2023). The climate in the study area is characterized by mild year-round temperatures and long wet winters. The mean maximum temperature is 59.2 degrees Fahrenheit (°F) (15.1 degrees Celsius [°C]), ranging from 64.0°F (17.8°C) in August to 54.7°F (12.6°C) in December; the mean average low temperature is 46.0°F (7.8°C), ranging from 40.0°F (4.4°C) in December to 53°F (11.7°C) in August. The average annual precipitation is 40.4 inches, with precipitation falling entirely as rain, mostly between October and May, but with an average of at least 1 inch of rain every month except June (0.70 inch), July (0.18 inch), August (0.18 inch), and September (0.68 inch).

4.3 Vegetation

The study area has a long industrial history which greatly influences landcover, natural communities, and species composition. Most of the study area has been previously developed with paved surfaces, foundations, drainageways, concrete rubble, and compacted soils remaining, following demolitions of structures and industrial facilities. Because of this, much of the study area is dominated by large expanses of unvegetated pavement, ruderal vegetation, and other areas with a mix of non-native and native vegetation (See Appendix 5, Photos 1-59). Several sensitive natural communities occur within highly manipulated situations on compacted gravels or other formerly developed areas; while others occur as remnants of habitat that existed prior to development. These include areas along the periphery of the study area including salt marsh (low to high elevation), beach pine forest remnants, and sand dune remnants, among others. Landcover composition including acreages and the percent cover of the study area occupied by each is listed below. Note the while the study area included 228.367 acres, a 25.879-acre area was not accessible; therefore, the percentages are out of a 202.488-acre area.

- Asphalt and pavement (mostly unvegetated): 109.59 acres (54.1%)
- Ruderal/non-native dominated: 62.18 acres (30.7%)
- Non-native grassland: 12.18 acres (6.0%)
- Himalayan blackberry scrub: 3.51 acres (1.7%)
- Coastal dune willow-Sitka willow thickets: 5.30 acres (2.6%)
- Intertidal (unvegetated): 4.27 acres (2.1%)
- Wax myrtle scrub: 1.81 acres (0.8%)
- Mid-high elevation salt marsh: 1.26 acres (0.6%)
- Beach pine forest and woodland: 0.62 acres (0.3%)
- shining willow groves: 0.55 acres (0.3%)
- Dune mat: 0.44 acres (0.2%)
- Low elevation salt marsh: 0.37 acres (0.2%)
- Red alder forest: 0.16 acres (<0.1%)
- Dune remnant: 0.12 acres (<0.1%)
- Pickleweed mats: 0.12 acres (<0.1%)
- Soft and western rush-sedge marsh: 0.02 acres (<0.1%)
- Slough sedge – water parsley – small fruited bulrush marsh: 0.01 acres (<0.1%)

The areas of unvegetated pavement, ruderal vegetation, and other areas with a mix of non-native and native vegetation are described below (see Appendix 1, Figures 3-15) and the Sensitive Natural Communities are described in Section 6.4.

4.3.1 Asphalt and Pavement (mostly unvegetated)

Unvegetated asphalt and concrete characterizes 109.59 acres of the study area. These areas represent former industrial development, including slab foundations, parking areas, log decks, wood chip storage, access roads, unvegetated concrete rubble along the shoreline, and other large expanses of asphalt. Vegetation cover is minimal and is restricted to cracks in the asphalt/concrete, in places where the asphalt/concrete has been removed or broken during the demolition process, or areas where soil has more recently been placed over the asphalt/concrete. Some of the more common non-native and invasive species include silver hairgrass (*Aira caryophyllea*), large quaking grass (*Briza maxima*), jubata grass (*Cortaderia jubata*), smooth cat's ear (*Hypochaeris glabra*), buck-horn plantain (*Plantago coronopus*), four-leaved allseed (*Polycarpon tetraphyllum var. tetraphyllum*), and Jersey cudweed (*Pseudognaphalium luteoalbum*), among others. These areas are upland and are designed to shed water, although there are some places where highly-altered artificially-induced wetlands have developed.

4.3.2 Ruderal/Non-native Species-Dominated

Ruderal/non-native-dominated species-dominated areas characterize 62.18 acres of the study area. These areas represent former industrial development where impervious surfaces have been removed or buried during demolition, or locations where impervious surfaces were not installed for past development. Ruderal/non-native-dominated areas are generally characterized by the dominance of a diverse flora of non-native and invasive species. Some of the more common non-native and invasive species in the study area include Himalayan blackberry (*Rubus armeniacus*), hairy vetch (*Vicia villosa ssp. villosa*), subterranean clover (*Trifolium subterraneum*), large quaking grass, yellow glandweed (*Parentucellia viscosa*), yellow bush lupine (*Lupinus arboreus*), iceplant (*Carprobrotus edulis and chilensis*), English plantain (*Plantago lanceolata*), buck-horn plantain, curly dock (*Rumex crispus*), dogtail grass (*Cynosurus echinatus*), English ivy (*Hedera helix*), soft chess (*Bromus hordeaceus*), and French broom (*Genista monspessulana*). Native species typically present in ruderal vegetation include coyote brush (*Baccharis pilularis ssp. consanguinea*), bee plant (*Scrophularia californica*), willow leaf dock (*Rumex salicifolius*), and California blackberry (*Rubus ursinus*). These areas are typically upland and well-drained, however locations with depressions and compacted soils have developed artificially-induced wetland conditions, often with some level of coast willow (*Salix hookeriana*) or Sitka willow (*Salix sitchensis)* growth, these areas are described in the State Aquatic Resources Delineation Report (SHN, 2024).

4.3.3 Non-native Grassland

Non-native grassland occupies 12.18 acres of the study area. These areas represent former industrial development where impervious surfaces have been removed or buried during demolition, or locations where impervious surfaces were not installed for past development. Non-native grassland within the study area is regularly mowed, which prevents the establishment of the herbaceous and woody species more common in the ruderal/non-native-dominated portions of the study area. Some of the more common non-native and invasive species in the non-native grassland portions of the study area include sweet vernal grass (*Anthoxanthum odoratum*), velvet grass (*Holcus lanatus*), silver hair grass, large quaking grass, six weeks grass (*Festuca myuros*), wild oat (*Avena barbata*), dogtail grass, subterranean clover, sheep sorrel (*Rumex acetosella*), hairy cat's ear (*Hypochaeris radicata*), common catchfly (Silene gallica), soft chess, and rabbit foot clover (*Trifolium arvense*). Native species typically present in the non-native grassland within the study area include annual lupine (*Lupinus bicolor*), butter 'nfeet eggs (*Triphysaria eriantha ssp. eriantha*), beach strawberry (*Fragaria chiloensis*), and narrowleaf owl's clover (*Castilleja attenuata*), all with very low cover. Non-native grasslands are upland and well-drained; however, some discrete locations with depressions and compacted soils have developed artificially-induced wetland conditions and these areas are described the State Aquatic Resources Delineation Report (SHN, 2024).

4.3.4 Himalayan Blackberry Scrub

Himalayan blackberry scrub occupies 3.51 acres of the study area. These areas represent former industrial development where impervious surfaces have been removed or buried during demolition, or locations where impervious surfaces were not installed for past development. Himalayan blackberry scrub is characterized by dense thickets with Himalayan blackberry having over 60 percent relative cover. Himalayan blackberry scrub frequently occurs at the edge of other vegetation communities, such as coast dune willow-Sitka willow scrub, however it also occupies other former industrial areas. Himalayan blackberry scrub appears to be increasing in cover and is invading both non-native grassland and ruderal-dominated areas, as well as coast dune willow-Sitka willow thickets. Some of the more common associated species in the Himalayan blackberry scrub include California blackberry, yellow bush lupine, French broom and to a lesser extent, willow species. Himalayan blackberry scrub in the

study area is primarily upland and well drained; however, some discrete locations within depressions and compacted soils have developed wetland conditions and these areas are described the State Aquatic Resources Delineation Report (SHN, 2023b).

4.4 Topography

Undeveloped lands on the Samoa peninsula are typically undulating, reflecting the aeolian sand deposits (coastal dunes) that characterize the area. Within the study area and adjacent developed land, the surface has been leveled for industrial use and large areas are flat and capped by asphalt with slight slopes to facilitate drainage. Some remnant dune habitat exists in the northwest portion of the study area, and the southern portion of the study area has the highest average elevation. The elevation in the study area ranges from 0 to approximately 50.5 feet above mean sea level on top of a remnant dune in the northwestern portion of the study area.

4.5 Wildlife Habitats

The proposed Project site consists of a mix of coastal dunes and coastal scrub, willow thickets, beach pine forest, salt marsh, and marine shoreline in patchy distribution among asphalt and other paved surfaces, as well as ruderal and non-native-dominated patches of vegetation throughout a previously developed area (See Appendix 5, Photos 1-14, 21-24, 33-45). Common wildlife species expected within the study area are those typically associated with coastal scrub and dunes, riparian areas, shorelines, and urban settings of northwestern California. Although the Project site is disturbed and previously developed, much of the site is abandoned and regrowth of vegetation throughout provide food and shelter for animals, including previous drainage features. Many special-status species require specific habitat conditions, including high-quality habitat for nesting and roosting, including lack of human disturbance. Portions of the site experiences frequent human disturbance and is surrounded by urban development. The dense vegetative cover and riparian habitats within the northern portion of the study area provides the highest quality wildlife habitat within the site (see Appendix 5, Photos 3, 4, 33-36). Abandoned buildings on site with openings, cracks, eaves, appropriate thermal conditions, and limited human disturbance provide nesting and roosting habitat for both birds and bats (Appendix 5, Photo 60). The numerous pilings, power poles, and other structures near and over the water of Humboldt Bay are ideal for nesting and foraging osprey (see Appendix 5, Photos 1, 2, and 61).

Wildlife habitat suitability modeling is available for the area by the CWHR (CDFW, 2023f). The CWHR Predicted Habitat Suitability dataset represents areas of suitable habitat within the species ranges based on a statewide best-available vegetation map. The California Department of Forestry and Fire Protections (CALFIRE) Fire and Resource Assessment Program (FRAP), in cooperation with CDFW VegCamp program and extensive use of United States Department of Agriculture (USDA) Forest Service Region 5 Remote Sensing Laboratory (RSL) data, has compiled the "best available" land cover data available for California into a single comprehensive statewide data set (CDFW, 2023f). Habitat suitability ranks of Low (less than 0.34), Medium (0.34-0.66), and High (greater than 0.66) suitability are based on the mean expert opinion suitability value for each habitat type for breeding, foraging, and cover. Data is represented in raster format with a pixel size of 30 meters. In the case of species that rely on habitat types that are difficult to map at this scale, such as riparian or wetland habitat types, the amount of representative habitat may be underestimated or inaccurately mapped due to aggregation into pixels with a majority type not used by the species. This program is used for supplemental information in the special-status species discussions in Section 6.2. Animal species observed during fieldwork are presented in Appendix 4, Table 4-2. Other wildlife species are likely to inhabit the surrounding area and it is expected that there are many other bird, mammal, and amphibian species that might use the study area, if only transitionally.

4.6 Wildlife Movement Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to sustain species with specific foraging requirements, preserve a species distribution potential, and retain diversity among many wildlife populations. Habitat loss and fragmentation makes it difficult for animals to move through the landscape for daily activities and to disperse to new areas. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

Wildlife movement includes seasonal migration, inter-population movement (genetic flow), and small, daily travel pathways within an animal's territory. Although 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 genetic flow among populations. As climate changes, these landscape connections may also facilitate species shifts to more suitable climate conditions, and for this reason, habitat corridors, are one of the most common climate change adaptation strategies for biodiversity conservation (Gray and Merenlender, 2015).

Heavy vegetative cover along stormwater drainages and within the northern undeveloped portion of the study area provide the best opportunity for wildlife movement corridors around and through the study area (see Appendix 1, Figures 2-4; Appendix 5, Photos 33-36).

The Project is sited along the shore of Humboldt Bay, which is along the Pacific Flyway, the route taken by migrating shorebirds and waterfowl twice each year. The marshes and mudflats of the Humboldt Bay provide important feeding and roosting habitat for these migrating birds. The Western Hemisphere Shorebird Reserve Network (WHSRN) recognizes Humboldt Bay as a "Site of International Importance" for shorebirds (WHSRN, 2023).

4.7 Offsite Conditions

Offsite conditions include industrial facilities and residential development surrounded by coastal dune, coastal scrub, and marine shore habitat (see Appendix 1, Figures 1 and 2).

5.0 Regulatory Setting

Regulatory authority over biological resources is shared by federal, State, and local authorities under a variety of legislative acts. The following section summarizes the federal, State, and local regulations for special-status species, jurisdictional Waters of the U.S. and State of California, and other sensitive biological resources. This section provides a listing and overview of these federal, State and local laws; only select regulations will be applicable to this Project.

5.1 Federal Laws

5.1.1 Clean Water Act Sections 404 and 401

Under Section 404 (33 U.S. Code (USC) 1344) of the Clean Water Act (CWA, United States Environmental Protection Agency (EPA), 2002), as amended, the U.S. Army Corps of Engineers (USACE) retains primary responsibility for permits to discharge dredged or fill material into Waters of the U.S (EPA, 1948). All discharges of dredged or fill material into jurisdictional Waters of the U.S. that result in permanent or

temporary losses of Waters of the U.S. are regulated by the USACE. A permit from the USACE must be obtained before placing fill or grading in wetlands or other Waters of the U.S., unless the activity is exempt from CWA Section 404 regulation (for example, certain farming and forestry activities).

Federal Wetland regulatory framework is discussed in detail within the Federal Aquatic Resources Delineation (SHN, 2023), which includes mapping of all federally jurisdictional wetlands within the study area.

5.1.2 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC Sections 661-667e, March 10, 1934, as amended 1936, 1946, 1947, 1948, 1949, 1958, 1965, 1978, and 1995; USFWS, 1934) requires that whenever waters or channel of a stream or other body of water are proposed or authorized to be modified by a public or private agency under a federal license or permit, the federal agency must first consult with the USFWS and/or National Marine Fisheries Service (NMFS) and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur (in this case the CDFW), with a view to conservation of birds, fish, mammals, and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent.

If direct permanent impacts will occur to Waters of the U.S. from a proposed project, then a permit from USACE under CWA Section 404 is required for the construction of the proposed project. USACE is required to consult with USFWS and/or NMFS as appropriate regarding potential impacts to federally-listed species under Federal Endangered Species Act (FESA). Such action may prompt consultation with CDFW, which would review the project pursuant to California Endangered Species Act (CESA) and issue a consistency letter with USFWS and/or NMFS, if required.

5.1.3 Federal Endangered Species Act

The United States Congress passed the FESA in 1973 to protect species that are endangered or threatened with extinction. The FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend and within which they live. The USFWS and the NMFS are the designated federal agencies responsible for administering the FESA.

The FESA prohibits the "Take" of endangered or threatened wildlife species. A "Take" is defined as harassing, harming (including significantly modifying or degrading habitat), pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species, or any attempt to engage in such conduct (16 USC 1531, 50 CFR 17.3; USFWS, 1973). An activity can be defined as a "Take" even if it is unintentional or accidental. Taking can result in civil or criminal penalties. Activities that could result in "Take" of a federally-listed species require an incidental "Take" authorization resulting from FESA Section 7 consultation or FESA Section 10 consultation (USACE/EPA, 1973). Plants are legally protected under the FESA only if "Take" occurs on federal land or from federal actions, such as, issuing a wetland fill permit.

A federal endangered species is one that is considered in danger of becoming extinct throughout all, or a significant portion, of its range. A federal threatened species is one that is likely to become endangered in the foreseeable future. The USFWS also maintains a list of species proposed for listing as threatened or endangered. Proposed species are those for which a proposed rule to list as endangered or threatened has been published in the Federal Register. In addition to endangered, threatened, and proposed species, the USFWS maintains a list of candidate species. Candidate species are those for which the USFWS has on file sufficient information to support issuance of a proposed listing rule.

Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed endangered or threatened species may be present in the study area and determine whether the proposed project will have a potentially significant impact on such a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the FESA or result in the destruction or adverse modification of critical habitat designated or proposed to be designated for such species (16 USC 1536[3], [4]; USFWS, 1973). Project-related impacts to species on the FESA endangered or threatened list would be considered significant and thus, would require mitigation.

5.1.4 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in CFR Part 10, including feather or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21; USFWS, 1918). The MBTA also prohibits disturbance and harassment of nesting migratory birds at any time during their breeding season. The USFWS is responsible for enforcing the MBTA (16 USC 703; USFWS, 1918). The migratory bird nesting season is generally considered to be between March 15 and August 15 within the study region.

5.2 State Laws

5.2.1 California Coastal Act

Legislature passed the Coastal Act in 1976, which made the Coastal Commission a permanent agency with broad authority to regulate coastal development. The Coastal Act guides how the land along the coast of California is developed, or protected from development. It emphasizes the importance of the public being able to access the coast, and the preservation of sensitive coastal and marine habitat and biodiversity. It dictates that development be clustered in areas to preserve open space, and that coastal agricultural lands be preserved. It prioritizes coastal recreation as well as commercial and industrial uses that need a waterfront location. It calls for orderly, balanced development, consistent with these priorities and taking into account the constitutionally protected rights of property owners.

The Coastal Act defines the area of the coast that comes under the jurisdiction of the California Coastal Commission, which is called the “coastal zone.” The Coastal Zone extends seaward to the state’s outer limit of jurisdiction (three miles), including offshore islands. The inland boundary varies according to land uses and habitat values. In general, it extends inland 1,000 yards from the mean high tide line of the sea, but is wider in areas with significant estuarine, habitat, and recreational values, and narrower in developed urban areas. Coastal Zone boundary maps are available on the Coastal Commission website (https://www.coastal.ca.gov/).

5.2.2 Porter-Cologne Water Quality Control Act

The State and Regional Water Quality Control Board (RWQCB) also maintain independent regulatory authority over the placement of waste, including fill, into Waters of the State under the Porter-Cologne Water Quality Control Act (State Water Resources Control Board [SWRCB], 1969). Waters of the State are defined by the Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The SWRCB protects all waters in its regulatory scope but has special responsibility for isolated wetlands and headwaters. These water bodies might not be regulated by other programs, such as Section 404 of the CWA. Waters of the State are regulated by the RWQCBs under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require an USACE permit, or

fall under other federal jurisdiction, and have the potential to impact Waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, but does involve activities that may result in a discharge of harmful substances to Waters of the State, the RWQCBs have the option to regulate such activities under their state authority in the form of waste discharge requirements (WDRs) or certification of WDRs.

5.2.3 California Endangered Species Act

The State of California enacted the CESA in 1984. The CESA is similar to the FESA but pertains to state-listed endangered and threatened species. Under the CESA, the CDFW has the responsibility for maintaining a list of threatened and endangered species designated under state law (California Fish and Game Code [CFGC] 2070; CDFW, 1984). Section 2080 of the CFGC prohibits "Take" of any species that the commission determines to be an endangered or threatened species. "Take" is defined in Section 86 of the CFGC as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

The State and federal lists of threatened and endangered species are generally similar; however, a species present on one list may be absent from the other. CESA regulations are also somewhat different from the
FESA in that the State regulations included threatened, endangered, and candidate plants on non-federal lands within the definition of "Take." CESA allows for "Take" incidental to otherwise lawful development projects.

Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the study area and determine whether the proposed project will have a potentially significant impact on such species. Project-related impacts to species on the CESA endangered or threatened list (or, in addition, designated by the CDFW as a "Species of Special Concern," which is a level below threatened or endangered status) would be considered significant and would require mitigation.

5.2.4 California Environmental Quality Act

California Environmental Quality Act (CEQA) Guidelines Sections 15125(c) and 15380(d) provide that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria (California National Resources Agency [CNRA], 1970). Thus, CEQA provides the ability to protect a species from potential project impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

The CNPS maintains a list of plant species native to California whose populations that are significantly reduced from historical levels, occur in limited distribution, or are otherwise rare or threatened with extinction. This information is published in the Inventory of Rare and Endangered Plants of California (CNPS, 2023a). Taxa with a CRPR of 1A, 1B, 2A, 2B, and 3 in the CNPS inventory consist of plants that meet the definitions of the CESA of the CFGC, are eligible for state listing, and meet the definition of Rare or Endangered under CEQA Guidelines Sections 15125(c) and 15380(d). Some taxa with a CRPR 4 may meet the definitions of the CESA of the CFGC. CRPR 4 populations may qualify for consideration under CEQA if they are peripheral or disjunct populations; represent the type locality of the species; or exhibit unusual morphology and/or occur on unusual substrates.

Additionally, CDFW maintains lists of special animals and plants. These lists include a species conservation ranking status from multiple sources, including FESA, CESA, and federal departments with

unique jurisdictions, CNPS, and other non-governmental organizations. Based on these sources, CDFW assigns a heritage rank to each species according to their degree of imperilment (as measured by rarity, trends, and threats). These ranks follow NatureServe's Heritage Methodology, in which all species are listed with a G (global) and S (state) rank. Species with state ranks of S1-S3 are also considered highly imperiled.

CEQA Guidelines checklist IV(b) calls for the consideration of riparian habitats and sensitive natural communities. Sensitive vegetation communities are natural communities and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. However, these communities may or may not necessarily contain special-status species. Sensitive natural communities are usually identified in local or regional plans, policies, or regulations, or by CDFW (that is, the CNDDB and VegCAMP programs; CDFW, 2023a, 2023e) or the USFWS. Impacts to sensitive natural communities and habitats must be considered and evaluated under CEQA (California Code of Regulations [CCR]: Title 14, Div. 6, Chap. 3, Appendix G; CNRA, 1970).

Although sensitive natural communities do not (at present) have legal protection, CEQA calls for an assessment of whether any such resources would be affected, and requires a finding of significance if there will be substantial losses. High-quality occurrences of natural communities with heritage ranks of 3 or lower are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents (such as general plans) often identify these resources as well. Avoidance, minimizations, or mitigation measures should be implemented if project-affected stands of rare vegetation types or natural communities are considered high-quality occurrences of the given community.

As a trustee agency under CEQA, CDFW reviews potential project impacts to biological resources, including wetlands. In accordance with the CEQA thresholds of significance for biological resources, areas that meet the state criteria of wetlands and could be impacted by a project must be analyzed. Pursuant to CFGC Section 2785, CDFW defines wet areas as "lands which may be covered periodically or permanently with shallow water and which include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, fens, and vernal pools" (CDFW, 1998).

5.2.5 California Fish and Game Code Sections 3503 and 3513

According to Section 3503 of the CFGC it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (except English sparrows [*Passer domesticus*] and European starlings [*Sturnus vulgaris*]). Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the MBTA, prohibiting the "Take" or possession of any migratory non-game bird (CDFW, 1998). Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "Take" by the CDFW.

5.2.6 Fully Protected Species and Species of Special Concern

The classification of "fully protected" was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced with possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The CFGC sections (fish at Sec. 5515, amphibian and reptiles at Sec. 5050, birds at Sec. 3511, and mammals at Sec. 4700) dealing with "fully protected" species states that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species," (CDFW, 1998) although "Take" may be authorized for necessary scientific research. This

language makes the "fully protected" designation the strongest and most restrictive regarding the "Take" of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFW to authorize "Take" resulting from recovery activities for state-listed species.

SSC are broadly defined as animals not listed under the CESA, but that are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by the CDFW, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under CESA and cumbersome recovery efforts that might ultimately be required. This designation is also intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although the SSC designation provides no special legal status, they are given special consideration under CEQA during project review.

5.2.7 Native Plant Protection Act of 1973

The Native Plant Protection Act (NPPA) of 1973 (Sec.1900-1913 of the CFGC; CDFW, 1998) includes provisions that prohibit the taking of endangered or rare native plants from the wild and a salvage requirement for landowners. The CDFW administers the NPPA and generally regards as "rare" many plant species included on Lists 1A, 1B, 2A, 2B, 3, and 4 of the CNPS Inventory of Rare and Endangered Vascular Plants of California (CNPS, 2023a).

5.2.8 Natural Community Conservation Planning Act

The Natural Community Conservation Planning (NCCP) Act of 1991 is an effort by the State of California, and numerous private and public partners that is broader in its orientation and objectives than the CESA and FESA (refer to discussions above; CDFW, 1991). The primary objective of the NCCP Act is to conserve natural communities at the ecosystem scale while accommodating compatible land use. The NCCP Act seeks to anticipate and prevent the controversies and gridlock caused by species listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process.

5.3 Local Laws

5.3.1 Humboldt Bay Area Plan (HBAP) for the Humboldt County Local Coastal Program

The Humboldt Bay Area Plan (HBAP), certified in 1982, represents one of six county coastal planning areas and identifies land uses and standards by which development will be evaluated within the Coastal Zone. The indicated uses and standards adopted by the County of Humboldt, and certified by the California Coastal Commission, are in conformance and satisfy the policies and requirements for coastal land use contained in the California Coastal Act of 1976 (Public Resource, Code 30000 et seq.) and other related legislation. Local policies and standards developed in the area planning workshops specific to the Coastal Act also affect the review of projects. All current County adopted planning documents, County ordinances, and State law regulating planning and land use, unless superseded by policies of the HBAP, also govern the evaluation of any proposed development.

6.0 Results

This section describes the results from the botanical surveys, wildlife surveys, and sensitive natural communities mapping effort.

6.1 Special-status Botanical Species

During botanical surveys, a total of 346 vascular and non-vascular botanical species were observed within the study area (see Appendix 4, Table 4-1), which includes 19 tree species, 29 shrub species, 12 fern and allies species, 65 graminoid species, 191 herbaceous species, 3 woody vine species, and 27 non-vascular species (12 moss taxa, 11 lichen taxa, 2 liverwort taxa, and 2 fungi). This represents taxa from 92 different plant families. Plant species composition was 51 percent native, reflecting the history of use onsite (see Appendix 4, Table 4-1). Varied habitat from salt marsh to remnant dune habitat in addition to the introduction of non-native species has resulted in a high level of plant diversity within the study area.

Two special-status[2] CRPR 1B species and one CRPR 4 species were observed within the study area. This included four occurrences[3] of Point Reyes bird's beak (CRPR 1B.2); one occurrence of Humboldt Bay owl's clover (CRPR 1B.2); and three occurrences of sea-watch (CRPR 4.2; see Appendix 1, Figures 3 and 5). These species and the occurrences within the study area are described in detail in Section 6.1.2.

Additionally, one federal and state endangered species, one federal threatened and state endangered species, and one additional CRPR 1B species were observed immediately west of the study area near New Navy Base Road and LP Drive. One occurrence of beach layia (Fed threatened and State endangered, CRPR 1B.1) was observed approximately 200 feet west of the study area on public land, and multiple occurrences of Menzies' wallflower (Fed and State endangered, CRPR 1B.1) occur west of the study area within 200 feet of the study area boundary. Lastly, multiple occurrences of dark-eyed gilia (CRPR 1B.2) occur west of the study area within 50 feet of the study area boundary. These occurrences were not mapped because they are outside of the study area.

Habitat of varying quality was present within the study area for an additional 23 CRPR plant taxa on the scoping list (see Appendix 2, Table 2-1) that were not observed within the study area. In general, habitats present for these CRPR taxa included coastal dunes, coastal salt marsh, coastal bluff scrub, coastal prairie, and disturbed areas (see discussion on natural communities below). Of the 23 CRPR species with potential habitat within the study area, 6 were considered to have a low potential of occurrence and 16 were considered to have a moderate or high potential of occurrence within the study area based on habitat requirements or observations within the vicinity but were not observed within the study area. These species are described in detail in Section 6.1.1.

There was no habitat present for 23 species on the scoping list. These species typically occur within a variety of habitats not found within the study area which included forests, bogs and fens, chaparral, cismontane woodland, habitats with serpentine soils (serpentinite), lower and upper montane coniferous forests, riparian scrub, rocky coastal bluff scrub, subalpine coniferous forests, valley and foothill grassland, and vernal pools (see Appendix 2, Table 2-1).

6.1.1 Special-status Species with Potential Habitat

Species with potential habitat within the study area are described below.

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[2] Special-status as defined in this report and the *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Sensitive Natural Communities* (CDFW, 2018a).

[3] Occurrence is informally defined here as a single individual or patches of individuals of a given species generally separated by at least 98 feet (30 meters) from another individual or patch of the same species. This definition differs from the CNDDB definition of an occurrence (see CNDDB Management Framework, dated 7/28/2020).

Pink sand verbena (*Abronia umbellata var. breviflora*) is an annual herb in the Nyctaginaceae family. It is neither state nor federally listed, but has a CRPR of 1B.1 and a heritage rank of G4G5-T2/S1. Its elevation range is reported from 0 to 10 meters above sea level. Within its range state-wide, its blooming period is reported as June through October. This species is reported from coastal dunes and coastal strand habitats. There are 61 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 0.5 mile to the west of the study area with an occurrence date in 2004. This species is also reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and species was determined to have a moderate potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Coastal marsh milk-vetch (*Astragalus pycnostachyus var. pycnostachyus*) is a perennial herb in the Fabaceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G2T2/S2. Its elevation range is reported from 0 to 155 meters above sea level. Within its range state-wide, its blooming period is reported as April through October. This species is reported from coastal dunes, marshes and swamps, coastal scrub, and along streams or coastal salt marsh habitats. There are 24 RareFind occurrence for this taxon within the nine-quad search, the closest reported from an unspecified area in the vicinity of Samoa with an occurrence date in 1925. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Lyngbye's sedge (*Carex lyngbyei*) is a perennial rhizomatous herb in the Cyperaceae family. It is neither state nor federally listed, but has a CRPR of 2B.2 and a heritage rank of G5/S3. Its elevation range is reported from 0 to 200 meters above sea level. Within its range state-wide, its blooming period is reported as April through October. This species is reported from brackish or freshwater marsh or swamp habitats. There are 22 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 0.75 miles north of the study area with an occurrence date in 1986. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Oregon coast paintbrush (*Castilleja litoralis*) is a perennial herb in the Orobanchaceae family. It is neither state nor federally listed, but has a CRPR of 2B.2 and a heritage rank of G3/S3. Its elevation range is reported from 5 to 255 meters above sea level. Within its range state-wide, its blooming period is reported as June. This species is reported from coastal bluff scrub, coastal dunes, and sandy habitats. There are 44 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 9 miles southwest of the study area with an occurrence date in 2016. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a moderate potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Round-headed Chinese-houses (*Collinsia corymbosa*) is an annual herb in the Plantaginaceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G1/S1. Its elevation range is reported from 10 to 30 meters above sea level. Within its range state-wide, its blooming period is reported as April through June. This species is reported from coastal dune habitats. There are 13 RareFind occurrences for this taxon within the nine-quad search, the closest being in an unspecified area approximately 1.4 miles east of the study area with an unknown occurrence date. This species has

been reported from within 10 miles of the study area through Calflora (Calflora, 2023) but was determined to have a low potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Small spikerush (*Eleocharis parvula*) is a perennial herb in the Cyperaceae family. It is neither state nor federally listed, but has a CRPR of 4.3 and a heritage rank of G5/S3. Its elevation range is reported from 1 to 3,020 meters above sea level. Within its range state-wide, its blooming period is reported as July through August. This species is reported from wetlands, swamps, and coastal salt marsh habitats. There is no RareFind occurrence for this taxon within the nine-quad search, though it has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Menzies' wallflower (*Erysimum menziesii*) is a perennial herb in the Brassicaceae family. It is both state and federally listed as Endangered. It has a CRPR of 1B.1 and a heritage rank of G1/S1. Its elevation range is reported from 0 to 35 meters above sea level. Within its range state-wide, its blooming period is reported as March through September. This species is reported from coastal dune and coastal strand habitats. There are 19 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 2 miles to the southwest of the study area with an occurrence date in 2010. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was observed within 200 feet of the western study area boundary. Although suitable habitat may exist within the study area for this species, it was not detected within the study area.

Pacific gilia (*Gilia capitata ssp. pacifica*) is an annual herb in the Polemoniaceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G5T3/S2. Its elevation range is reported from 5 to 1,345 meters above sea level. Within its range state-wide, its blooming period is reported as April through August. This species is reported from coastal bluff scrub, chaparral, coastal prairie, and valley and foothill grassland habitats. There are 91 RareFind occurrences for this taxon within the nine-quad search, the closest being within an unspecified area approximately 2 miles southeast of the study area with an occurrence date of 1905. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) but was determined to have a low potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Dark-eyed gilia (*Gilia millefoliata*) is an annual herb in the Polemoniaceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G2/S2. Its elevation range is reported from 1 to 60 meters above sea level. Within its range state-wide, its blooming period is reported as April through July. This species is reported from coastal dune habitats. There are 54 RareFind occurrences for this taxon within the nine-quad search, including two occurrences adjacent to the study area with occurrence dates in 2014 and 2020. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was observed within 50 feet of the western study area boundary. Although suitable habitat may exist within the study area for this species, it was not detected within the study area.

American glehnia (*Glehnia littoralis ssp. leiocarpa*) is a perennial herb in the Apiaceae family. It is neither state nor federally listed, but has a CRPR of 4.2 and a heritage rank of G5T5/S2S3. Its elevation range is reported from 0 to 20 meters above sea level. Within its range state-wide, its blooming period is reported as May through August. This species is reported from coastal dune habitats. There is no RareFind occurrence for this taxon within the nine-quad search, though it has been reported from

several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a moderate potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Short-leaved evax (*Hesperevax sparsiflora var. brevifolia*) is an annual herb in the Asteraceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and has a heritage rank of G4T3/S2. Its elevation range is from 0 to 215 meters above sea level. Within its range state-wide, its blooming period is reported as March through June. This species is reported from coastal bluff scrub, coastal dunes, and coastal prairie habitats. There are 72 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 2.5 miles southwest of the study area with an occurrence date in 1984. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Harlequin lotus (*Hosackia gracilis*) is a perennial herb in the Fabaceae family. It is neither state nor federally listed, but has a CRPR of 4.2 and a heritage rank of G3G4/S3. Its elevation range is reported from 0 to 700 meters above sea level. Within its range state-wide, its blooming period is reported as March through July. This species is reported from broadleaved upland forests, coastal bluff scrub, coastal prairie, coastal scrub, meadows, seeps, marshes and swamps, north coast coniferous forests, and valley and foothill grassland habitats. There is no RareFind occurrence for this taxon within the nine-quad search, though it has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023), but was determined to have a low potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Perennial goldfields (*Lasthenia californica ssp. macrantha*) is a perennial herb in the Fabaceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G3T2/S2. Its elevation range is reported from 5 to 520 meters above sea level. Within its range state-wide, its blooming period is reported as January through November. This species is reported from coastal bluff scrub, coastal scrub, and coastal dune habitats. There are 59 RareFind occurrence for this taxon within the nine-quad search, the closest being within an unspecified area approximately 1.4 miles southeast of the study area with an occurrence date in 1913. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023), but was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Seaside pea (*Lathyrus japonicus*) is a perennial rhizomatous herb in the Fabaceae family. It is neither state nor federally listed, but has a CRPR of 2B.1 and a heritage rank of G5/S2. Its elevation range is reported from 3 to 65 meters above sea level. Within its range state-wide, its blooming period is reported as May through August. This species is reported from coastal dune habitats. There are 24 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 3.5 miles of the southeast of the study area with an occurrence date in 1915. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a moderate potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Marsh pea (*Lathyrus palustris*) is a perennial herb in the Fabaceae family. It is neither state nor federally listed, but has a CRPR of 2B.2 and a heritage rank of G5/S2. Its elevation range is reported from 2 to 140 meters above sea level. Within its range state-wide, its blooming period is reported as March through

August. This species is reported from bogs and fens, lower montane coniferous forests, marshes and swamps, north coast coniferous forests, coastal prairie, and coastal scrub habitats, primarily from moist coastal areas. There are 13 RareFind occurrences for this taxon within the nine-quad search, the closest being adjacent to the study area with an occurrence date in 2003. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Beach layia (*Layia carnosa*) is an annual herb in the Asteraceae family. It is Federally threatened, and State listed as Endangered. This species has a CRPR of 1B.1 and heritage rank of G2/S2. Its elevation range is reported from 0 to 30 meters above sea level. Within its range state-wide, its blooming period is reported as March through July. This species is reported from coastal dune and coastal scrub habitats. There are 25 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 1.4 miles north of the study area with an occurrence date in 2018. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was observed approximately 200 feet west of the western boundary of the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Howell's montia (*Montia howellii*) is an annual herb in the Montiaceae family. It is neither state nor federally listed, but has a CRPR of 2B.2 and a heritage rank of G3G4/S2. Its elevation range is reported from 10 to 1,215 meters above sea level. Within its range state-wide, its blooming period is reported as March through May. This species is reported from vernally mesic meadows and seeps, north coast coniferous forests, and sometimes roadside habitats. There are 123 RareFind occurrences for this taxon within the nine-quad search, the closest being a non-specified area approximately 1.5 miles to the east of the study area with an occurrence date in 1916. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a moderate potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Wolf's evening-primrose (*Oenothera wolfii*) is a biennial herb in the Asteraceae family. It is neither state nor federally listed, but has a CRPR of 1B.1 and heritage rank of G2/S2. Its elevation range is reported from 0 to 125 meters above sea level. Within its range state-wide, its blooming period is reported as May through October. This species is reported from coastal bluff scrub, coastal dunes, coastal prairie, and low montane coniferous forest habitats. There are 29 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 0.6 miles north of the study area with an occurrence date in 2001. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Dwarf alkali grass (*Puccinellia pumila*) is a perennial herb in the Poaceae family. It is neither state nor federally listed, but has a CRPR of 2B.2 and heritage rank of G5/SH. Its elevation range is reported from 1 to 10 meters above sea level. Within its range state-wide, its blooming period is reported as July. This species is reported from marsh and swamp habitats. There is no RareFind occurrence for this taxon within the nine-quad search, though it has been reported from within 10 miles of the study area through Calflora (Calflora, 2023). This species was determined to have a low potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Maple-leaved checkerbloom (*Sidalcea malachroides*) is a perennial herb in the Malvaceae family. It is neither state nor federally listed, but has a CRPR of 4.2 and a heritage rank of G3/S3. Its elevation range

is reported from 4 to 765 meters above sea level. Within its range state-wide, its blooming period is reported as April through August. This species is reported from broadleaved upland forests, coast prairie, coast scrub, north coast coniferous forests, and riparian habitats, primarily from woodlands and clearings near the coast, often in disturbed areas. There are 136 RareFind occurrences for this taxon within the nine-quad search, the closest being within an unspecified area approximately 1.4 miles southeast of the study area with an occurrence date in 1921. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) but was determined to have a low potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Siskiyou checkerbloom (*Sidalcea malviflora* ssp*. patula*) is a perennial herb in the Malvaceae family. It is neither state nor federally listed, but has a CRPR of 1B.2 and a heritage rank of G5T2/S2. Its elevation range is reported from 5 to 1,255 meters above sea level. Within its range state-wide, its blooming period is reported as April through August. This species is reported from broadleaved upland forests, coast prairie, coast scrub, north coast coniferous forests, and riparian habitats, primarily from woodlands and clearings near the coast; often in disturbed areas. There are 60 RareFind occurrences for this taxon within the nine-quad search, the closest being approximately 2 miles to the southeast of the study area with an occurrence date in 2020. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023), but was determined to have a low potential of occurrence within the study area. Although suitable habitat exists within the study area for this species, it was not detected.

Western sand-spurrey (*Spergularia canadensis var. occidentalis*) is an annual herb in the Caryophyllaceae family. It is neither state nor federally listed, but has a CRPR of 2B.1 and a heritage rank of G5T4/S1. Its elevation range is reported usually from 0 to 3 meters above sea level. This species is reported from marshes and swamps, including coastal salt marsh habitats. There are 4 RareFind occurrences for this taxon within the nine-quad search, the closest being an unspecified area that includes the study area with an unknown occurrence date. This species has been reported from several locations within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a high potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

Twisted horsehair lichen (*Sulcaria spiralifera*) is a lichen in the Parameliaceae family. It is neither state nor federally listed, but has a CRPR of 1B.1 and a heritage rank of G3/S1S2. Its elevation range is reported usually from 0 to 30 meters above sea level. This species is reported from north coast coniferous forest and usually grows on conifers. There are 18 RareFind occurrences for this taxon within the nine-quad search, the closest being adjacent to the study area to the north with an occurrence date in 1975. This species has been reported from within 10 miles of the study area through Calflora (Calflora, 2023) and was determined to have a moderate potential of occurrence within the study area. Although suitable habitat may exist within the study area for this species, it was not detected.

6.1.2 Special-status Botanical Species Observed

In summary, two special-status CRPR 1B species and one CRPR 4 species were observed within the study area during the surveys. This included three occurrences of Point Reyes bird's beak (CRPR 1B.2); one occurrence of Humboldt Bay owl's clover (CRPR 1B.2); and three occurrences of seacoast angelica (CRPR 4.2; Appendix 4, Table 4-1). No state or federally listed plants were observed within the study area. The locations of the special-status and CRPR 4 plant occurrences are shown in Appendix 1, Figures 3 and 5. Each mapped occurrence is numbered and shown on the figures and described below.

Point Reyes bird's beak (CRPR 1B.2) is considered rare, threatened, or endangered in California and elsewhere, and is moderately threatened in California. This species is an annual hemi-parasitic herb in the Orobanchaceae family with pinkish purple flowers that typically bloom between June and October (CNPS, 2023a) (see Appendix 5, Photos 25-28). Point Reyes bird's beak typically grows in coastal salt marsh from 0-35 feet, but is most common around the high tide line which experiences regular tidal inundation by brackish water (CNPS, 2023a and Jepson Flora Project (eds.), 2023). This species is differentiated from other *Chloropyron* species and *Chloropyron maritimum* subspecies by four fertile stamens and entire or notched inner brackets and a stem that has zero branches or few branches that are less than or equal to the central spike.

Point Reyes bird's beak is distributed along the California coastline, but is concentrated around the San Francisco Bay area and the Humboldt Bay area with other scattered observations on the coast. Its distribution stretches from San Luis Obispo County in the south to southwestern Oregon in the north and is State listed as endangered in Oregon (CNPS, 2023a and Jepson Flora Project (eds.), 2023). Many local observations in salt marsh around Humboldt Bay are recorded and it can be locally abundant where conditions are right. This species was historically much more common in proper habitat, but has been reduced by development and salt marsh alteration. CNPS lists several ongoing threats for this species, including foot traffic and trampling, non-native plants, and cattle grazing with foot traffic and associated trampling as impacting the greatest percentage of populations (CNPS, 2023a).

Three occurrences of Point Reyes bird's beak were recorded within the study area in 2020 and 2022 (see Appendix 1, Figure 3).

- Occurrence 1 was the largest occurrence comprised of several thousand individuals in 10 polygons and 11 scattered individuals over a 930-foot stretch of salt marsh along Humboldt Bay. All individuals and polygons that make up Occurrence 1 were within 100 feet of another. In total, Occurrence 1 populations cover approximately 1,801 square feet of salt marsh in the northern portion of the study area.
- Occurrence 2 consisted of two polygons containing an estimated 500 individuals within salt marsh in a slough between the railroad and Vance Avenue. This occurrence is within 100 feet of Occurrence 1 at its nearest point, however it is separated by the railroad fill prism and hydrologically, the slough connects to Humboldt Bay approximately 750 feet north of this population, therefore it is considered a different occurrence. In total, Occurrence 2 populations cover approximately 561 square feet of salt marsh in the northern portion of the study area.
- Occurrence 3 consisted of one isolated individual approximately 200 feet south of Occurrence 1 at its nearest point within salt marsh along Humboldt Bay. This individual is the southernmost extent of Point Reyes bird's beak within the study area and is approximately 0.25 mile south of the northernmost occurrence within the study area.

Site quality was good for all three occurrences due to the presence of high-quality mid elevation salt marsh habitat within the northern portion of the study area, although this salt marsh likely represents a small portion of what was historically present. It should be noted that extensive salt marsh north of the study area supports thousands of individuals, as noted during reconnaissance site visits of the area. Common associated species included salt grass (*Distichlis spicata*), marsh jaumea (*Jaumea carnosa*), annual pickleweed (*Salicornia depressa*), arrow grass (*Triglochin maritima*), and perennial pickleweed (*Salicornia pacifica*), among others.

Humboldt Bay owl's clover (CRPR 1B.2) is considered rare, threatened, or endangered in California and elsewhere and is moderately threatened in California. This species is an annual hemi-parasitic herb in the Orobanchaceae family with somewhat showy purple flowers that typically bloom between April and

August (CNPS, 2023a; see Appendix 5 photos 29 and 30). Humboldt Bay owl's clover typically grows in coastal salt marsh from 0-10 feet but is most common around the high tide line which experiences regular tidal inundation by brackish water (CNPS, 2023a and Jepson Flora Project (eds.), 2023). This species is differentiated from other annual *Castilleja* species by three bract lobes that are white or pale yellow and seeds less than 1millimeter (mm) with a shallow coat. It is further differentiated from other *Castilleja ambigua* varieties by being fleshy, having zero to few branches and by its occurrence in and adaptation to salt marsh habitat.

Humboldt Bay owl's clover is endemic to California and is distributed along the California coastline but is most concentrated in the Humboldt Bay area with other scattered observations along the coast. Its distribution stretches from Humboldt Lagoons State Park in the north to Tomales Bay in the south (CNPS, 2023a and Jepson Flora Project (eds.), 2023). Many local observations in salt marsh around Humboldt Bay are recorded and it can be locally abundant where conditions are right. This species was historically much more common in proper habitat but has been reduced by development and salt marsh alteration. CNPS lists several ongoing threats for this species including coastal development, foot traffic and trampling, and non-native plants with development and foot traffic and associated trampling as impacting the greatest percentage of populations (CNPS, 2023a).

One occurrence of Humboldt Bay owl's clover was recorded within the study area in 2020 and 2022 (see Appendix 1, Figure 3). This occurrence consisted of two populations comprised of over 100 individuals mapped within two discrete polygons covering 562 square feet. This occurrence was located within mid-level salt marsh in a slough between the railroad and Vance Avenue. It has a very similar spatial distribution and location to Point Reyes bird's beak Observation 2.

Site quality was good for this occurrence of Humboldt Bay owl's clover due to high quality mid-elevation salt marsh habitat, limited disturbance, minimal invasive species cover and slight variations in topography representing potential habitat for this species. This salt marsh likely represents a small portion of what was historically present. Common associated species included salt grass, marsh jaumea, annual pickleweed, arrow grass, Point Reyes bird's beak, and perennial pickleweed, among others.

Sea coast angelica (CRPR 4.2) is of limited distribution and is moderately threatened in California. It is a tap rooted perennial herb in the Apiaceae family that grows up to 4.9 feet (1.5 meters) in height (Jepson Flora Project (eds.), 2023; see Appendix 5, Photos 31 and 32). It is characterized by large, shiny-green, compound leaves and clusters of numerous, small, usually white, flowers arranged in compound umbels (Jepson Flora Project (eds.), 2023). The flowers typically bloom between April and September (CNPS, 2023a). Sea coast angelica is only found within coastal habitats in California, such as within coastal backdunes, on coastal bluffs and beaches, and along edges of coastal marshes and riparian areas (CNPS, 2023a; Jepson Flora Project (eds.), 2023). It is distinguished from similar species of angelica in the region by the presence of bractlets (such as, small bracts) below each small cluster of flowers and the lack of white hairs on the lower leaf surface, among other features (Jepson Flora Project (eds.), 2023).

Sea coast angelica is distributed along the northern California coastline, but is concentrated around the Humboldt Bay area. Its distribution stretches from Albion in Mendocino County to the Oregon border and up into Alaska (CNPS, 2023a and Jepson Flora Project (eds.), 2023). Many local observations are recorded in Humboldt County, specifically around Humboldt Bay, and it can be locally abundant where conditions are right. This species is restricted to coastal areas and has a limited distribution, which makes it more susceptible to disturbance and habitat alteration. CNPS states that it is possibly threatened by invasive plants (CNPS, 2023a) however other threats exist including foot traffic and trampling, and development or habitat.

Three occurrences of sea coast angelica were recorded within the study area in 2020 and 2022 (Appendix 1, Figures 3 and 5).

- Occurrence 1 consisted of one individual in the far northern corner of the study area under the California State Route 255 bridge. This occurrence was located above the Mean Higher High Water (MHHW) and was at the upper edge of salt marsh vegetation.
- Occurrence 2 consisted of one individual in the northern portion of the study area. This occurrence was located at the upper edge of salt marsh vegetation and above the MHHW and in an area that rarely experiences tidal inundation.
- Occurrence 3 consisted of four individuals within the northcentral portion of the study area along Humboldt Bay immediately north of the existing dock. The four individuals were located above the MHHW near the top of the embankment above the salt marsh vegetation and are above the reach of tidal inundation even during extreme events.

Site quality was good for the two northernmost occurrences due to the presence of high-quality high elevation salt marsh habitat within the northern portion of the study area, although abundant non-native vegetation occurs at high densities just above the high salt marsh vegetation. Site quality was fair for Occurrence 3, which exists in a narrow band of habitat between Humboldt Bay and invasive dominated areas and impervious pavement from former industrial activity. Furthermore, portions of the embankment below Occurrence 3 are eroding, which could jeopardize the long-term viability of this occurrence. Common associated species included coast willow, Italian wildrye (*Festuca perennis*), California blackberry, spring vetch (*Vicia sativa*), red fescue (*Festuca rubra* ssp. *pruinosa*), Pacific aster (*Symphyotrichum chilense*), and jubata grass, among others.

Although CRPR 4 plants do not meet the definition of "rare, threatened, or endangered" under CRPR definitions, they are considered of limited distribution in California. Specific CRPR 4 species may be considered of local concern or rare or unique to a region and therefore qualify as special-status species under CEQA (State CEQA guidelines Sections 15380(d) and 15125(c)). For example, they may be considered special-status if they are at the periphery of the species' range, at the type locality, are in areas where they are especially uncommon or declining, associated with unusual or declining habitats, occur on unusual substrates, or are maintained on sensitive species lists by other agencies (CNPS, 2020). Seacoast angelica (CRPR 4) within the Project was evaluated using these criteria by reviewing distributional information available from herbarium records in the Consortium of California Herbaria (CCH) online specimen database (CCH1 Portal, 2023), Calflora (Calflora, 2023a), and records from the region provided by the CNDDB (CDFW, 2023a). The sea coast angelica within the study area qualifies as special-status under CEQA based on the unusual and declining habitat in which it occurs. Salt marsh associated with Humboldt Bay has been significantly altered and reduced, and natural embankments above salt marsh have been hardened for large portions of bay lands, especially within the vicinity of the Project.

6.2 Special-status Animal Species

Based on a review of special-status animal species, 51 special-status animal species have been reported with the potential to occur in the Project region consisting of the Eureka quadrangle and the surrounding quadrangles (see Appendix 2, Table 2-2). Of the special-status animal species potentially occurring in the region, 32 animal species are considered to have a potential to occur at the Project site, including nine species that were observed within the study area and one observed adjacent to the site. Species with a potential for occurrence within the study area are discussed below. During field surveys,

a total of 51 wildlife species were observed, documented by trail cameras, detected acoustically, or detected by sign (for example, scat and tracks). See Appendix 4, Table 4-2 for a complete list of animal species detected in the study area during field visits.

6.2.1 Amphibians

The northern red-legged frog (*Rana aurora*) is reported from lowlands, foothills, humid forests, woodlands, grasslands, and within and adjacent to streamsides with plant cover. Breeding occurs in permanent water sources between December and April, with metamorphosis completed by late July. Typically a pond frog, found in or near water, but northern red-legged frogs can be wide-ranging and highly terrestrial, sometimes inhabiting damp places far from water.

Status: Federal None, State None, Species of Special Concern, Global Rank Apparently Secure, State Rank Vulnerable.

Although this species was not detected, patches of suitable habitat exist within portions of the study area and in the surrounding vicinity for this species and has a low potential to occur on site. There are no RareFind occurrences of this species within or adjacent to the study area. No suitable habitat is identified throughout the majority of the site, with the northern undeveloped portion of the study area identified as moderate suitability by the CWHR system.

6.2.2 Birds

The Cooper's hawk (*Accipiter cooperii*) occupies woodlands, open and interrupted and marginal habitats. Nests are primarily in riparian areas with deciduous trees, in canyons bottoms, and also among live oaks. This species is often found in suburban areas, parks, and open fields and primarily hunt other birds and small mammals.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Apparently Secure.

This species was observed foraging within the study area on April 14, 2022 and suitable habitat exists for this species within the forested and forest edge portions of the study area. There are no RareFind occurrences of this species within or adjacent to the study area. The CWHR system identifies the majority of the site as high suitability habitat with the northern undeveloped portion of the study area identified as low suitability for this species. The study area primarily provides foraging habitat, although areas of nesting habitat may be available, this species tends to prefer more dense wooded areas with taller trees for nesting.

The sharp-shinned hawk (*Accipiter striatus*) is found in pine, oak, and other mixed coniferous forests, riparian areas, and usually nesting within 275 feet of water. They require dense forest, ideally with a closed canopy, for breeding. They occupy a wide range of elevations, from sea level to near tree line. In the winter season, this species can be found at forest edges, in somewhat more open habitats than the dense forests they breed in, as well as in suburban areas with bird feeders.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Apparently Secure.

Although this species was not detected, suitable foraging habitat exists within portions of the study area for this species. There are no RareFind occurrences of this species within or adjacent the study area. The

CWHR system identifies the majority of the site as high suitability habitat with the northern undeveloped portion of the study area identified as low suitability for this species. However, typical suitable nesting habitat is not present within the study area and is not expected to nest on site.

The great egret (*Ardea alba*) occupies brackish marsh, estuary, freshwater marsh, marsh and swamp, riparian forest, and wetland. This species is a colonial nester in large trees. Rookery sites are usually located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.

Status: Federal None, State None, Global Rank Secure, State Rank Apparently Secure. This species is on the CDFW Special Animals List (CDFW, 2023d) particularly for rookeries.

Although this species was not detected during the 2022 site visits, it is expected to use this area occasionally, as foraging habitat is available in patches throughout the site and possible nesting habitat in the northern undeveloped portion. There are no RareFind occurrences of this species within or adjacent to the study area, although, there is a known rookery on nearby Indian Island (Tuluwat) approximately 0.6 miles to the east where this species has historically been reported to nest. The entire site is identified as high suitability habitat for this species by CWHR. eBird reports an October 2020 occurrence of this species at North Spit of the Humboldt Bay, an unspecified area of the Samoa Peninsula.

The great blue heron (*Ardea herodias*) can be found in brackish marsh, estuary, freshwater marsh, marsh and swamp, riparian forest, and wetland. Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites are typically in close proximity to foraging areas such as marshes, lake margins, tide-flats, rivers and streams, and wet meadows.

Status: Federal None, State None, Global Rank Secure, State Rank Apparently Secure. This species is on the CDFW Special Animals List (CDFW, 2023d) particularly for rookeries.

This species was observed flying over the site on April 14, 2022, though was not considered “present”, but is expected to use the study area occasionally, as foraging habitat is available in patches throughout the site and possible nesting habitat in the northern undeveloped portion. No RareFind occurrences are reported within or adjacent to the study area, although, there is a known rookery site on nearby Indian Island (Tuluwat) approximately 0.6 miles to the east where this species has historically been reported to nest. The CWHR system identifies the majority of the site as high suitability habitat with portions of the northern undeveloped area identified as low suitability for this species. eBird reports an October 2019 occurrence of this species at North Spit of the Humboldt Bay.

The short-eared owl (*Asio flammeus*) is found in swamp lands, both fresh and salt, lowland meadows, foothill grassland, wetland, and irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests are made on dry ground in a depression, concealed in vegetation.

Status: Federal None, State None, Species of Special Concern, Global Rank Secure, State Rank Vulnerable.

This species was not detected during the 2022 site visits, though can often be observed during the day in the vicinity. There are no RareFind occurrences of this species within or adjacent to the study area, although the entire site is identified as high suitability habitat for this species by CWHR. Foraging habitat exists within patches of the study area, although nesting habitat is minimal and of low quality compared to the surrounding landscape.

The American bittern (*Botaurus lentiginosus*) occurs in freshwater and slightly brackish marshes as well as in coastal saltmarshes. Nests are made in dense reed beds or other tall vegetation. Wintering birds may also forage in dry grasslands and other terrestrial habitats.

Status: Federal None, State None, Global Rank Apparently Secure, State Rank Vulnerable/Apparently Secure.

This species was not detected during 2022 site visits and is not expected to occur on site for nesting. Suitable foraging habitat is patchy and of low quality compared to the surrounding landscape. There are no RareFind occurrences of this species within or adjacent to the study area and there is no identified suitable habitat throughout the site by CWHR, aside from small, isolated areas of low suitability habitat along the shoreline.

The Vaux's swift (*Chaetura vauxi*) nests in coniferous or mixed forest, foraging in openings, especially above streams. They nest communally, usually in hollow trees. This species typically uses mature trees for nesting, however, nonbreeding birds also use tree hollows and chimneys during the summer, roosting communally.

Status: Federal None, State None, Species of Special Concern, Global Rank Secure, State Rank Imperiled/Vulnerable.

Although this species was not detected, suitable foraging habitat and potentially nesting and roosting habitat exists within the study area for this species. There are no RareFind occurrences of this species within or adjacent to the study area. The majority of the site is identified as moderate suitability habitat by CWHR with no identified suitable habitat in the northern undeveloped portion of the study area.

The Western snowy plover (*Charadrius alexandrines nivosus*) occupies sandy beaches, river bars, salt pond levees, wetlands and shores of large alkali lakes. This species needs sandy, gravelly or friable soils for nesting. They forage along river gravel bars and sandy beaches.

Status: Federal Threatened, State None, Species of Special Concern, Global Rank Vulnerable, State Rank Imperiled/Vulnerable.

Although this species was not detected, patches of suitable foraging habitat exists for this species along the bay shore edges of the study area. Suitable habitat of the Humboldt Bay area is documented as ocean beaches and gravel bars along the Eel River (CDFW, 2023b). The nearest RareFind occurrence of this species is noted as an unspecified area along the ocean beach of North Spit of the Humboldt Bay (Samoa) with an occurrence date of 2014. eBird records show a November 2023 occurrence of this species at Humboldt Bay-North Jetty and an October 2019 occurrence at North Spit of the Humboldt Bay.

Survey efforts have shown that western snowy plovers prefer to nest and make courtship scrapes in relatively flat, open, sparsely vegetated habitats, probably enabling early detection of predators, and preferentially select flatter and wider habitats with more debris and less vegetation (Raby, 2018).

During the non-breeding season, Brindock and Colwell (2011) found that snowy plovers occupied wide beaches that had more brown algae and associated invertebrates and less vegetation compared with unoccupied sites, suggesting that plovers selected habitats that provide more food and have lower risk of predation.

Existing development and narrow sandy shore above high tide line creates unsuitable nesting habitat for this species within the study area. This species is sensitive to disturbance and is not expected to frequent the proposed Project location. Habitat suitability modeling for this species is not available on the CWHR system. The closest Designated Critical Habitat for this species is mapped 4 miles to the southwest and 7.8 miles to the northeast of the study area (USFWS, 2023b; CDFW, 2023b).

The Northern harrier (*Circus hudsonius*) is found in coastal salt and fresh-water marsh and riparian scrub, nesting and foraging in grasslands, from salt grass in desert sink to mountain cienagas. The nest is built of a large mound of sticks on the ground in shrubby vegetation, usually at the marsh edge.

Status: Federal None, State None, Species of Special Concern, Global Rank Secure, State Rank Vulnerable.

Although this species was not detected, suitable habitat exists within the vegetated portions of the study area and surrounding. This species is known to regularly occur in the immediate vicinity year-round and has the potential to occur on site. There are no RareFind occurrences within or adjacent to the study area, although there is a report of a historical nest approximately 1.7 miles to the southeast with an occurrence date from 2017. eBird reports an October 2019 occurrence of this species at North Spit of the Humboldt Bay. The majority of the study area is identified as medium suitability habitat with high suitability mapped in the northern undeveloped portion of the study area.

The snowy egret (*Egretta thula*) is found in marsh and swamp, meadow and seep, riparian forest, riparian woodland, and wetlands. This species is a colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites are typically situated close to foraging areas such as marshes, tidal-flats, streams, wet meadows, and borders of lakes in inland areas of the west.

Status: Federal None, State None, Global Rank Secure, State Rank Apparently Secure. Special-status for this species refers specifically to rookery sites.

Although this species was not detected, suitable foraging habitat exists within the riparian, wetlands, and shoreline portions of the study area. No RareFind occurrences are reported within or adjacent to the study area, although, there is a known rookery site on nearby Indian Island (Tuluwat) approximately 0.6 miles to the east where this species has historically been reported to nest. eBird reports an October 2019 occurrence of this species at North Spit of the Humboldt Bay. The entire study area is identified as low suitability habitat for this species by CWHR.

The white-tailed kite (*Elanus leucurus*) occurs in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes are used for foraging close to isolated, dense-topped trees for nesting and perching. This species is known to occur primarily in the agricultural fields and marshes in the area.

Status: Federal None, State None, Fully Protected, Global Rank Secure, State Rank Critically Imperiled/Imperiled.

Although this species was not detected, suitable habitat exists throughout portions of the study area and adjacent. There are no RareFind occurrences of this species within or adjacent to the study area. There are historical nest sites to the southeast approximately 2.6 miles away with the most recent occurrence date in 2015. There is a November 2023 eBird report of this species occurring at North Spit of the Humboldt Bay. The majority of the study area is identified as high suitability with the northern

undeveloped portion of the study area identified as low suitability habitat by CWHR. Foraging habitat exists in the short grass and marsh areas and potential nesting habitat does exist in the northern undeveloped portion of the study area.

The willow flycatcher (*Empidonax traillii*) is a migrant and occasional breeder locally in meadow and seep, riparian scrub, riparian woodland, and wetland areas. This species inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters from 2.000-8.000 ft elevation. They require dense willow thickets for nesting and roosting. Low, exposed branches are used for singing posts and hunting perches. The subspecies that occurs in northern California is the little willow flycatcher (*Empidonax traillii brewsterii*). The breeding range for *E.t. brewsterii* is generally considered to be the higher elevations of the Sierra Nevada ranges and into the northwestern USA (USDA, 2023). Nesting in Humboldt County appears to be a rare event; based on 5 years (1995-1999) of intensive breeding bird surveys conducted throughout Humboldt County, there were only one confirmed, two "probable" and four "possible", breeding occurrences reported (Hunter et al., 2005).

Status: Federal None, State Endangered, Global Rank Secure, State Rank Critically Imperiled/Imperiled.

This species was not detected during reconnaissance surveys, and protocol-level surveys were not conducted. Suitable habitat exists in patches of the study area although it is of low quality and this species is considered rare along the northern California coast. Willow flycatcher is much more likely to occur as a migrant moving through the area, typically flying 125 meters above ground level (HT Harvey, 2019). There are no RareFind occurrences of this species within or adjacent to the study area and there is no identified suitable habitat within or adjacent to the study area by CWHR.

The merlin (*Falco columbarius*) occurs within seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, as well as farms and ranches. Clumps of trees or windbreaks are required for roosting in open country. Merlin tend to use abandoned nests of crows or hawks to lay their eggs.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Vulnerable/Apparently Secure.

This species was **observed** foraging within the study area on April 14, 2022. Suitable foraging habitat exists within and adjacent to the proposed Project site. There are no RareFind occurrences of this species within or adjacent to the study area. The majority of the site is identified as medium suitability habitat with the northern undeveloped portion identified as low suitability habitat for this species. Merlin are known to breed in Alaska and Canada and are not expected to nest within the study area.

The American peregrine falcon (*Falco peregrinus anatum*) is found in many open habitats, however, more likely along coastlines, lake edges, and mountain edges and also near wetlands, lakes, rivers, or other water. This species nests on cliffs, banks, dunes, mounds, and human-made structures. This species is known to occur around the Humboldt Bay area.

Status: Federal Delisted, State Delisted, Sensitive, Global Rank Apparently Secure, State Rank Vulnerable/Apparently Secure.

This species was **observed adjacent** to the study area on April 14, 2022. Suitable foraging habitat exists within and adjacent to the proposed Project site. The entire study area is identified as high suitability habitat by CWHR, although suitable nesting habitat is scarce and of low-quality compared to the

surrounding landscape. There are no RareFind occurrences with a specified location within the study area. There is a historical nest adjacent to the site with a disclosed exact location with an occurrence date in 2020.

The bald eagle (*Haliaeetus leucocephalus*) occurs in lower montane conifer forest and old growth. They are found along ocean shores, lake margins, and rivers for both nesting and wintering. Most nests are within one mile of water. Nests are built in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. This species roosts communally in winter.

Status: Federal Delisted, State Endangered, Fully Protected, Global Rank Secure, State Rank Vulnerable.

Although this species was not detected during site visits, suitable foraging habitat does exist adjacent to the study area. No nesting habitat is available within or immediately adjacent to the proposed Project site. There are no RareFind occurrences of this species within or adjacent to the study area. The majority of the site has no identified suitable habitat by CWHR, with areas of low suitability in the northern undeveloped portion of the study area.

The long-billed curlew (*Numenius americanus*) occupies Great Basin grassland meadow and seep. Breeds in upland shortgrass prairies and wet meadows in northeastern California. Habitats on gravelly soils and gently rolling terrain are favored over others. This species is known to forage along beaches and sandy shores on the Samoa peninsula and Humboldt Bay.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Imperiled.

Although this species was not observed during site visits, suitable foraging habitat does exist adjacent to the study area, within the mudflats along the shoreline of Humboldt Bay. There are no RareFind occurrences of this species within or adjacent to the study area. The majority of the site has no identified suitable habitat by CWHR, with areas of medium to high suitability in the northern undeveloped portion of the study area. However, no suitable nesting habitat is available within or immediately adjacent to the proposed Project site and this species is known to breed further inland.

The black-crowned night heron (*Nycticorax nycticorax*) occurs in marsh and swamp, riparian forest, riparian woodland, and wetlands. This species is a colonial nester, usually in trees, and occasionally in tule patches. Rookery sites located adjacent to foraging areas such as lake margins, mud-bordered bays, and marshes.

Status: Federal None, State None, Global Rank Secure, State Rank Apparently Secure. Special-status refers specifically to rookery sites.

This species was **observed** during a previous biological assessment within a portion of the study area (SHN, 2020). Suitable roosting, rookery, and foraging habitat exists for this species within portions of the study area, particularly within the northern undeveloped portion. The majority of the site is identified as medium suitability habitat by CWHR. No RareFind occurrences are reported within the study area, although, there is a known rookery site on nearby Indian Island (Tuluwat) approximately 0.6 miles to the east where this species has historically been reported to nest.

The osprey (*Pandion haliaetus*) occurs along ocean shores, riparian forest, bays, fresh-water lakes, and larger streams. This species builds large nests built in tree-tops or tall human-made structures within 15 miles of a good fish-producing body of water. Observations of this species is frequent around the Humboldt Bay area and several nests exist along the shores of the Samoa peninsula.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Apparently Secure.

There are no specific RareFind occurrences within the study area and the CWHR system identifies patches of low suitability along the shoreline in the study area with no habitat suitability identified for a majority of the site. However, this species was **observed** with active nests throughout the proposed Project site and is expected to continue to nest on site (see Appendix 1, Figures 6, 8, 9, and 11; Appendix 5, Photo 61). eBird reports a May 2021 occurrence of this species at North Spit of the Humboldt Bay.

More details on osprey observations are included in Section 6.3 Focused Wildlife Surveys.

Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) occurs in grasslands with few trees, cultivated fields, tidal salt marshes, and estuaries. This species nests on the ground, typically in a thick thatch of dead grasses or in low shrubs such as blackberry.

Status: Federal None, State None, Species of Special Concern, Global Rank Imperiled/Vulnerable, State Rank Imperiled/Vulnerable.

Although this species was not detected, suitable foraging and potential nesting habitat exists within the study area for this species and it has the potential to occur on site. There are no RareFind occurrences of this species within or adjacent to the study area. eBird reports an October 2019 occurrence of this species at North Spit of the Humboldt Bay. The majority of the study area has no identified suitable habitat by CWHR, with patches of medium suitability habitat in the northern undeveloped portion of the study area.

The California brown pelican (*Pelecanus occidentalis californicus*) occur seasonally in estuaries and coastal marine habitat. They are a colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally. This species occurs along the Humboldt County coastline and Humboldt Bay primarily during migration and winter, with breeding areas further south.

Status: Federal Delisted, State Delisted, Global Rank Apparently Secure (Subspecies Vulnerable), State Rank Vulnerable.

This species was **observed** flying over the study area during a previous Biological and Habitat Assessment in 2020 (SHN, 2020) and is expected to roost and forage around the suitable habitat of Humboldt Bay. Roosting habitat exists along the edges of the study area along the shoreline on piers and pilings. eBird reports this species in Humboldt County year-round including a May 2021 occurrence at North Spit of the Humboldt Bay. There are no RareFind occurrences of this species within or adjacent to the study area and there is no habitat suitability mapped within or adjacent to the study area by CWHR.

The double-crested cormorant (*Phalacrocorax auritus*) occur in riparian forest, riparian scrub, and riparian woodland. This species is a colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state, usually on the ground with sloping surface, or in tall trees along lake margins. This species is known to nest in various locations around Humboldt Bay.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Apparently Secure.

Suitable habitat exists within portions of the study area for this species and was **observed** roosting and feeding young on July 11, 2022 at 'no name dockfeet and perching in old osprey nests on July 18, 2022

(see Appendix 1, Figure 11). The majority of the Project site has no identified suitable habitat by CWHR, with patches of high suitability in the southern end of the study area and along the shoreline. The adjacent waters of Humboldt Bay are identified as medium suitability habitat. Existing piers, docks, and platforms within the study area are suitable habitat features for this species. There are no RareFind occurrences of this species within or adjacent to the study area. eBird reports a May 2021 occurrence of this species at North Spit of the Humboldt Bay.

The black-capped chickadee (*Poecile atricapillus*) inhabits riparian woodlands in Del Norte and northern Humboldt Counties in the southern extent of its year-round range. It is mainly found in deciduous trees, especially willows and alders, along large or small watercourses. The chickadee excavates its nest cavity in rotten wood, or nests in old woodpecker holes. This species is known to occur and nest in the coastal habitats around the Humboldt Bay area.

Status: Federal None, State None, Watch List, Global Rank Secure, State Rank Vulnerable.

Suitable foraging and nesting habitat exists for this species within portions of the study area and it was **observed** on April 13, 2022. There are no RareFind occurrences of this species within or adjacent to the study area and the CWHR system does not include the Humboldt Bay area in the habitat suitability model. eBird reports a November 2020 occurrence of this species at North Spit of the Humboldt Bay.

6.2.3 Insects

The obscure bumble bee (*Bombus caliginosus*) historically has occurred in coastal areas from Santa Barbara county to north to Washington state. This species nests individually underground or above ground in abandoned bird nests primarily in shrubland and grassland. Preferred food plant genera include *Baccharis, Cirsium, Lupinus, Lotus, Grindelia* and *Phacelia.* Dispersal occurs primarily in spring by queens while searching for suitable nest sites.

Status: Federal None, State None, Global Rank Apparently Secure, State Rank Critically Imperiled/Imperiled.

Although this species was not identified during site visits, suitable habitat exists for this species within and adjacent to the study area and has the potential to occur on site. Habitat suitability is not available for this species in the CWHR program. There are no RareFind occurrences of this species within or adjacent to the study area. The closest occurrence is approximately 1.6 miles to the southeast with an occurrence date in 1962.

Western Bumblebee (*Bombus occidentalis*) requires a variety of flowering resources spring, summer, and fall and nest in colonies in the ground (abandoned ground squirrel or rodent burrows). Since 1998, this bumblebee has undergone a drastic decline throughout some areas of its former range. While viable populations still exist east of the Cascades, the once common populations of central California have largely disappeared. There have been significant range losses particularly from lower elevation sites in California (Xerces Society, 2023).

Status: Federal None, State Candidate Endangered, Global Rank Imperiled/Vulnerable, State Rank Critically Imperiled.

Although this species was not identified during site visits, and may not occur in this coastal habitat, suitable habitat exists for this species within and adjacent to the study area. Habitat suitability is not available for this species in the CWHR program. There is one RareFind occurrence with an unspecified area that includes a portion of the study area with an occurrence date in 1993.

The monarch butterfly (*Danaus plexippus*) occurs from Canada to Mexico and may migrate through Humboldt County. They occupy fields, roadside areas, open areas, wet areas, or urban gardens. Milkweed and other flowering plants are used for food, but they only lay their eggs on milkweed plants. Status: Federal Candidate, State None, Global Apparently Secure/Subspecies Critically Imperiled/Imperiled, State Rank Imperiled.

This species was not detected during site visits and minimal overwintering habitat exists within the study area. No milkweed is present for egg laying. This species is not expected to occur on site other than possibly moving through during migration. There are no RareFind occurrences of this species within or adjacent to the study area. Habitat suitability is not available for this species in the CWHR program.

6.2.4 Mammals

The Townsend's big-eared bat (*Corynorhinus townsendii*) occurs throughout California in a wide variety of habitats including montane forest, riparian woodland, chaparral, and grasslands. This species is most common in mesic sites. They roost in the open, hanging from walls and ceilings. They are extremely sensitive to human disturbance. In the spring and summer, females form maternity colonies in mines, caves, or buildings (Bat Conservation International [BatCon], 2023).

Status: Federal None, State None, Species of Special Concern, Global Rank Vulnerable/Apparently Secure, State Rank Imperiled.

This species was not detected during acoustic survey sampling efforts in 2022. However, the buildings on site that are not currently occupied or in use may provide some roosting habitat for this species, although they are typically associated with desert scrub and pine forest habitats. The majority of the Project site is identified by CWHR as low suitability with patches of medium suitability habitat in undeveloped areas. However, this species is highly sensitive to human disturbance, therefore maternity roosts are not expected on site. There are no RareFind occurrences of this species within or adjacent to the study area.

The Silver-haired bat (*Lasionycteris noctivagans*) occupies coniferous and riparian forest. This species is primarily a coastal and montane forest dweller, feeding over streams, ponds and open brushy areas. It roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes, and rarely under rocks. They need access to drinking water. They form maternity colonies almost exclusively in tree cavities or small hollows and are dependent upon roosts in old-growth areas (BatCon, 2023).

Status: Federal None, State None, Global Rank Vulnerable/Apparently Secure, State Rank Vulnerable/Apparently Secure.

This species was **detected** during acoustic survey sampling efforts on July 11 and July 18, 2022 (see Appendix 6). Suitable foraging and non-maternity roost habitat exists for this species throughout portions of the study area. The majority of the Project site is identified by CWHR as medium suitability habitat with the northern undeveloped portion as low suitability for this species. There are no RareFind occurrences of this species within or adjacent to the study area.

The hoary bat (*Lasiurus cinereus*) occurs in broadleaved upland forest, cismontane woodland, and lower montane and north coast conifer forests. This species prefers open habitats or habitat mosaics, access to trees for cover and open areas or habitat edges for feeding. It roosts solitarily in dense foliage of medium to large trees and feeds primarily on moths. This species requires water.

Status: Status: Federal None, State None, Global Rank Secure, State Rank Apparently Secure.

This species was **detected** during acoustic survey sampling efforts July 18, 2022 (see Appendix 6). Suitable habitat exists for this species throughout portions of the study area which is identified as low suitability by CWHR. There are no other RareFind occurrences of this species within or adjacent to the study area.

The long-eared myotis (*Myotis evotis*) is found in all brush, woodland and forest habitats from sea level to about 9,000 ft but tends to prefer coniferous woodlands and forests. Nursery colonies can be found in buildings, crevices, spaces under bark, and snags. Caves are used primarily as night roosts.

Status: Federal None, State None, Global Rank Secure, State Rank Vulnerable.

Although this species was not detected during the acoustic sampling effort in 2022, suitable habitat exists for this species throughout portions of the study area and has the potential to occur on site. The CWHR does not identify suitable habitat throughout the majority of the study area, with patchy medium suitability habitat in the northern undeveloped portion. There are no RareFind occurrences of this species within or adjacent to the study area.

The Yuma myotis (*Myotis yumanensis*) occupies coniferous and riparian forests. Optimal habitats are open forests and woodlands with sources of water over which to feed. Their distribution is closely tied to bodies of water. Maternity colonies can be found in caves, mines, buildings, or crevices.

Status: Federal None, State None, Global Rank Secure, State Rank Apparently Secure.

This species was **detected** during acoustic survey sampling efforts on July 11 and July 18, 2022 (see Appendix 6). Suitable habitat exists for this species throughout portions of the study area. The CWHR identifies the majority of the Project site as low suitability habitat for this species. The northern portion of the study area is identified as medium suitability habitat. There are no other RareFind occurrences of this species within or adjacent to the study area.

6.2.5 Reptiles

The western pond turtle (*Emys marmorata*) is a thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 ft elevation. This species needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers (km) from water for egg-laying. Although this species spends most of its time in the water, terrestrial habitat is important for nesting, overwintering, and dispersal.

Status: Federal Proposed Threatened, State None, Global Rank Secure, State Rank Secure.

Although this species was not detected during 2022 site visits, suitable habitat may exist within the northern undeveloped portion of the study area. The CWHR identifies the majority of the study area as

low suitability habitat for this species. The northern portion of the study area is identified as medium suitability habitat. There are no RareFind occurrences of this species within or adjacent to the study area. The nearest occurrence is over 3 miles to the southeast with an occurrence date of 2013.

6.3 Focused Wildlife Surveys

Osprey

Ten (10) osprey nest structures were observed within the study area during the April 13, 2022 site visit, all on human-made structures. Six (6) of these nests were active, with pairs apparently incubating eggs or young, with the male bringing food to the female on the nest (see Appendix 1, Figures 6, 8, 9, 11, and 13; Appendix 5, Photo 61). During a site visit in June, all osprey young appeared to be fledged from nests, although nests were still being used for resting. By early July, osprey nests were not being frequented by osprey, and a few of the nests on the southern end of the study area were occupied by resting double-crested cormorants.

Osprey tend to remain with the same mate and return to the same nesting location year after year, and nesting is often semi-colonial, which may enhance foraging and reduce risk of predation (Hagan III and Walters, 1990). Osprey are expected to continue to return to existing nest sites within the study area during the breeding season.

Bats

On July 11, four (4) species of bats were detected foraging in the immediate vicinity of Survey Location 1; bat presence was visually observed, though no emergence from buildings was observed. On July 18, 2022, six (6) bat species were detected foraging in the vicinity of Survey Location 2, and three (3) species were detected from Survey Location 3, although most were faint recordings at Survey Location 3, likely distant. Overall, a total of six (6) bat species were detected in the study area, four (4) of these species are on the California Special Animals List (CDFW, 2023d): Hoary bat (*Lasiurus cinereus*); Yuma myotis; Silver-haired bat; and Little brown bat (see Appendix 1, Figures 4, 5, and 11 for survey locations and Appendix 6 for survey results).

Bats typically use maternity roosts during the day, though they may use different roosts at night between times of foraging, and often change roosts seasonally (H.T. Harvey and Associates, 2004). Confirming roosting locations and year-round use patterns of bats require a more intensive survey effort within multiple seasons. Buildings near bat Survey Location 1 have the greatest potential for building-roosting bat use (see Appendix 5, Photo 60); however, the dilapidated condition of the buildings make closer inspection unsafe; therefore, visual inspection of the buildings for physical signs of roosting bats was not conducted as part of this study.

Trail Cameras

Trail camera images captured several non-special-status mammals typical of the area including black-tailed jackrabbit (*Lepus californicus*), racoon (*Procyon lator*), gray fox (*Urocyon cinereoargenteus*), and North American opossum (*Didelphis virginiana*; see Appendix 5, Photos 62-65). The jackrabbit, gray fox, and opossum photo captures were from Trail Camera Location 2 and the racoon photo capture was from Trail Camera Location 3 (see Appendix 1, Figure 11), near the abandoned buildings and temporary standing water on the asphalt. From Trail Camera Location 4 (see Appendix 1, Figure 4), though motion sensors were triggered, there were no photo captures of animals, likely due to placement positioning.

6.4 Natural Communities

In total, 202.488 acres of vegetated and non-vegetated habitat were mapped within the study area (see Appendix 1, Figures 2-15). Natural communities observed within the study area included the following alliances and associations[4]:

- Coast dune willow-Sitka willow thickets (*Salix hookeriana - Salix sitchensis - Spiraea douglasii* Shrubland Alliance; G4 S3): *Salix hookeriana* Association, *Salix hookeriana / Rubus ursinus* Association, *Salix sitchensis* Association
- Wax myrtle scrub (*Rubus spectabilis - Morella californica* Shrubland Alliance; G4 S3): *Morella californica-Rubus* spp.
- Beach pine forest and woodland (*Pinus contorta* ssp. *contorta* Forest and Woodland Alliance; G5 S3): *Pinus contorta* ssp. *contorta* Association
- Shining willow groves (*Salix lasiandra*[5] ssp. *lasiandra* Forest and Woodland Alliance; G4 S3.2): *Salix lasiandra* ssp. *lasiandra* Association
- Seaside woolly-sunflower - seaside daisy - buckwheat patches (*Eriophyllum staechadifolium – Erigeron glaucus - Eriogonum latifolium Herbaceous Alliance*; G3 S3)
- Pickleweed mats (*Sarcocornia pacifica* [*Salicornia depressa]* Herbaceous Alliance; G4 S3): *Sarcocornia pacifica - Jaumea carnosa - Distichlis spicata* Association
- Soft and western rush - Sedge marshes (*Juncus* [*effusus*, *patens*] - *Carex* [*pansa*, *praegracilis*] Herbaceous Alliance; G4 S3S4): *Carex pansa* Association, *Carex pansa - Baccharis pilularis* Association
- Slough sedge - Water-parsley - Small-fruited bulrush marsh (*Carex obnupta - Oenanthe sarmentosa - Scirpus microcarpus* Herbaceous Alliance; G4 S3): *Argentina egedii* (*Potentilla anserina* ssp. *pacifica*) Association
- Red alder forest (*Alnus rubra* Forest Alliance; G5 S4)
- Himalayan blackberry - rattlebox - edible fig riparian scrub (*Rubus armeniacus - Sesbania punicea - Ficus carica* Shrubland Semi-Natural Alliance; GNA SNA): *Rubus armeniacus* Association, *Rubus armeniacus - Rubus ursinus* Association
- Smooth or Chilean cordgrass marshes (*Spartina* [*alterniflora*, *densiflora*] Herbaceous Semi-Natural Alliance; SNA): *Spartina densiflora* Association
- Mid-high elevation salt marsh (undescribed vegetation assemblage)
- Low elevation salt marsh (undescribed vegetation assemblage)
- Undescribed ruderal species assemblages

Of the natural communities occurring in the study area, ten (10) were determined to be sensitive natural communities and are therefore considered ESHA. Sensitive natural communities are habitats that are generally defined by vegetation type and geographical location and are increasingly restricted in

[4] Associations within sensitive alliances were not mapped separately.

[5] Called *Salix lucida* ssp. *lasiandra* in the Manual of California vegetation. This follows the Jepson Manual naming.

abundance and distribution. Recognition of natural communities is an ecosystem-based approach to maintaining biodiversity in California. Sensitive natural communities are described in detail below, including the location, habitat, acreage, plant associates, and other vegetation characteristics.

6.4.1 Sensitive Natural Communities (ESHA)

Sensitive natural communities considered ESHA with predominantly natural conditions occur throughout the Project area, supporting a mix of native and non-native species and habitat conditions (See Appendix 1, Figures 2-14). Many of the ESHA areas occur within highly manipulated situations on compacted gravels or other formerly developed areas; however, many of these are considered ESHA on account of naturalized conditions or intact habitat present. Additionally, ESHA occurs as remnants of habitat that existed prior to development. These include areas along the periphery of the study area, including salt marsh, beach pine forest remnants, and sand dune remnants, among others. Lastly, isolated areas with a single willow or wax myrtle growing within asphalt, concrete, or other developed substrate are not considered ESHA. These locations are generally impacted by invasive species cover and present minimal habitat value. Rather than representing sensitive habitat, these locations represent a response to abandonment or unmaintained development. As such, these are not mapped as ESHA.

Non-wetland ESHA occurs throughout the study area, represented by sensitive natural communities, salt marsh, and remnant dunes (see Appendix 1, Figures 2-14). The majority of these features have been manipulated in the past and display differing levels of impact; however, ESHA represents habitat for botanical and wildlife species in an area that is otherwise not suitable on account of developed conditions.

ESHA Sensitive natural communities within the study area included and the total acreage within the study area includes:

- coastal dune willow-Sitka willow thickets: 5.30 acres
- wax myrtle scrub: 1.81 acres
- mid-high elevation salt marsh: 1.26 acres
- beach pine forest and woodland: 0.62 acres
- shining willow groves: 0.55 acres
- seaside woolly-sunflower - seaside daisy - buckwheat patches: 0.44 acres
- low elevation salt marsh (spartina and salt grass dominant): 0.37 acres
- pickleweed mats: 0.12 acres
- soft and western rush - sedge marshes: 0.02 acres
- slough sedge - water-parsley - small-fruited bulrush marsh: 0.01 acres

These ESHA sensitive natural communities, totaling 10.65 acres, are described below.

6.4.2 Coastal Dune Willow-Sitka Willow Thickets

Coastal dune willow-Sitka willow thickets (*Salix hookeriana - Salix sitchensis - Spiraea douglasii* Shrubland Alliance; G4 S3; hereinafter referred to as coast willow thickets) is a sensitive natural community in California that is at apparently secure globally based on worldwide abundance, but is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Coast willow thickets are distinguished by the dominance or co-dominance of coast willow and Sitka willow as shrubs or trees which can grow up to 26 feet (<8 meters) in height (CNPS, 2023b). Both coast willow and Sitka willow fast-growing short-lived species in the Salicaceae family and produce abundant short-leaved seeds that sprout readily on bare mineral soil but are viable for only a few days. Both willow species sprout from their root crown or stem base after fire or cutting and branches readily root when in contact with moist soil. (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Coastal dune willow-Sitka willow thickets are defined by a relative cover of coastal dune willow greater than 50 percent or Sitka willow with relative cover greater than 30 percent in the shrub canopy with *Salix lasiolepis* and *Rubus* spp., or a combined cover by coast willow and/or Sitka willow of greater than 30 percent relative cover in the shrub canopy with *Salix lasiolepis, Morella californica, Rubus* spp. and other shrubs (CNPS, 2023b). Coast dune willow thickets are distributed along the Pacific Coast from San Luis Obispo County in the south, with both willow species having a range into Alaska in the north (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California, it is the major willow scrub vegetation community and provides valuable habitat for birds and wildlife, and is an important soil and bank stabilizer critical for the health of coastal riparian areas. Furthermore, it is a frequent colonizer of disturbed areas and is important in restoration of naturally and anthropogenically disturbed areas (CNPS, 2023b).

Coast dune willow thickets grow along coastal streams, tidal swamps, riparian areas, and areas near the ocean where water stands and seasonally floods, as in deflation plains and swales among stabilized dunes, lagoon margins, and floodplains. It also commonly occurs in road banks and other disturbed areas. Many willow stands observed from Mendocino County north are dominated by *S. hookeriana*, while other stands both north of Mendocino County and further south at least to San Luis Obispo County are dominated by *S. sitchensis* (CNPS, 2023b). While both willow species can grow up to at least 1,000 m, this natural community is coastal and occurs from sea level up to 400 m within moist coastal areas influenced by summer fog (CNPS, 2023b). Coast dune willows typically occur on alluvial soils and often on mucky soils or soils with abundant organic material such as is found in wetlands.

Coastal dune willow-Sitka willow thickets are the most abundant sensitive natural community within the study area (5.30 acres). In total, 19 polygons of coastal dune willow thickets were mapped within the study area (see Appendix 1, Figures 2-9, 11, 12; Appendix 5, Photos 33-38). Vegetation dominance varied between polygons, but was dominated by either willow species singly or by a mix of these two willow species, with lesser dominance by wax myrtle. The coastal dune willow-Sitka willow thickets occupy both wetland and upland areas. This vegetation community was observed frequently in formerly developed areas such as cracks in asphalt, former foundations or former drainage features, and most occurrences of the vegetation community date back to the cessation of industrial activity and demolition of infrastructure. Vegetation descriptions of this vegetation community are based on four rapid assessments conducted within these thickets (Appendix 7, RA2, RA5, RA8, and RA10), as well as field notes, rare plant occurrence data, photographs, and aerial imagery. Coastal dune willow thickets within the study area differ in terms of species composition, canopy density, distribution patterns, and other features, as described below.

The majority of the coastal dune willow thickets are discrete isolated polygons likely reflecting soil moisture conditions and establishment following demolition of industrial facilities. The largest and most developed examples of this natural community occur in the northern portion of the study area which has been vacant longer. Only two of the 19 polygons of coastal dune willow thicket within the study area had undisturbed soils present, this included one in the northern portion of the study area associated within slough between the railroad and Vance Avenue, the other was associated with a deflation plain wetland in the southwestern portion of the study area. The remaining 17 polygons of coastal dune willow thickets had disturbed fill soils present, including concrete and asphalt in some places and have originated after the cessation of industrial activities, which occurred around 30 years ago. Most examples of this vegetation community within the study area have a significant non-native and invasive species component that reflects the history of disturbance. Several of the examples of this vegetation communities are associated with wetlands that have developed in former drainage ditches or depressions resulting from past development, however other examples of this vegetation community are in upland areas, and the associated species typically reflect the hydrology of the area.

Some of the common species within the understory of upland willow thickets include Himalayan blackberry, California blackberry, sweet vernal grass, English ivy, jubata grass, and yellow bush lupine, among others. In wetland locations, water parsley (*Oenanthe sarmentosa*), slough sedge (*Carex obnupta*), Himalayan blackberry, and velvet grass were common species, among others. Mixed willow cover within the coastal dune willow thickets averaged 75 percent cover, comprised primarily of coast willow, and to a slightly lesser extent, Sitka willow. Wax myrtle was a common associate, with an average of 9 percent cover in the canopy, although cover by this species varies widely. Shrub cover was generally high with an average of 69 percent cover. Most of the shrub cover occurred at the edge of the willow canopy with dense, impenetrable Himalayan blackberry thickets common. Shrub cover under the willow canopy was generally reduced, but frequent Himalayan and California blackberry canes made movement within the coastal dune willow thickets difficult. Herbaceous vegetation cover and diversity was minimal within the coastal dune willow thickets in the study area. Herbaceous vegetation cover averaged 21 percent, reflecting the dense willow canopy and shrub cover. There was an average of 7 herbaceous species present at each Releve' point within coastal dune willow thicket, of which 43 percent were non-native species. Herbaceous species cover and percentage of native species varied widely, but was in general highest in the examples with less disturbance or that were adjacent to other vegetation communities.

One CRPR 4.2 species—seacoast angelica—was observed within the coast dune willow thicket where the willow canopy was adjacent to Humboldt Bay shoreline. In general, the habitat within the coast dune willow thickets in the study area are degraded, however they do represent habitat for some special-status species.

6.4.3 Wax Myrtle Scrub

Wax myrtle scrub (*Rubus spectabilis - Morella californica Shrubland Alliance*; G4 S3; hereinafter referred to as wax myrtle scrub) is a sensitive natural community in California that is at apparently secure globally based on worldwide abundance, but is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Wax myrtle scrub is distinguished by the dominance or co-dominance by wax myrtle and salmon berry, however in the study area, only wax myrtle was present. Wax myrtle is an evergreen shrub or small tree that can grow up to 33 feet (10 meters) in height (CNPS, 2023b). Wax myrtle is a moderately fast-growing short-lived species in the Myricaceae family and produces abundant short-lived seeds and seedlings with low vigor, however wax myrtle sprouts vigorously from their root crown or stem base after fire or cutting. (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Wax myrtle scrub is defined by a relative cover of wax myrtle greater than 50 percent (CNPS, 2023b). Wax myrtle scrub is distributed along the Pacific Coast from Santa Barbara in the south, to the Oregon border and beyond, as wax myrtle has a range that extends into British Columbia (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California, it is often a part of a mosaic of vegetation and occurrences can be quite small. It provides valuable habitat for birds and wildlife, including important winter cover. Wax myrtle withstands salt spray, which makes it a critical component of near coastal ecosystems. It prefers full sun and is a frequent colonizer of disturbed coastal areas, making it important in the restoration of naturally and anthropogenically-disturbed areas (CNPS, 2023b).

Wax myrtle scrub grows in wet swales, low drainages and gullies, edges of lakes, lagoons and sag ponds, moist to wet foggy slopes, along creeks, and other riparian areas. It also commonly occurs in road banks and other disturbed areas along the coast from sea level to 550 m. Wax myrtle scrub usually occurs within 1-2 km of the Pacific coast of California and stands are typically small (<2 hectares [ha]), occurring on moist to wet soils with high water tables in the foggy coastal strip of the coast (CNPS, 2023b).

Wax myrtle scrub is the second-most abundant sensitive natural community within the study area (1.81 acres). In total, 10 polygons of wax myrtle scrub were mapped within the study area (see Appendix 1, Figures 2-5, 7, and 10; Appendix 5, Photos 39-42). Vegetation dominance varied between polygons but was dominated by wax myrtle with a dense canopy typically with over 85 percent cover. The wax myrtle scrub within the study area was found to occupy both wetland and upland areas. This vegetation community was observed frequently in formerly developed areas such as cracks in asphalt, former foundations or former drainage features, and most occurrences of the vegetation community date back to the cessation of industrial activity and demolition of infrastructure. Vegetation descriptions of this vegetation community are based on two rapid assessments conducted within the wax myrtle scrub occurrences (see Appendix 7, RA1 and RA11), as well as field notes, photographs, and aerial imagery. Wax myrtle scrub within the study area is relatively similar throughout the study area, however there are differences in species composition, canopy density, distribution patterns, and other features, as described below.

The majority of the wax myrtle scrub occurrences are discrete isolated polygons likely reflecting soil moisture conditions and establishment following demolition of industrial facilities, however wax myrtle scrub adjoins coast dune willow thickets in two locations (see Appendix 1, Figures 4 and 7) The largest and most developed examples of this natural community occur in the northern portion of the study area, which has been vacant longer. Two of the 10 polygons of wax myrtle scrub within the study area had undisturbed soils present, this included two in the northern portion of the study area west of Vance Avenue, and although the soils were undisturbed, the area has been manipulated in the past for the creation of the dewatering basins. The remaining eight polygons of coastal dune willow thickets had disturbed fill soils present including concrete and asphalt in some places and have originated after the cessation of industrial activities which occurred around 30 years ago. Most examples of this vegetation community within the study area have a significant non-native and invasive species component that reflects the history of disturbance; however, species cover is limited under the dense canopy of the wax myrtle. Several of the examples of this vegetation community are associated with wetlands that have developed in former drainage ditches or foundations and depressions resulting from past development, however other examples of this vegetation community are in upland areas, and the associated species typically reflect the hydrology of the area.

Some of the common species within the understory of the wax myrtle scrub included Himalayan blackberry, California blackberry, beach pine (*Pinus contorta* ssp. *contorta*), coyote brush, yellow bush lupine, large quaking grass, hairy vetch, six weeks grass, and iceplant, among others. Wax myrtle cover within the wax myrtle scrub averaged 88 percent. California blackberry was a common understory associate with an average of 14 percent cover in the understory, although cover by this species varied widely. Shrub cover was generally low with an average of 28 percent cover. Nearly all of the shrub cover occurred at the edge of the wax myrtle canopy with dense, impenetrable Himalayan and California blackberry thickets common.

Herbaceous vegetation cover and diversity was minimal within the coastal dune willow thickets in the study area. Herbaceous vegetation cover averaged 10 percent, reflecting the dense wax myrtle canopy and shrub cover. There was an average of three herbaceous species present at each Releve' point within wax myrtle scrub, all of which were non-native species.

No special-status botanical species were observed within the wax myrtle scrub in the study area. In general, the habitat within the wax myrtle scrub in the study area is degraded, however they do represent habitat for some special-status species.

6.4.4 Mid-High Elevation Salt Marsh

Mid- to high-elevation salt marsh around Humboldt Bay is remarkably diverse, and in many places, does not meet the definition of a described vegetation community. Environmental factors that affect salt marsh species distribution include time and duration of tidal inundation, soil and water salinity, soil aeration, soil type and development, air and water temperature, drainage patterns, nutrient availability, water table height, precipitation, and light (Barnhart, 1992). The salt marsh species grow along intermixed environmental gradients. The most obvious gradient, and the one that is most often measured in salt marshes, is elevation (Barnhart, 1992), which is used in this report to differentiate the marsh types occurring in the study area, rather than specific vegetation communities.

Mid- to high-elevation salt marsh has been significantly reduced around Humboldt Bay, with an estimated 90 percent of the historical extent having been lost. This leaves the remaining 10 percent of the mid-high salt marsh critically important for salt marsh-dependent species, including several special-status species. For the purposes of this report, mid-high salt marsh refers to salt marsh that roughly starts just below the MHHW and extends above the MHHW in elevation, until conditions become too elevated to be influenced by the tide and associated saturation and salt input. In addition to elevation, this habitat type was mapped using the dominant species that characterize this marsh type, namely, marsh jaumea, annual pickleweed, arrow grass, perennial pickleweed, Brewer's rush (*Juncus breweri*) saltgrass, and dense-flowered cordgrass (*Spartina densiflora*). Additional common associates with lesser cover include coastal gumplant (*Grindelia stricta* var. *stricta*), Point Reyes bird's beak, salt marsh dodder (*Cuscuta pacifica* var. *pacifica*), and marsh rosemary (*Limonium californicum*), among others. Vegetation descriptions of this vegetation community are based on two rapid assessments conducted within mid-high salt marsh (Appendix 7, RA4 and RA7), as well as field notes, rare plant occurrence data, photographs, and aerial imagery. Mid-high salt marsh within the study area differ in terms of species composition, canopy density, distribution patterns, and other features, as described below.

Mid-high elevation salt marsh occupies 1.26 acres of the study area (see Appendix 1, Figures 2-8; Appendix 5, Photos 43-45). Mid-high salt marsh occupies brackish wetland areas below the MHHW of 6.65 feet, Estuarine Wetlands above the MHHW, and upland areas immediately above the Estuarine Wetlands where it transitions into upland vegetation dominance. This vegetation community is characterized primarily by native brackish marsh-dependent herbaceous species, however there is a non-native species component that becomes more prominent with increasing elevation. Some of the more common species in the mid-high elevation salt marsh within the study area included marsh jaumea, annual pickleweed, arrow grass, perennial pickleweed, Brewer's rush, sweet vernal grass, dense-flowered cordgrass, and salt grass, among others. Vegetation cover by species varied widely, however the primary dominants were consistently marsh jaumea, annual and perennial pickleweed, saltgrass, and dense-flowered cordgrass. Herbaceous vegetation cover was near 100 percent cover or greater, except where erosion or sediment deposition has resulted in exposed soils. This vegetation community was observed in the northern portion of the study area along Humboldt Bay and likely represents relictual habitat that has been minimally disturbed over the years, or areas where conditions have been less manipulated, allowing for the reestablishment of salt marsh habitat. Salt marsh in this area was likely much more extensive in the past prior to development.

Two special-status CRPR 2B species—Humboldt Bay owls clover and Point Reyes bird's beak—and one CRPR 4 species—seacoast angelica—were observed within the mid-high salt marsh in the study area. Mid-high salt marsh is incredibly diverse and limited in extent and represent moderate to high-quality potential habitat for other special-status botanical species, such as coastal marsh milkvetch, Lyngbye's sedge, small spikerush, and western sand-spurrey (see Appendix 2. Table 2-1).

6.4.5 Beach Pine Forest and Woodland

Beach pine forest and woodland (*Pinus contorta* ssp. *contorta* Forest and Woodland Alliance; G5 S3): *Pinus contorta* ssp. *contorta* Association (hereinafter referred to as beach pine forest and woodland) is a sensitive natural community in California that is demonstrably secure globally based on worldwide abundance, but is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Beach pine forest and woodland is distinguished by the dominance of beach pine, specifically where beach pine has greater than 50 percent relative cover in the tree canopy. Beach pine is an evergreen conifer tree that can grow up to 50 feet (15 meters) in height (CNPS, 2023b) and it is a moderately fast-growing tree (can be stunted in unfavorable conditions) that lives up to 100 years. It is in the Pinaceae family and produces abundant short-lived seeds from non-serotinous cones and displays moderate recruitment in favorable conditions. (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Beach pine forest and woodland is distributed along the Pacific Coast from southern Mendocino County in the south to Alaska in the north (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California, it is often a part of a mosaic of vegetation and occurrences can be quite small. It occurs most commonly on the leeward sides of active sand, and stabilized dunes within the vicinity of the study area, however it is also found in marshy sloughs, rocky headlands, and bluffs subject to fog drip, heavy wind, and salt spray (CNPS, 2023b). Wind rather than fire is likely the primary driver of disturbance (CNPS, 2023b) within these coastal forests, and this was observed within the beach pine forest and woodland in the study area where windthrow of older trees allowed for the recruitment of saplings.

Beach pine forest and woodland is the fourth most abundant sensitive natural community within the study area (0.62 acres). In total, two polygons of beach pine forest and woodland were mapped within the study area, both in the northern portion of the study area (see Appendix 1, Figures 2-4; Appendix 5, Photos 47 and 48). Vegetation dominance varied significantly between polygons but was dominated by beach pine with a dense canopy provided by beach pine in the northern occurrence with young robust pines, however the southern occurrence is older with a declining canopy and many blow downs, with beach pine having approximately 40 percent absolute cover (80 percent relative cover). While the southern population was older, saplings were observed with approximately 5 percent absolute cover. The beach pine forest and woodland within the study area was found to occupy upland areas, with the northern population occurring on fill soils in a formerly developed area and is much younger, while the southern population occurred on top of a stabilized sand dune surrounded by varied development and is likely an older remnant population. Vegetation descriptions of this vegetation community are based on a rapid assessment conducted within the southern beach pine forest and woodland occurrence (Appendix 7, RA6), as well as field notes, photographs, and aerial imagery. Large intact stands occur outside of the study area, and beach pine forest and woodland are a major component of the vegetation composition on the undeveloped portions of the Samoa peninsula.

Some of the common species within the understory of the beach pine forest and woodland included evergreen huckleberry (*Vaccinium ovatum*), coast silk tassel (*Garrya elliptica*), yellow bush lupine, wax myrtle, and sweet vernal grass, among others. Evergreen huckleberry was the most abundant understory associate, with an average of 50 percent cover in the understory, although cover by this species varied widely. The shrub layer was well developed and diverse with nine shrub species present within the older southern population, but was nearly absent in the younger northern population. Within the older population, shrub cover was high with an average of 81 percent absolute cover, comprised primarily of native species, although yellow bush lupine, English ivy, and milkflower cotoneaster (*Cotoneaster lacteus*) were present with low cover. Herbaceous vegetation cover and diversity was minimal within the beach pine forest and woodland in the study area on account of the high shrub cover in the older population and high canopy cover in the northern population. Herbaceous vegetation cover

averaged 14 percent and was concentrated in openings in the shrub canopy. There were seven herbaceous species present at the Releve' point within the southern beach pine forest and woodland, of which four were non-native species.

No special-status botanical species were observed within the beach pine forest and woodland within the study area. In general, the habitat within northern occurrence of beach pine forest and woodland was degraded, and the southern occurrence was of higher quality, however both represent habitat for some special-status species, specifically twisted horsehair lichen (*Sulcaria spiralifera*).

6.4.6 Shining Willow Groves

Shining willow groves (*Salix lasiandra*[6] ssp. *lasiandra* Forest and Woodland Alliance; G4 S3.2): *Salix lasiandra* ssp*. lasiandra* Association (hereinafter referred to as shining willow groves) is a sensitive natural community in California that is at apparently secure globally based on worldwide abundance, but is vulnerable to extirpation within California and is threatened (CDFW, 2023b; CNPS, 2023b). Shining willow groves are distinguished by the dominance of shining willow in the overstory with or without other woody species present. Shining willow trees is the tallest willow species in California and can grow up to 60 feet (18 meters) in height (CNPS, 2023b), it is a fast-growing short-lived species in the Salicaceae family and produces abundant short-leaved seeds that sprout readily on moist bare mineral soil but are viable for only a few days. Shining willow sprouts from their root crown or stem base after fire or cutting and branches readily root when in contact with moist soil, which is a dispersal mechanism of this species during flood events (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Shining willow groves are defined by shining willow with greater than 40 percent absolute cover in the overstory without other strong woody dominants, or with greater than 50 percent relative cover in the overstory with other woody species and sometimes with higher or similar cover by shrubs in the understory (CNPS, 2023b). Shining willow groves occur over a broad area in western North America and this species ranges from Mexico into Alaska (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California, stands occur in relatively moist areas along low gradient creeks and in swampy situations adjacent to tidal marshes, and is a critical component of riparian woodland which provides valuable habitat for birds and wildlife and health of coastal riparian areas (CNPS, 2023b).

Shining willow groves are the fifth most abundant sensitive natural community within the study area (0.55 acres). One occurrence of shining willow groves was mapped within the study area (see Appendix 1, Figures 2, 11, and 13) within a stormwater collection feature in the southern portion of the study area. This area experiences sporadic inundation during storm events, however it likely drains quickly as evidenced by the lack of three wetland parameters. Shining willow was likely able to become established during periods when soils were moist, and its deeper root system is able to access the water table after stormwater flows cease. No rapid assessment was conducted within the shining willow grove, and vegetation descriptions of this vegetation community are based on wetland testpit data, specifically TP87, as well as field notes, rare plant occurrence data, photographs, and aerial imagery (SHN, 2023, 2024). Conditions within the shining willow grove in the study area, including species composition, canopy density, distribution patterns, and other features, are described below.

Some of the common species within the understory of the shining willow grove included, California blackberry, sword fern, pacific rush (*Juncus effusus* ssp. *pacificus*), and velvet grass, among others. The canopy within the shining willow grove averaged 90 percent cover, comprised of shining willow, wax

[6] Called *Salix lucida* ssp. *lasiandra* in the Manual of California vegetation. This follows the Jepson Manual naming.

myrtle, and coast willow, all with varying cover, however shining willow cover was greatest in the center of the grove with coast willow and wax myrtle cover greatest along the periphery. Most of the shrub cover occurred at the edge of the willow canopy with dense, impenetrable Himalayan blackberry thickets, with jubata grass common. Shrub cover and herbaceous species cover under the willow canopy was greatly reduced in the center of the shining willow grove. Shrub cover averaged around 25 percent and was primarily composed of California blackberry. Herbaceous vegetation cover and diversity was minimal within the shining willow grove in the study area. Herbaceous vegetation cover averaged 5 percent, reflecting the dense willow canopy and shrub cover, which inhibits the growth of herbaceous species

No special-status botanical species were observed within the shining willow grove in the study area. In general, the habitat within the shining willow grove in the study area was degraded, however it does represent habitat for some special-status species.

6.4.7 Seaside woolly-sunflower - seaside daisy - buckwheat patches

Seaside woolly-sunflower - seaside daisy - buckwheat patches (*Eriophyllum staechadifolium – Erigeron glaucus - Eriogonum latifolium Herbaceous Alliance*; G3 S3; hereinafter referred to as coast buckwheat patches) is a sensitive natural community in California that is vulnerable globally based on limited worldwide abundance and is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Coast buckwheat (*Eriogonum latifolium)* patches are distinguished by the dominance or co-dominance of seaside daisy (*Erigeron glaucus*), seaside golden yarrow (*Eriophyllum staechadifolium*), beach strawberry, and/or coast buckwheat in the herbaceous layer, while shrubs may be present at low cover (CNPS, 2023b). These species are adapted to conditions found on the immediate coast, including intense winds, fluctuation in and/or high temperatures, salt spray, and sand/sandstone movement. These species display a range of recruitment, seed production, longevity, and response to disturbance, however all are able to thrive in coastal dune habitat. (CNPS, 2023a; Jepson Flora Project (eds.), 2023). The biggest threat to dune and coastal habitats across California is the increase in non-native species, which have drastically changed vegetation dynamics in the dune ecosystem, and many patches are of small extent and low quality due to invasive exotics (CNPS, 2023b).

Coast buckwheat patches are defined by the presence of seaside daisy, seaside golden yarrow, beach strawberry and/or coast buckwheat in the herbaceous layer with 50 percent relative cover in the herbaceous layer, while shrubs may be present at low cover. This includes any one of these species with greater than 50 percent relative cover with or without the presence of the other indicator species. Additionally, this sensitive natural community can be defined by seawatch (*Armeria maritima*) and beach sagewort (*Artemisia pycnocephala*), in combination with the above species with greater than 50 percent relative cover in the herbaceous layer (CNPS, 2023b). The examples of this natural community within the study area are characterized by coast buckwheat, and the discussion focuses on this species. Coast buckwheat patches occupy a narrow band along the immediate coast of California from the Channel Islands in the south, into central Oregon in the north, however diagnostic species are known to have slightly larger ranges (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California, stands occur in stabilized dunes of coastal bars, river mouths, spits along coastlines, steep coastal bluffs, and terraces immediately adjacent to the ocean. Soils are coarse to fine- textured sands. Within the study area and vicinity, it occurs on inner dunes and steep sandy slopes inland from the leading edge of the beach and is a major component in the stabilization of coastal dunes (CNPS, 2023b).

Coast buckwheat patches are the sixth most abundant sensitive natural community within the study area (0.44 acres). In total, seven polygons of coast buckwheat patches were mapped within the study area (see Appendix 1, Figures 2-5; Appendix 5, Photos 49 and 50). Vegetation dominance varied between

polygons, but was dominated by coast buckwheat and Idaho fescue (*Festuca idahoensis*), with abundant non-native species cover, which is some occurrences was greater than native species cover by over 50 percent. The coast buckwheat patches occupy well drained, sandy upland areas and was observed on remnant dunes scattered throughout the northwestern portion of the study area. Most of these areas display evidence of significant manipulation in the past, such as excavation and soil movement, however remaining sandy dune soils have allowed this sensitive natural community to become re-established where the sandy soils are exposed and continue to exhibit some dune characteristics. Vegetation descriptions of this vegetation community are based on one rapid assessment conducted within these patches (see Appendix 7, RA3), as well as field notes, rare plant occurrence data, photographs, and aerial imagery. Coast buckwheat patches within the study area differ in terms of species composition, canopy density, distribution patterns, and other features, as described below.

All of the coast buckwheat patches are discrete isolated polygons, likely reflecting the presence of intact sand dune soils, aspect, intensity of ongoing disturbance, and cover by invasive species or woody vegetation (see Appendix 1, Figures 2-5). All occurrences of this natural community were observed in the northwestern portion of the study area on the periphery of the study area. The largest and most developed example of this natural community occurs northwest of the intersection of Vance Ave and Cookhouse Road on the southeast facing slope of a remnant dune. It appears to have been somewhat excavated in the past for the development of Vance Avenue, however conditions have naturalized. Two occurrences are on the dredge spoils dewatering basin slope that was developed in the past. One occurrence is on a sandy fill slope for Vance Ave east of the roadway above a slough. One example is on a sand embankment above the access road to the timber heritage roundhouse, and the remaining two occurrences are on a sand embankment southwest of the Samoa Cookhouse. Most examples of this vegetation community within the study area have a significant non-native and invasive species component that reflects the history of disturbance and also threatens the persistence of this vegetation community in some areas. Coast buckwheat patches are a common natural community on the Samoa peninsula, and large areas surrounding the study area support this vegetation community.

Some of the common species within the coast buckwheat patches included coast buckwheat, Idaho fescue, dune goldenrod (*Solidago spathulata*), large quaking grass, sheep sorrel, and sweet vernal grass, among others. Coast buckwheat was the most common diagnostic species of this natural community within the study area, with a minimum of 20 percent absolute cover. The most common native associate was Idaho fescue, however bracken fern (*Pteridium aquilinum* var. *pubescens*), and dune goldenrod were also common at varying levels of cover. Large quaking grass had the highest cover, with sheep sorrel displaying high cover as well. Shrub cover was low to non-existent within the coast buckwheat patches in the study area, however yellow bush lupine was a common invader and bearberry (*Artostaphylos uva-ursi*) was present with low cover in some locations. Herbaceous vegetation cover and diversity varied, but was generally high, especially where non-native species cover was less. Herbaceous vegetation cover averaged 83 percent absolute cover with exposed sand or non-vascular crust in the intervening space. There were 12 herbaceous species present at the Releve' point within the coast buckwheat patches, of which 5 were native species.

No special-status botanical species were observed within the coast buckwheat patches in the study area. In general, the habitat within the coast buckwheat patches is degraded as a result of past disturbance and non-native species cover, however it does represent habitat for some special-status species, specifically Menzies' wallflower, dark-eyed gilia and beach layia, which were observed outside of the study area in high-quality dune habitat.

6.4.8 Low-elevation Salt Marsh

Low-elevation salt marsh around Humboldt Bay is less diverse that the mid-- to high-elevation salt marsh, however it still represents important habitat, and in many places, does not meet the definition of a described vegetation community. Environmental factors that affect salt marsh species distribution include time and duration of tidal inundation, soil and water salinity, soil aeration, soil type and development, air and water temperature, drainage patterns, nutrient availability, water table height, precipitation, and light (Barnhart, 1992). The salt marsh species grow along intermixed environmental gradients. The most obvious gradient, and the one that is most often measured in salt marshes, is elevation (Barnhart, 1992), which is used in this report to differentiate the marsh types occurring in the study area, rather than specific vegetation communities.

Low-elevation salt marsh has been less impacted by development than the mid-high elevation salt marsh, however it has been extensively invaded by dense-flowered cordgrass, which has continued to invade into lower elevations. For the purposes of this report, low-elevation salt marsh refers to salt marsh that occurs almost entirely below the MHHW of 6.65 ft and extends to the lowest elevations that can support herbaceous vegetation. The low-elevation salt marsh is subject to regular tidal inundation and wave action and represents a transitional area between the more diverse mid-high elevation salt marsh and extensive unvegetated mud flats. In addition to elevation, this habitat type was mapped using the dominant species that characterize this marsh type, namely, annual pickleweed, perennial pickleweed, salt grass, and dense-flowered cordgrass. Few additional species occur within the low elevation salt marsh. Low-elevation salt marsh occupies 0.37 acres of the study area (see Appendix 1, Figures 2-5; Appendix 5, Photo 46). There is evidence that this vegetation community is expanding around Humboldt Bay with the increasing cover by dense-flowered cordgrass, which is more tolerant of inundation by brackish water, resulting in its colonization of mud flats adjacent to existing low-elevation salt marsh.

Herbaceous vegetation cover varied but was usually less than 50 percent cover with exposed mud or sediment in the intervening spaces where erosion or sediment deposition has resulted in exposed soils. This vegetation community was observed in the northern portion of the study area along Humboldt Bay and was typically associated with shoreline that is not armored.

No special-status botanical species were observed within the low-elevation salt marsh in the study area. In general, the low-elevation salt marsh did not have the habitat conditions necessary for the special-status species occurring in the mid-high salt marsh, however there is a slight possibility that Point Reyes bird's beak, Lyngbye's sedge, and western sand spurrey could occur (see Appendix 2, Table 2-1).

6.4.9 Pickleweed Mat

Pickleweed mats (*Salicornia pacifica* (*Salicornia depressa*) Herbaceous Alliance; G4 S3): *Sarcocornia pacifica - Jaumea carnosa - Distichlis spicata* Association (hereinafter referred to as pickleweed mats) is a sensitive natural community in California that is apparently secure globally based on worldwide abundance, but is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Pickleweed mats are distinguished by the dominance of perennial pickleweed and annual pickleweed species with lesser dominance by salt grass (CNPS, 2023b). Perennial pickleweed is a somewhat shrubby perennial and has scalelike leaves and fleshy green to reddish stems. Annual pickleweed is short lived and also has scalelike leaves and fleshy stems. Both have succulent stems that increase in water content to dilute salts, and plants shed tissues and organs to remove salts (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Pickleweed mats are defined by greater than 10 percent absolute cover of pickleweed or greater than 50 percent relative cover of pickleweed with other salt marsh species present with lower cover (CNPS, 2023b). Pickleweed mats are distributed along the Pacific Coast from southern California in the south up into Alaska. It also extends inland where it can be found at alkaline seeps (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California, small stands are scattered in marshes along the Pacific coastline at estuaries and river mouths, they are extensive around in marshes around Humboldt Bay, at the mouth of the Eel River, and in other tidal marshes. Pickleweed mats provide valuable habitat for several sensitive species and are critical foraging habitat for shoreline and migratory birds (CNPS, 2023b). Pickleweed mat habitat has been severely reduced as a result of historical diking, development and shoreline armoring, and in the Humboldt Bay area, dense-flowered cordgrass expansion further threatens this vegetation community.

Pickleweed mats occupy approximately 0.12 acres of the study area in 41 discrete polygons, averaging 127 square feet (see Appendix 1, Figures 2, 6-9, 11, and 13; Appendix 5, Photos 51-54). This vegetation community was primarily observed in small pockets within the armored shoreline along the former industrial areas, and crushed concrete and other artificial substrates were present in nearly all occurrences of this vegetation community. The pickleweed mat vegetation community occupies areas where the substrate is too altered to support the development of salt marsh. Consequently, it occurs in isolated locations throughout the concrete rubble-lined shoreline along Humboldt Bay. Occurrences were closely associated with the MHHW, but were typically slightly above the MHHW, which was a higher elevation for pickleweed that was observed in the less artificial areas in the northern portion of the study area. Vegetation dominance and composition was similar between the pickleweed mat occurrences and was dominated by pickleweed with an average of 50 percent absolute cover. Dense flowered cordgrass displayed a high level of cover within the pickleweed mats in the study area, and cover varied widely, but averaged 25 percent cover. Other associated species included salt grass and marsh jaumea with low cover. Vegetation descriptions of this vegetation community are based on one rapid assessment conducted within pickleweed mats (see Appendix 7, RA12), as well as field notes, rare plant occurrence data, photographs, and aerial imagery.

No special-status botanical species were observed within the pickleweed mats in the study area. In general, the habitat within the pickleweed mats in the study area is severely degraded and manipulated, however this vegetation community does represent habitat for some special-status species, including those observed within the mid-high salt marsh in less disturbed portions of the study area.

6.4.10 Soft and western rush - Sedge marshes

Soft and western rush - Sedge marshes (*Juncus* (*effusus*, *patens*) - *Carex* (*pansa*, *praegracilis*) Herbaceous Alliance; G4 S3S4): *Carex pansa* Association, *Carex pansa* - *Baccharis pilularis* Association (hereinafter referred to as sand dune sedge marsh) is a sensitive natural community in California that is apparently secure globally based on worldwide abundance but is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Sand dune sedge marsh is distinguished by the dominance of sand dune sedge with lesser dominance or co-dominance by a wide range of associated species (CNPS, 2023b). Sand dune sedge is a perennial rhizomed graminoid species that occurs in both wetland and upland areas. It has clustered inflorescences at the stem tips and the flower bracts are dark brown, shiny, pointed, and sometimes white-margined. (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Sand dune sedge marsh is defined by greater than 50 percent relative cover of sand dune sedge or greater than 30 percent relative cover of sand dune sedge, in combination with other sedge and rush species (CNPS, 2023b). Sand dune sedge marsh is distributed along the Pacific Coast from the Channel Islands and Central California coast up into British Columbia (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California,

stands are relatively widespread. Stands occur in seasonally moist, low-lying areas, which may retain moisture throughout much of the growing season, such as coastal terraces, seeps, springs, grazed pasturelands, and pond edges; however, stands of this alliance also occur in drier sites. Stands in the Humboldt Bay area occupy drifting sands and borders of estuaries along the coast and are frequently in deflation plain wetlands and extend outward into drier sites surrounding the wetlands areas.

Sand dune sedge marsh occupies approximately 0.02 acres of the study area in one location along the far southwestern boundary of the study area (see Appendix 1, Figures 2 and 12; Appendix 5, Photo 55). This vegetation community occurred along the edges of a large deflation plain wetland west of the study area. The portion of this vegetation within the study area represents only a small portion of the sand dune sedge marsh that occurs west of the study area. This area is minimally disturbed and displays high cover by native species and high native species diversity. Additional sand dune sedge marsh occurs in minimally disturbed areas west of the study area and this vegetation community represents an important component of the sand dune/deflation plain habitat located on the Samoa peninsula. Only one occurrence of this vegetation community was observed within the study area and conditions there are based on one rapid assessment conducted within the sand dune sedge marsh (see Appendix 7, RA9), as well as field notes, rare plant occurrence data, photographs, and aerial imagery. Sand dune sedge was dominant with 67 percent cover. Lesser dominants included California blackberry with 15 percent cover, large quaking grass with dominance and composition was similar between the 10 percent cover, beach strawberry with 5 percent cover, and creeping bent grass with 5 percent cover. Several other species were present with low cover reflecting the high diversity of this vegetation community, and a total of 15 species were recorded from the Releve' point of which 67 percent were native species.

No special-status botanical species were observed within the sand dune sedge marsh in the study area, although dark-0eyed gilia was observed at the upper edge of this vegetation community outside of the study area. In general, the habitat within the sand dune sedge marsh was of high quality and does represent habitat for some special-status species including coastal marsh milk-vetch, seaside pea, and marsh pea.

6.4.11 Slough sedge - Water-parsley - Small-fruited bulrush marsh

Slough sedge - Water-parsley - Small-fruited bulrush marsh *Carex obnupta - Oenanthe sarmentosa – Scirpus microcarpus* Herbaceous Alliance; G4 S3): *Argentina egedii* (*Potentilla anserina* ssp. *pacifica*) Association (hereinafter referred to as Pacific silverweed marsh) is a sensitive natural community in California that is apparently secure globally based on worldwide abundance but is vulnerable to extirpation within California (CDFW, 2023b; CNPS, 2023b). Pacific silverweed marsh is distinguished by the dominance of Pacific silverweed with lesser or co-dominance by a wide range of associated species (CNPS, 2023b). Pacific silverweed marsh was until recently given its own distinct vegetation community; however, it has been merged with several previously separate alliances, in which the concept has been broadened based on overlapping environmental and floristic features (CNPS, 2023b). Pacific silverweed is a perennial stoloniferous species that occurs in both fresh and brackish wetlands. It is a low-growing, tufted plant with extensive stolons up to 80 centimeters (cm) long. Silky, white hairs sparsely cover the upper leaf blades (CNPS, 2023a; Jepson Flora Project (eds.), 2023).

Pacific silverweed marsh is defined by greater than 50 percent relative cover of Pacific silverweed or greater than 30 percent relative cover of Pacific silverweed in combination with other herbs (CNPS, 2023b). Pacific silverweed marsh is distributed along the Pacific Coast from the Santa Clara River in southern California into British Columbia (CNPS, 2023b; Jepson Flora Project (eds.), 2023). Within coastal Humboldt County and along the moist, northwestern coastal belt of California stands are mixed and generally restricted to seasonally wet locations, often in areas where brackish water intrusion is

common, such as in upper salt marsh habitat. Typically, this vegetation community occurs in freshwater to slightly brackish marshes, in coastal marshes, and low-elevation valleys. Soils are seasonally saturated, mucky to silty or clayey alluvium.

Pacific silverweed marsh occupies approximately 0.01 acres of the study area in three isolated locations in the central portion of the study area (see Appendix 1, Figures 2, 6, and 7; Appendix 5, Photos 55 and 57). This vegetation community occurred in one freshwater wetland, and in an artificially induced wetland feature where stormwater is accumulating in previously demolished drying shed foundations, and both of these wetland features are described in the aquatic resource delineations (SHN, 2023 and 2024). Additional areas with Pacific silverweed dominance with saltmarsh indicator species were mapped as mid-high elevation salt marsh. The wetlands and artificially induced wetland areas that support this vegetation community are degraded with high cover by non-native and invasive species, compacted fill soils, and a history of disturbance. No rapid assessments were conducted within the Pacific silverweed marsh, and conditions within this vegetation community are based on field notes, rare plant occurrence data, photographs, and aerial imagery, as well as wetland test pit data, specifically testpit 13 (SHN, 2023, 2024). Pacific silverweed was dominant with co-dominance by common horsetail (*Equisetum arvense*), bird's-foot-trefoil (*Lotus corniculatus*), and creeping bentgrass, with a minor shrub component by coast willow and California blackberry. Lesser dominants included spikerush (*Eleocharis macrostachya*), curly dock, and few additional species were observed.

No special-status botanical species were observed within the Pacific silverweed salt marsh in the study area. In general, the Pacific silverweed marsh did not have the habitat conditions necessary for the support of special-status species due to the degraded nature and history of disturbance, however there is a slight possibility that wetland dependent special-status species could occur.

6.5 Other ESHA

The definition of ESHA includes "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." This definition encompasses the sensitive natural communities described above; however, it also includes non-vegetated areas, or habitat defined by conditions other than vegetation composition. Within the study area, this includes dune remnants dominated by non-native species, estuarine intertidal to subtidal mudflats, and other wetland habitat. These areas are briefly described below.

6.5.1 Dune Remnant

Dune remnant ESHA represents areas of aeolian sand deposits that remain from historic sand dunes that once occurred within the study area. Within these areas, the sandy soils are still intact but do not support native sand dune vegetation and are currently dominated almost exclusively by non-native and invasive species, reflecting the history and extent of past disturbance. These areas do not meet the definition of a sensitive natural community but still represent habitat for sensitive dune dependent vegetation communities and special-status species, and is therefore considered ESHA. Most of the historic dunes and dune habitat has been removed for past development of the site. Approximately 5,111.25 square feet (0.12 acre) of dune remnant ESHA occurs within the Project area and represents potential habitat for dune-dependent species, although these areas are currently dominated by non-native and invasive species. Dominant species included large quaking grass, sweet vernal grass, sheep sorrel, and yellow bush lupine, among others. Dune remnant ESHA could be restored to functional coast sand dune dependent natural communities.

No special-status botanical species were observed within the dune remnant ESHA in the study area. Dune remnant within the study area does not have the habitat conditions necessary for the support of special-status species due to the degraded nature and history of disturbance, however there is a slight possibility that coastal dune dependent special-status species could occur.

6.5.2 Estuarine Intertidal to Subtidal Mud Flats

Estuarine intertidal to subtidal mudflats exist below the lowest elevation of low-elevation salt marsh vegetation. Estuarine intertidal to subtidal mudflats are regularly flooded for long periods of time, and are also exposed daily during regular tidal cycles. These areas are mapped and described in the Federal Aquatic Resources Delineation Report (SHN, 2023) and the State Aquatic Resources Delineation Report (SHN, 2024). An assessment of biological conditions and impacts to this habitat is not a part of this report.

6.5.3 Wetlands and Riparian Habitats

A site-specific wetland delineation was conducted within the study area (SHN, 2023, 2024). Federally jurisdictional wetlands are described in detail within the Federal Aquatic Resources Delineation Report (SHN, 2023) which shows the location and extent of federally jurisdictional wetlands within the study area. Additionally, all state jurisdictional wetlands were delineated within the study area and are described in detail within the State Aquatic Resources Delineation Report (SHN, 2024). This report shows the location and extent of state jurisdictional wetlands, including the State Water Resources Control Board, California Department of Fish and Wildlife, and California Coastal Act wetlands.

6.6 Designated Critical Habitat

The USFWS Critical Habitat Portal was queried for habitat designated as critical for terrestrial species listed under the FESA (USFWS, 2023b). No critical habitat is designated within the study area. The nearest designated critical habitat is for the western snowy plover, over 4 miles southwest of the Project site. The proposed Project will not impact this critical habitat.

6.7 Wildlife Movement Corridors

Heavy vegetative cover along stormwater drainages and within the northern portion of the study area provide wildlife movement corridors around and through the Project area, although these are patchy in nature, are interrupted by roads and other development, and do not represent part of a significant connectivity corridor throughout the surrounding landscape. The previous stormwater drainage features in portions of the site are likely the best-quality portion of movement corridor within the Project site. A trail camera placed in one of the historical stormwater drainages captured a photo of a racoon passing through (see Appendix 1, Figure 11; Appendix 5, Photo 63). Several other photos from this location showed eye shine in the distance but no other discernable identifying characteristics.

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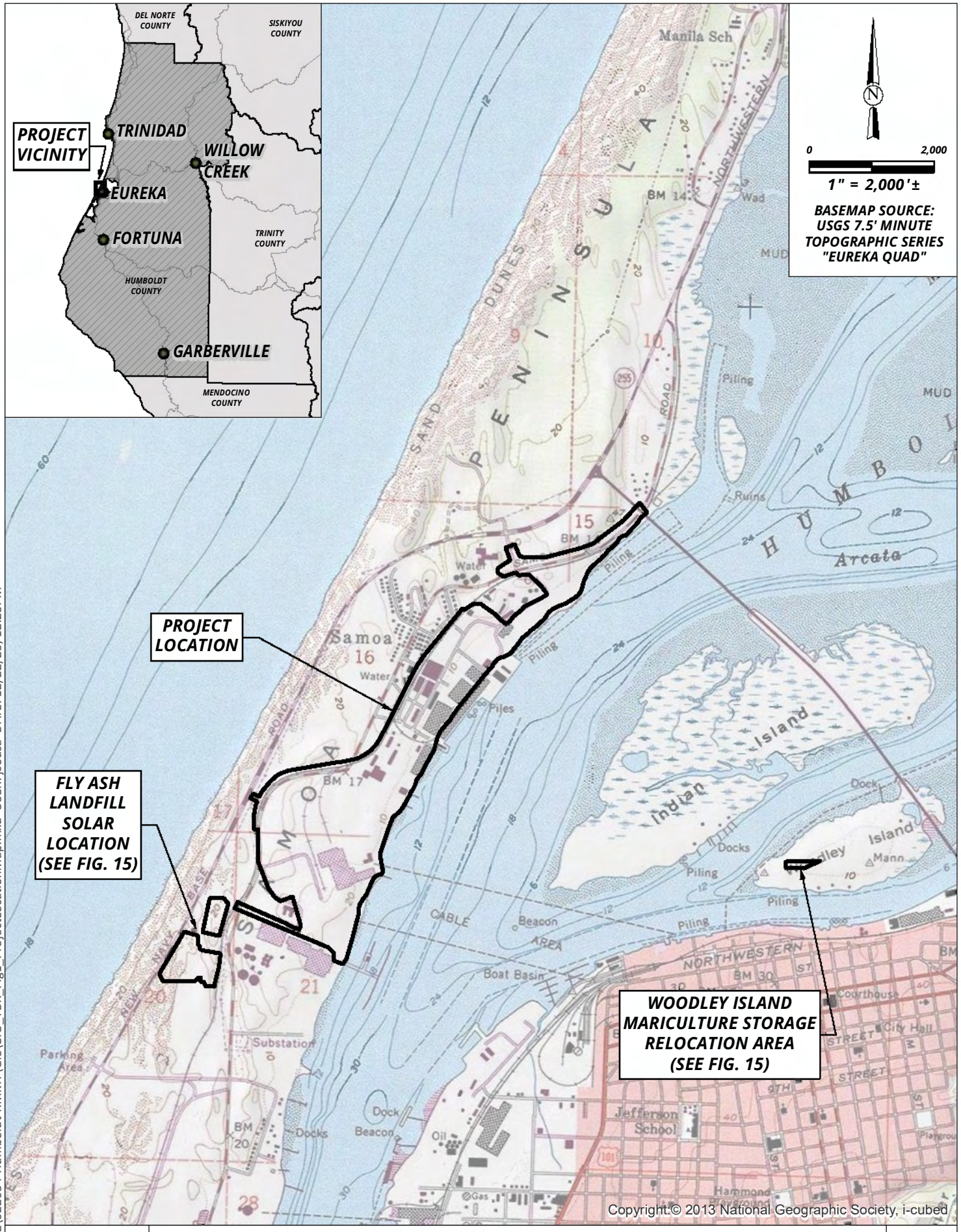
Figures 1



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Humboldt Bay Harbor, Rec., & Cons. District
Hum. Bay Offshore Wind Hvy. Lift Marine Terminal
Eureka, California

Project Location Map
Terrestrial Biological Report
December 2023 - 022054.400

Figure 1

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EXPLANATION

- VEGETATION RAPID ASSESSMENT POINT
- MHHW (6.65 FT, NAVD88)
- STUDY AREA

WILDLIFE OCCURRENCE

- BAT SURVEY LOCATION
- OSPREY NEST
- CORMORANT
- CHICKADEE
- TRAIL CAMERA LOCATION
- WILDLIFE TRAIL

SPECIAL STATUS PLANT SPECIES OCCURRENCES

- ANGELICA LUCIDA (IND.)
- CHLOROPYRON MARITIMUM SSP. PALUSTRE (IND.)
- CASTILLEJA AMBIGUA VAR. HUMBOLDTIENSIS (POP.)
- CHLOROPYRON MARITIMUM SSP. PALUSTRE (POP.)

ESHA

- SOFT AND WESTERN RUSH - SEDGE MARSHES (R9)
- COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)
- WAX MYRTLE SCRUB (R1,11)
- SHINING WILLOW GROVE
- SLOUGH SEDGE - WATER-PARSLEY - SMALL-FRUITED BULRUSH MARSH
- PICKLEWEED MAT (R12)
- BEACH PINE FOREST AND WOODLAND (R6)
- SEASIDE WOOLLY-SUNFLOWER - SEASIDE DAISY - BUCKWHEAT PATCHES (R3)
- DUNE REMNANT
- LOW ELEVATION SALT MARSH (SPARTINA AND SALT GRASS DOMINANT)
- MID-HIGH SALT MARSH (R4,7)

NON-ESHA

- RED ALDER FOREST
- HIMALAYAN BLACKBERRY SCRUB
- NON-NATIVE GRASSLAND
- RUDERAL VEGETATION
- CONCRETE/ASPHALT SURFACE

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 600
1" = 600'

HWY 255 / SAMOA BRIDGE

FIGURE 3
FIGURE 4
FIGURE 5
FIGURE 6
FIGURE 7
FIGURE 8
FIGURE 9
FIGURE 10
FIGURE 11
FIGURE 12
FIGURE 13
FIGURE 14
FIGURE 15

NEW NAVY BASE RD

NO ACCESS
NOT SURVEYED

PACIFIC OCEAN

HUMBOLDT BAY

Humboldt Bay Harbor, Recreation, & Conservation District
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal
Eureka, California

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Figure 2

P:\Eureka\2022\022054-Humboldt-RMMT\GIS\ProProjects\TerrestrialBio202312\TerrestrialBio202312.aprx USER: jsousa DATE: 12/22/23, 4:09PM

EXPLANATION

- VEGETATION RA POINT
- MHHW
- STUDY AREA

WILDLIFE OCCURRENCE

- CHICKADEE

SPECIAL STATUS PLANT SPECIES OCCURRENCES

- ANGELICA LUCIDA (IND.)
- CHLOROPYRON MARITIMUM SSP. PALUSTRE (IND.)
- CASTILLEJA AMBIGUA VAR. HUMBOLDTIENSIS (POP.)
- CHLOROPYRON MARITIMUM SSP. PALUSTRE (POP.)

ESHA

- COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)
- WAX MYRTLE SCRUB (R1,11)
- BEACH PINE FOREST AND WOODLAND (R6)
- SEASIDE WOOLLY-SUNFLOWER - SEASIDE DAISY - BUCKWHEAT PATCHES (R3)
- DUNE REMNANT
- LOW ELEVATION SALT MARSH (SPARTINA AND SALT GRASS DOMINANT)
- MID-HIGH SALT MARSH (R4,7)

NON-ESHA

- HIMALAYAN BLACKBERRY SCRUB
- NON-NATIVE GRASSLAND
- RUDERAL VEGETATION
- CONCRETE/ASPHALT SURFACE

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 100
1" = 100'

SAMOA BRIDGE
OPEN WATER
VANCE AVE
R7
R4
R5
1
2
3
BLACK-CAPPED CHICKADEE FORAGING, NESTING HABITAT
MATCH LINE - FIGURE 4
HUMBOLDT BAY

Humboldt Bay Harbor, Recreation, & Conservation District
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal
Eureka, California

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Figure 3

EXPLANATION

- VEGETATION RA POINT
- MHHW
- STUDY AREA

WILDLIFE OCCURRENCE

- BAT SURVEY LOC.
- CHICKADEE
- TRAIL CAMERA LOC.
- WILDLIFE TRAIL

ESHA

- COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)
- WAX MYRTLE SCRUB (R1,11)
- BEACH PINE FOREST AND WOODLAND (R6)
- SEASIDE WOOLLY-SUNFLOWER - SEASIDE DAISY - BUCKWHEAT PATCHES (R3)
- LOW ELEVATION SALT MARSH (SPARTINA AND SALT GRASS DOMINANT)
- MID-HIGH SALT MARSH (R4,7)

NON-ESHA

- HIMALAYAN BLACKBERRY SCRUB
- NON-NATIVE GRASSLAND
- RUDERAL VEGETATION
- RED ALDER FOREST
- CONCRETE/ASPHALT SURFACE

PHOTO SOURCE: SHN UAV (APR. 2022)

0 100

1" = 100'

R5

MATCH LINE - FIGURE 3

BLACK-CAPPED CHICKADEE FORAGING, NESTING HABITAT

R3

R6

R2

BAT SURVEY LOCATION 3

HUMBOLDT BAY

4 WILDLIFE TRAIL

MATCH LINE - FIGURE 5

R1

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Humboldt Bay Harbor, Rec., & Cons. District
Humb. Bay Offshore Wind Heavy Lift Marine Terminal
Eureka, California

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Figure 4

EXPLANATION

- VEGETATION RA POINT
- MHHW
- STUDY AREA

WILDLIFE OCCURRENCE

- BAT SURVEY LOC.

SPECIAL STATUS PLANT SPECIES OCCURRENCES

- ANGELICA LUCIDA (IND.)

ESHA

- COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)
- WAX MYRTLE SCRUB (R1,11)
- SEASIDE WOOLLY-SUNFLOWER - SEASIDE DAISY - BUCKWHEAT PATCHES (R3)
- DUNE REMNANT
- LOW ELEVATION SALT MARSH (SPARTINA AND SALT GRASS DOMINANT)
- MID-HIGH SALT MARSH (R4,7)

NON-ESHA

- HIMALAYAN BLACKBERRY SCRUB
- NON-NATIVE GRASSLAND
- RUDERAL VEGETATION
- CONCRETE/ASPHALT SURFACE

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 100
1" = 100'

R1

MATCH LINE - FIGURE 4

HUMBOLDT BAY

BAT SURVEY LOCATION 2

MATCH LINE - FIGURE 6

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Humboldt Bay Harbor, Rec., & Cons. District
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Figure 5

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Humboldt Bay Harbor, Rec., & Cons. District
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Eureka, California

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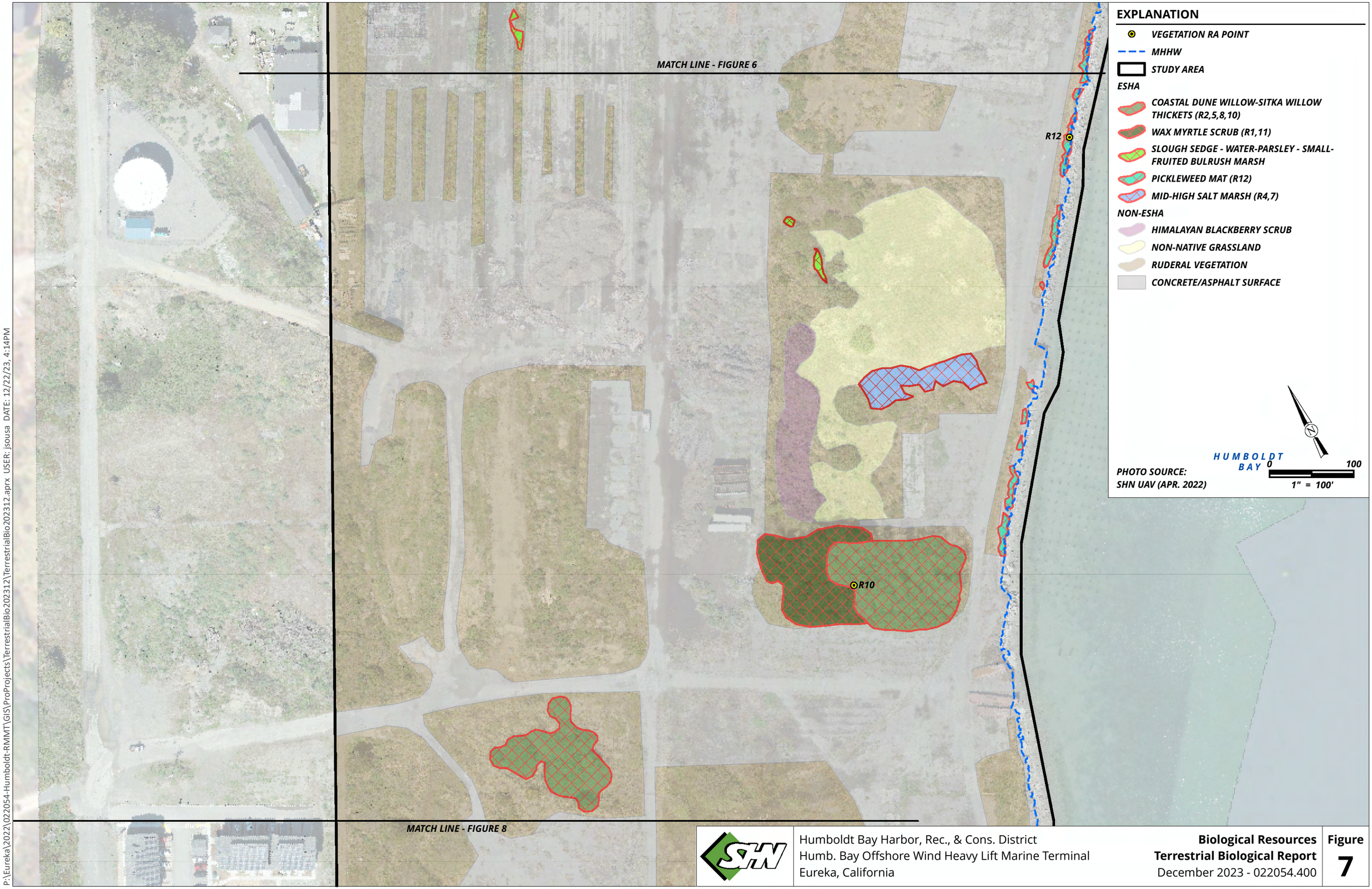
Figure 6



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Humboldt Bay Harbor, Rec., & Cons. District
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Eureka, California

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Figure 7

EXPLANATION

- *MHHW*
- *STUDY AREA*

WILDLIFE OCCURRENCE

- *OSPREY NEST*

ESHA

- *COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)*
- *PICKLEWEED MAT (R12)*
- *MID-HIGH SALT MARSH (R4,7)*

NON-ESHA

- *HIMALAYAN BLACKBERRY SCRUB*
- *RUDERAL VEGETATION*
- *CONCRETE/ASPHALT SURFACE*

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 *100*
1" = 100'

MATCH LINE - FIGURE 7

HUMBOLDT BAY

OSPREY NEST REMNANTS (INACTIVE)

MATCH LINE - FIGURE 9

OSPREY NEST (ACTIVE)

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Humboldt Bay Harbor, Rec., & Cons. District
Humb. Bay Offshore Wind Heavy Lift Marine Terminal
Eureka, California

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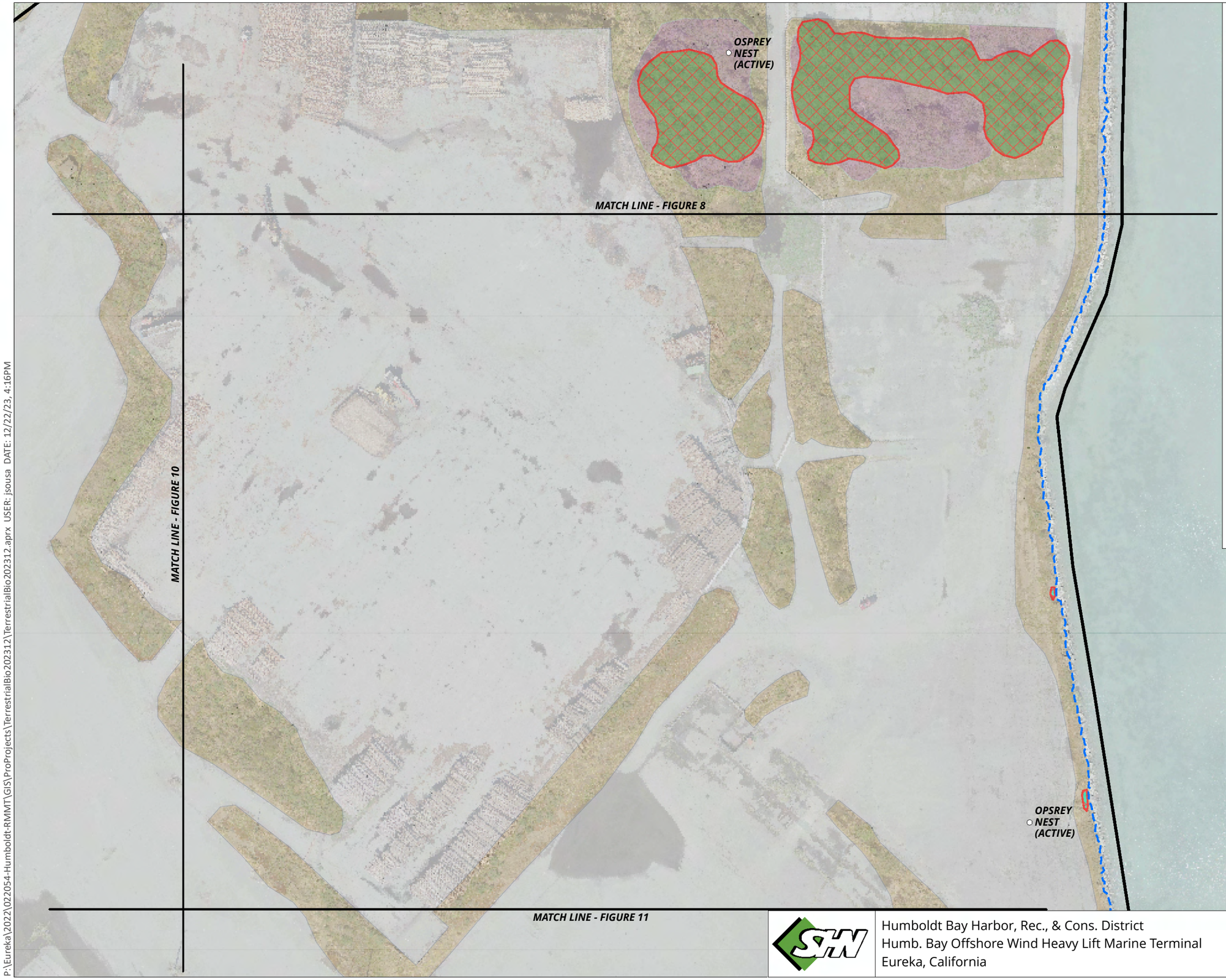
Figure 8



EXPLANATION

- MHHW
- STUDY AREA

WILDLIFE OCCURRENCE

- OSPREY NEST

ESHA

- COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)
- PICKLEWEED MAT (R12)

NON-ESHA

- HIMALAYAN BLACKBERRY SCRUB
- RUDERAL VEGETATION
- CONCRETE/ASPHALT SURFACE

HUMBOLDT BAY

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 100
1" = 100'

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Humboldt Bay Harbor, Rec., & Cons. District
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Figure 9

EXPLANATION

- VEGETATION RA POINT
- STUDY AREA

ESHA

- WAX MYRTLE SCRUB (R1,11)

NON-ESHA

- RUDERAL VEGETATION
- CONCRETE/ASPHALT SURFACE

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 100
1" = 100'

R11

MATCH LINE - FIGURE 9

MATCH LINE - FIGURE 12

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Humb. Bay Offshore Wind Heavy Lift Marine Terminal
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Figure 10

MATCH LINE - FIGURE 9

OPSREY NEST (INACTIVE)

BAT SURVEY LOCATION 1

1

2

DOUBLE-CRESTED CORMORANTS ROOSTING, FEEDING YOUNG

OSPREY NEST (ACTIVE)

MATCH LINE - FIGURE 12

3

MATCH LINE - FIGURE 13

EXPLANATION

- MHHW
- STUDY AREA

HUMBOLDT BAY

WILDLIFE OCCURRENCE
- BAT SURVEY LOC.
- OSPREY NEST
- CORMORANT
- TRAIL CAMERA LOC.

ESHA
- COASTAL DUNE WILLOW-SITKA WILLOW THICKETS (R2,5,8,10)
- SHINING WILLOW GROVE
- PICKLEWEED MAT (R12)

NON-ESHA
- HIMALAYAN BLACKBERRY SCRUB
- RUDERAL VEGETATION
- CONCRETE/ASPHALT SURFACE

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 100
1" = 100'

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Humboldt Bay Harbor, Rec., & Cons. District
Humb. Bay Offshore Wind Heavy Lift Marine Terminal
Eureka, California

Biological Resources
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Figure 11

EXPLANATION

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Humboldt Bay Harbor, Rec., & Cons. District
Humb. Bay Offshore Wind Heavy Lift Marine Terminal
Eureka, California

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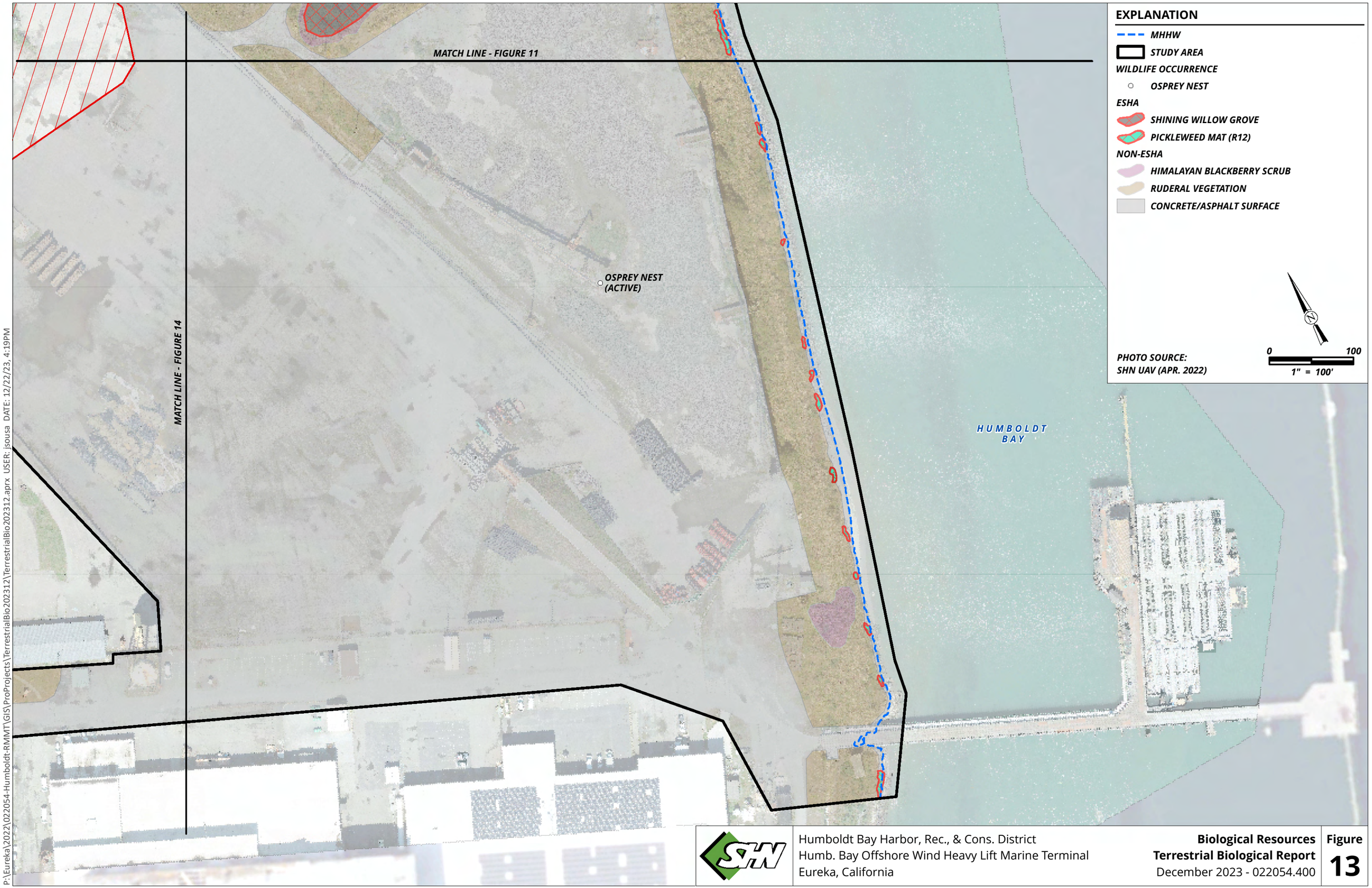
Figure
12



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Humboldt Bay Harbor, Rec., & Cons. District
Humb. Bay Offshore Wind Heavy Lift Marine Terminal
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Figure
13

EXPLANATION

- *STUDY AREA*

NON-ESHA

- *RUDERAL VEGETATION*
- *CONCRETE/ASPHALT SURFACE*

MATCH LINE - FIGURE 12

MATCH LINE - FIGURE 13

MATCH LINE - FIGURE 15

PHOTO SOURCE:
SHN UAV (APR. 2022)

0 100

1" = 100'

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Humboldt Bay Harbor, Rec., & Cons. District
Humb. Bay Offshore Wind Heavy Lift Marine Terminal
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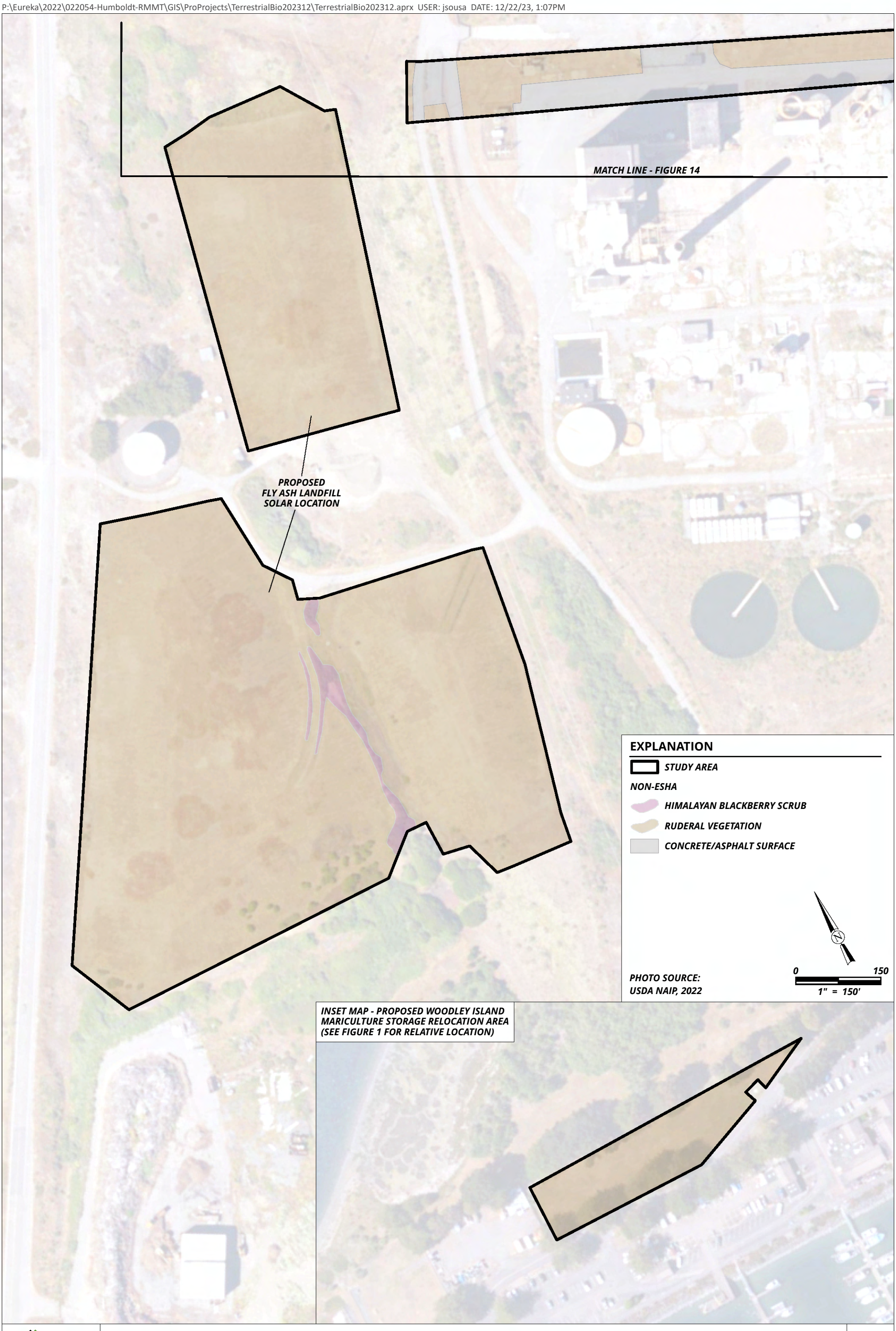
Figure
14


MATCH LINE - FIGURE 14
PROPOSED
FLY ASH LANDFILL
SOLAR LOCATION
EXPLANATION
STUDY AREA
NON-ESHA
HIMALAYAN BLACKBERRY SCRUB
RUDERAL VEGETATION
CONCRETE/ASPHALT SURFACE
PHOTO SOURCE:
USDA NAIP, 2022
0
150
1" = 150'
INSET MAP - PROPOSED WOODLEY ISLAND
MARICULTURE STORAGE RELOCATION AREA
(SEE FIGURE 1 FOR RELATIVE LOCATION)

Special-status Species Lists

2

Table 2-1
Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles
RMMT Biological Assessment 3/30/2022

Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence
Abronia umbellata var. *breviflora*	pink sand-verbena	Nyctagin-aceae	None	None	G4G5-T2	S1	1B.1	June-Oct.	Coastal dunes and coastal strand.	Foredunes and interdunes with sparse cover. Usually the plant closest to the ocean. 0-10 m.	Moderate
Angelica lucida	Sea coast angelica	Apiaceae	None	None	G5	S3	4.2	May-Sept.	Coastal strand	Coastal bluff scrub, coastal dunes, coastal scrub, coastal salt marshes. 0-150 m	**Present**
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	Fabaceae	None	None	G2T2	S2	1B.2	April-Oct.	Coastal dunes, marshes & swamps, coastal scrub.	Mesic sites in dunes or along streams or coastal salt marshes. 0-155 m.	High
Astragalus rattanii var. *rattanii*	Rattan's milk-vetch	Fabaceae	None	None	G4T4	S4	4.3	April-July	Chaparral, cismontane woodland, lower montane conifer forest.	Open grassy hillsides, gravelly flats in valleys, and gravel bars of stream beds. 30-825 m.	None
Cardamine angulata	seaside bittercress	Brassic-aceae	None	None	G5	S1	2B.1	Jan.-July	Lower montane, conifer forest, N. coast conifer forest, wetland	Wet areas, streambanks. 90-155 m.	None
Carex arcta	northern clustered sedge	Cyperaceae	None	None	G5	S1	2B.2	June-Sept.	Bogs and fens, north coast conifer forest.	Mesic sites. 60-1405 m.	None
Carex leptalea	bristle-stalked sedge	Cyperaceae	None	None	G5	S1	2B.2	March-July	Bogs and fens, meadows and seeps, marshes and swamps.	Mostly known from bogs and wet meadows. 3-1395 m.	None
Carex lyngbyei	Lyngbye's sedge	Cyperaceae	None	None	G5	S3	2B.2	April-August	Marsh & swamp (brackish or freshwater).	0-200 m.	High
Carex praticola	northern meadow sedge	Cyperaceae	None	None	G5	S2	2B.2	May-July	Meadows and seeps.	Moist to wet meadows. 15-3200 m.	None

Table 2-1
Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles
RMMT Biological Assessment 3/30/2022

Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence
Castilleja ambigua var. *humboldtiensis*	Humboldt Bay owl's-clover	Orobanch-aceae	None	None	G4T2	S2	1B.2	April-August	Marshes and swamps.	Coastal saltmarsh with *Spartina, Distichlis, Salicornia, Jaumea*. 0-20 m.	**Present**
Castilleja litoralis	Oregon coast paintbrush	Orobanch-aceae	None	None	G3	S3	2B.2	June	Coastal bluff scrub, coastal dunes, coastal scrub.	Sandy sites. 5-255 m.	Moderate
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	Orobanch-aceae	None	None	G4?T2	S2	1B.2	June-Oct.	Coastal salt marsh.	Usually in coastal salt marsh with *Salicornia, Distichlis, Jaumea, Spartina,* etc. 0-10 m.	**Present**
Chrysosplenium glechomifolium	Pacific golden saxifrage	Saxifrag-aceae	None	None	G5	S3	4.3	Feb.-June	North Coast coniferous forest, riparian forest	Streambanks, sometimes seeps, sometimes roadsides. 10-220 m.	None
Collinsia corymbosa	round-headed Chinese-houses	Plantagin-aceae	None	None	G1	S1	1B.2	April-June	Coastal Dunes	Coastal dunes from 10-30 m	Low-One unconfirmed occurrence recorded in Humboldt Co.
Eleocharis parvula	small spikerush	Cyperaceae	None	None	G5	S4	4.3	July-August	Marsh & swamp, salt marsh, wetland	In coastal salt marshes. 1-3020 m.	High
Erysimum menziesii	Menzies' wallflower	Brassic-aceae	E	E	G1	S1	1B.1	March-Sept.	Coastal dunes.	Localized on dunes and coastal strand. 0-35 m.	**High. Present immediately west.**
Erythronium revolutum	coast fawn lily	Liliaceae	None	None	G4G5	S3	2B.2	March-August	Bogs & fens, broadleaf upland forest, north coast conifer forest.	Mesic sites; streambanks. 60-1405 m.	None
Fissidens pauperculus	minute pocket moss	Fissident-aceae	None	None	G3?	S2	1B.2	Lichen	North coast coniferous forest, Redwood.	Moss growing on damp soil along the coast. In dry streambeds and on stream banks. 10-1024 m.	None

Table 2-1
Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles
RMMT Biological Assessment 3/30/2022

Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence
Gilia capitata ssp. *pacifica*	Pacific gilia	Polemoni-aceae	None	None	G5T3	S2	1B.2	April-August	Coastal bluff scrub, chaparral, coastal prairie, valley & foothill grassland.	5-1345 m.	Low
Gilia millefoliata	dark-eyed gilia	Polemoni-aceae	None	None	G2	S2	1B.2	April-July	Coastal dunes.	1-60 m.	**High. Present immediately west.**
Glehnia littoralis ssp. *leiocarpa*	American glehnia	Apiaceae	None	None	G5T5	S3	4.2	May-August	Coastal Dunes	0-20 m.	Moderate
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	Asteraceae	None	None	G4T3	S2	1B.2	March-June	Coastal bluff scrub, coastal dunes, coastal prairie.	Sandy bluffs and flats. 0-215 m.	High
Hosackia gracilis	harlequin lotus	Fabaceae	None	None	G4	S3	4.2	March-July	Broadleaf upland forest, coast bluff scrub, coast prairie, coast scrub, closed-cone conifer forest, meadow, seep, marsh & swamp, N. coast conifer forest, valley & foothill grassland.	Wetlands and roadsides. 0-700 m.	Low
Lasthenia californica ssp. *macrantha*	perennial goldfields	Asteraceae	None	None	G3T2	S2	1B.2	Jan.-Nov.	Coastal bluff scrub, coastal dunes, coastal scrub.	5-185 m.	Low
Lathyrus glandulosus	sticky pea	Fabaceae	None	None	G3	S3	4.3	April-June	Cismontane woodland.	In oak woodlands upland from the coast redwood forests & along roadsides. 300-800 m.	None
Lathyrus japonicus	seaside pea	Fabaceae	None	None	G5	S2	2B.1	May-August	Coastal dunes.	3-65 m.	Moderate

Table 2-1
Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles
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Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence
Lathyrus palustris	marsh pea	Fabaceae	None	None	G5	S2	2B.2	March-August	Bogs & fens, lower montane conifer forest, marsh & swamp, north coast conifer forest, coastal prairie, coastal scrub.	Moist coastal areas. 2-140 m.	High
Layia carnosa	beach layia	Asteraceae	E	E	G2	S2	1B.1	March-July	Coastal dunes, coastal scrub.	On sparsely vegetated, semi-stabilized dunes, usually behind foredunes. 0-30 m.	Moderate
Lilium kelloggii	Kellogg's lily	Liliaceae	None	None	G3	S3	4.3	May-August	Lower montane conifer forest, N. coast conifer forest.	Gaps and roadsides in conifer forest. 3-1300 m.	None
Lilium occidentale	western lily	Liliaceae	E	E	G1	S1	1B.1	June-July	Coastal scrub, freshwater marsh, bogs & fens, coastal bluff scrub, coast prairie, N. coast conifer forest, marshes and swamps.	Well-drained, old beach washes overlain with wind-blown alluvium and organic topsoil; usually near margins of Sitka spruce. 3-110 m.	None
Listera cordata	heart-leaved twayblade	Orchidaceae	None	None	G5	S4	4.2	Feb.-July	Lower montane conifer forest, north coast conifer forest.	Bogs and fens, 5-1370 m.	None
Lycopodium clavatum	running-pine	Lycopodi-aceae	None	None	G5	S3	4.1	June-Sept.	Lower montane conifer forest, north coast conifer forest, marsh &swamp.	Forest understory, edges, openings, roadsides; mesic sites with partial shade and light. 45-1225 m.	None
Mitellastra caulescens	leafy-stemmed mitrewort	Saxifrag-aceae	None	None	G5	S4	4.2	March-Oct.	Broadleaf upland forest, lower montane conifer forest, meadow & seep, N. coast conifer forest.	Mesic sites. 5-1700 m.	None

Table 2-1
Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles
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Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence
Monotropa uniflora	ghost-pipe	Ericaceae	None	None	G5	S2	2B.2	June-Sept.	Broadleaved upland forest, north coast conifer forest.	Often under redwoods or west hemlock. 15-855 m.	None
Montia howellii	Howell's montia	Montiaceae	None	None	G3G4	S2	2B.2	Feb.-May	Meadows and seeps, north coast coniferous forest, vernal pools.	Vernally wet sites; often on compacted soil. 10-1005 m.	Moderate
Oenothera wolfii	Wolf's evening-primrose	Onagraceae	None	None	G2	S1	1B.1	May-Oct.	Coastal bluff scrub, coastal dunes, coastal prairie, low montane conifer forest.	Sandy substrates; usually mesic sites. 0-125 m.	High
Pityopus californicus	California pinefoot	Ericaceae	None	None	G4G5	S4	4.2	March-August	Broadleaf upland forest, upper montane and, N. coast conifer forest, low montane conifer forest.	Deep shade with few understory species, often under layer of duff, in rocky to clay loam soil. 15-2225 m.	None
Pleuropogon refractus	nodding semaphore grass	Poaceae	None	None	G4	S4	4.2	March-August	Meadow & seep, low montane conifer forest, N. coast conifer forest, riparian forest.	Mesic sites along streams, grassy flats in shaded redwood groves. 0-1600 m.	None
Puccinellia pumila	dwarf alkali grass	Poaceae	None	None	G4?	SH	2B.2	July	Marshes and swamps.	Mineral spring meadows and coastal salt marshes. 1-10 m.	Low
Ribes laxiflorum	trailing black currant	Grossulari-aceae	None	None	G5	S4	4.3	March-August	N. coast conifer forest, Redwood forests.	Grows over logs and stumps in moist, wet places. 5-1395 m.	None
Sidalcea malachroides	maple-leaved checkerbloom	Malvaceae	None	None	G3	S3	4.2	March-August	Broadleaf upland forest, coast prairie, coast scrub, N. coast conifer forest, riparian.	Woodlands and clearings near coast; often in disturbed areas. 0-730 m.	Low

Table 2-1
Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles
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Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence
Sidalcea malviflora ssp. *patula*	Siskiyou checkerbloom	Malvaceae	None	None	G5T2	S2	1B.2	May-August	Coastal bluff scrub, coastal prairie, north coast conifer forest.	Open coastal forest; roadcuts. 5-1255 m.	Low
Sidalcea oregana ssp. *eximia*	coast checkerbloom	Malvaceae	None	None	G5T1	S1	1B.2	June-August	Meadow & seep, N. coast & low montane conifer forest.	Near meadows, in gravelly soil. 5-1805 m.	None
Silene scouleri ssp. *scouleri*	Scouler's catchfly	Caryophyll-aceae	None	None	G5T4 T5	S2S3	2B.2	June-August	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	5-315 m.	None
Spergularia canadensis var. *occidentalis*	western sand-spurrey	Caryophyll-aceae	None	None	G5T4	S1	2B.1	June-August	Marshes and swamps (coastal salt marshes).	0-3 m.	High
Sulcaria spiralifera	twisted horsehair lichen	Parmeliaceae	None	None	G3G4	S2	1B.2	Lichen	Coastal dunes, N. coast conifer forest (immediate coast)	Usually on conifers. 0-90 m.	Moderate
Trichodon cylindricus	cylindrical trichodon	Ditrichaceae	None	None	G4	S2	2B.2	Moss	Broadleafed upland forest, upper montane coniferous forest.	In openings on sandy or clay soils on roadsides, stream banks, trails or in fields. 50-1500 m.	None
Usnea longissima	Methuselah's beard lichen	Parmeli-aceae	None	None	G4	S4	4.2	Lichen	North coast coniferous forest, broadleaf upland forest.	In the "redwood zone" on tree branches of a variety of trees, incl. big leaf maple, oaks, ash, Douglas-fir, and bay. 45-1465 m in California.	None
Viola palustris	alpine marsh violet	Violaceae	None	None	G5	S1S2	2B.2	March-August4	Coastal scrub, bogs and fens.	Swampy, shrubby places in coastal scrub or coastal bogs. 0-150 m.	None

Table 2-1

Special Status Plant Species List CNDDB, CNPS, IPaC: Eureka and Surrounding 7.5-minute quadrangles

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Scientific Name	Common Name	Family	FedList	CalList	GRank	SRank	RPlant Rank	Bloom Period	General Habitat	Micro-Habitat	Potential of Occurrence

1. Species indicator status as assigned by Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and California Department of Fish and Wildlife (CDFW)

C: candidate
CT: candidate threatened
D: delisted
DPS: distinct population segment
E: endangered
ESU: evolutionarily significant unit
FP: fully protected
PT: proposed threatened
SSC: species of special concern
T: threatened
WL: watch list

2. Species Heritage rank as assigned by California Department of Fish and Wildlife (CDFW)

G1/S1: critically imperiled
G2/S2: imperiled
G3/S3: vulnerable
G4/S4: apparently secure
G5/S5: secure

Table 2-2 Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles RMMT Biological Assessment 2023								
Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
Amphibians								
Ascaphus truei	Pacific tailed frog	None	None, SSC	G4	S3S4	Aquatic. Flowing waters. Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats.	Restricted to perennial montane streams. Tadpoles require water below 15 degrees C.	None, no suitable habitat available on site or adjacent.
Rana aurora	northern red-legged frog	None	None, SSC	G4	S3	Flowing waters and ponds. Humid forests, woodlands, grasslands, & streamsides in NW California, usually near dense riparian cover.	Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season.	Low, no suitable breeding habitat available, dispersal habitat sparse and fragmented.
Rana boylii pop. 1	foothill yellow-legged frog	E (excluding North Coast Clade)	None, SSC	G3	S3	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats. Lower montane conifer forest, meadow & seep, riparian forest and woodland.	Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.	None, no suitable available on site or adjacent.
Rhyacotriton variegatus	southern torrent salamander	None	None, SSC	G3G4	S2S3	Coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Old growth forest.	Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rock within trickling water.	None, no suitable available on site or adjacent.
Birds								
Accipiter cooperii	Cooper's hawk	None	None, WL	G5	S4	Woodland, chiefly of open, interrupted or marginal type. Riparian forests.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	High, suitable foraging habitat on site. **Present 2022.**
Accipiter striatus	sharp-shinned hawk	None	None, WL	G5	S4	Ponderosa pine, black oak, riparian deciduous, mixed conifer & Jeffrey pine	North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 ft of water.	Low, minimal suitable foraging habitat available.

Table 2-2 Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles RMMT Biological Assessment 2023								
Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
						habitats. Prefers riparian areas.		
Ardea alba	great egret	None	None, S	G5	S4	Brackish marsh, estuary, freshwater marsh, marsh & swamp, riparian forest, wetland. Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	High, foraging habitat available throughout the site, possible nesting habitat in north portion.
Ardea herodias	great blue heron	None	None, S	G5	S4	Brackish marsh, estuary, freshwater marsh, marsh & swamp, riparian forest, wetland. Colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	High, foraging habitat available throughout the site, possible nesting habitat in north portion.
Asio flammeus	short-eared owl	None	None, SSC	G5	S3	Found in swamp lands, both fresh and salt; lowland meadows; foothill grassland, wetland, irrigated alfalfa fields.	Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	Low, minimal suitable habitat available on site or adjacent.
Botaurus lentiginosus	American bittern	None	None	G4	S3S4	Freshwater and slightly brackish marshes. Also in coastal saltmarshes.	Dense reed beds.	Low, very little suitable habitat available on site.
Brachyramphus marmoratus	marbled murrelet	T	E	G3G4	S1	Lower montane conifer forest, Oldgrowth Redwood Feeds near-shore; nests inland along coast from Eureka to Oregon border.	Nests in old-growth redwood-dominated forests, up to 6 mi. inland, often in Douglas-fir. Uses open ocean, uncommon in Humboldt Bay.	None, no suitable habitat on site.
Chaetura vauxi	Vaux's swift	None	None, SSC	G5	S2S3	Redwood, Douglas-fir, & other coniferous forests. Old growth. Nests in large hollow trees & snags. Often nests in flocks.	Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.	Low, minimal foraging habitat available, no suitable nesting habitat.

Table 2-2 Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles RMMT Biological Assessment 2023								
Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
Charadrius alexandrinus nivosus	western snowy plover	T	None, SSC	G3T3	S2S3	Sandy beaches, river bars, salt pond levees, wetlands & shores of large alkali lakes.	Needs sandy, gravelly or friable soils for nesting. Forages along river gravel bars and sandy beaches.	Low, no suitable nesting habitat available, minimal foraging habitat.
Charadrius montanus	mountain plover	None	None, SSC	G3	S2S3	Chenopod scrub. Valley and foothill short grasslands, freshly plowed fields, newly sprouting grain fields, & sometimes sod farms.	Short vegetation, bare ground & flat topography. Prefers grazed areas & areas with burrowing rodents.	None, no suitable habitat available, out of typical range.
Circus hudsonius	northern harrier	None	None, SSC	G5	S3	Coastal salt & fresh-water marsh, riparian scrub. Nest & forage in grasslands, from salt grass in desert sink to mountain cienagas.	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Moderate, limited suitable foraging habitat available.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	T	E	G5T2T3	S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.	None, no suitable habitat available, out of typical range.
Contopus cooperi	olive-sided fly catcher	None	None, SSC	G4	S4	Nesting habitats are mixed conifer, montane hardwood conifer, Douglas-fir, redwood, red fir & lodgepole pine.	Most numerous in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain.	None, no suitable habitat available.
Coturnicops noveboracensis	yellow rail	None	None, SSC	G4	S1S2	Freshwater marsh Meadow & seep. Summer resident in eastern Sierra Nevada in Mono County.	Freshwater marshlands.	None, no suitable habitat available, out of typical range.
Egretta thula	snowy egret	None	None	G5	S4	Marsh & swamp, meadow & seep, riparian forest, riparian woodland, wetland. Colonial nester, with nest sites situated in protected beds of dense tules.	Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Moderate, minimal suitable habitat available.

Table 2-2 Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles RMMT Biological Assessment 2023								
Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
Elanus leucurus	white-tailed kite	None	None, FP	G5	S3S4	Rolling foothills and valley margins w/scattered oaks & river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Moderate, minimal suitable habitat available.
Empidonax traillii	willow flycatcher	None	E	G5	S1S2	Meadow & seep, riparian scrub, riparian woodland, wetland. Inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters; 2000-8000 ft elevation.	Requires dense willow thickets for nesting/roosting. Low, exposed branches are used for singing posts/hunting perches.	Low, minimal suitable habitat, not typical ecological setting.
Falco columbarius	merlin	None	None, WL	G5	S3S4	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches.	Clumps of trees or windbreaks are required for roosting in open country. Use abandoned nests of crows and hawks.	High, suitable foraging habitat available. **Present 2022.**
Falco peregrinus anatum	American peregrine falcon	D	D, S	G4T4	S3S4	Many open habitats, however, more likely along coastlines, lake edges, mountain edges. Near wetlands, lakes, rivers, or other water; nests on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.	High, suitable foraging habitat. (**Present adjacent 2022**).
Haliaeetus leucocephalus	bald eagle	D	E, FP	G5	S3	Lower montane conifer forest, Old growth. Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water.	Nests in large, old-growth, or dominant live tree w/open branches, especially ponderosa pine. Roosts communally in winter.	Low, suitable foraging habitat adjacent, no nesting habitat on site.

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Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
Numenius americanus	long-billed curlew	None	None, WL	G5	S2	Great Basin grassland Meadow & seep. Breeds in upland shortgrass prairies & wet meadows in northeastern California.	Habitats on gravelly soils and gently rolling terrain are favored over others.	Low, suitable foraging habitat along shoreline, no nesting habitat on site.
Nycticorax nycticorax	black-crowned night heron	None	None	G5	S4	Marsh & swamp, riparian forest, riparian woodland, wetland. Colonial nester, usually in trees, occasionally in tule patches.	Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshes.	High, suitable habitat on site in northern portion. **Present 2020.**
Pandion haliaetus	osprey	None	None, WL	G5	S4	Ocean shore, riparian forest, bays, fresh-water lakes, and larger streams.	Large nests built in tree-tops or tall human-made structures within 15 miles of a good fish-producing body of water.	High, suitable habitat on site. **Present. On-going historical nesting on site. 6 active nests in 2022.**
Passerculus sandwichensis alaudinus	Bryant's savannah sparrow	None	None, SSC	G5T2T3	S2S3	Agricultural fields, wet meadows, brackish marsh, low growing grasslands, low tidally influenced habitat and adjacent ruderal areas.	Moist grasslands within and just above the fog belt.	Moderate, suitable habitat available in portions of the site.
Pelecanus occidentalis californicus	California brown pelican	D	D	G4T3	S3	Estuaries and coastal marine habitat. Colonial nester on coastal islands just outside the surf line.	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	Low, suitable foraging habitat adjacent, no nesting habitat on site. **Fly-over (2020).**
Phalacrocorax auritus	double-crested cormorant	None	None, WL	G5	S4	Riparian forest, Riparian scrub, Riparian woodland. Colonial nester on coastal cliffs, offshore islands, & along lake margins in the interior of the state.	Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	High, foraging habitat adjacent and roosting habitat on site, limited nesting habitat on site. **Present (2020 and 2022).**
Poecile atricapillus	black-capped chickadee	None	None, WL	G5	S3	Inhabits riparian woodlands in Del Norte and northern Humboldt counties.	Mainly found in deciduous tree-types, especially willows	High, suitable nesting and foraging habitat on site. **Present 2022.**

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Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
							and alders, along large or small watercourses.	
Riparia riparia	bank swallow	None	T	G5	S2	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	None, no suitable habitat on site or adjacent.
Strix occidentalis caurina	northern spotted owl	T	T	G3T3	S2S3	Old-growth forests or mixed stands of old-growth & mature trees. Occasional in younger forests w/ patches of big trees.	High, multistory canopy dominated by big trees, many trees w/cavities or broken tops, woody debris & space under canopy.	None, no suitable habitat on site or adjacent.
Insects								
Bombus caliginosus	obscure bumble bee	None	None	G4?	S1S2	Coastal areas from Santa Barbara county to north to Washington state.	Nests underground or above ground in abandoned bird nests. Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.	Low, minimal nesting and foraging habitat.
Bombus occidentalis	western bumble bee	None	CE	G2G3	S1	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	Nest in cavities or abandoned burrows.	Low, minimal nesting and foraging habitat. Uncommon on the coast now.
Bombus crotchii	Crotch bumble bee	None	CE	G3G4	S1S2	California, parts of Nevada. Warm, dry environments such as desert scrub.	Nests are often located underground in abandoned rodent nests.	None, not typical habitat and out of current known range.
Cicindela hirticollis gravida	sandy beach tiger beetle	None	None	G5T2	S2	Coastal dunes. Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico.	Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	None, no suitable habitat available on site.

Table 2-2 Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles RMMT Biological Assessment 2023								
Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
Danaus plexippus plexippus pop. 1	monarch butterfly - California overwintering population	Candidate	None	G4T1T2Q	S2	Canada to Mexico. Fields, roadside areas, open areas, wet areas or urban garden.	Milkweed and other flowering plants. They only lay eggs on milkweed.	Low, minimal resting or foraging habitat, no milkweed present.
Scaphinotus behrensi	Behrens' snail-eating beetle	None	None	G2G4	S2S4	Coniferous forest Found in extreme NW CA along the coast.	Shaded, moist ground, occasionally tree trunks. Nocturnal, takes cover under fallen trees and leaf litter.	None, no suitable habitat available.
Mammals								
Aplodontia rufa humboldtiana	Humboldt mountain beaver	None	None	G5TNR	SNR	Coastal scrub, redwood forest, riparian forest. Coast Range in southwestern Del Norte County and northwestern Humboldt County.	Variety of coastal habitats, including coastal scrub, riparian forests, typically with open canopy and thickly vegetated understory.	None, no suitable habitat available.
Arborimus albipes	white footed vole	None	None, SSC	G3G4	S2	Mature coastal forests in Humboldt & Del Norte cos. Prefers areas near small, clear streams with dense alder & shrubs.	Occupies the habitat from the ground surface to the canopy. Feeds in all layers & nests on the ground under logs or rock	None, no suitable habitat available.
Arborimus pomo	Sonoma tree vole	None	None, SSC	G3	S3	N. coast fog belt from Oregon border to Sonoma Co. In Douglas-fir, redwood & montane hardwood-conifer forests. Old growth.	Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.	None, no suitable habitat available.
Corynorhinus townsendii	Townsend's big-eared bat	None	None, SSC	G3G4	S2	Throughout California in a wide variety of habitats including montane forest, riparian woodland, chaparral, and grasslands. Most common in mesic sites.	Roosts in the open, hanging from walls & ceilings. Extremely sensitive to human disturbance.	Low, abandoned buildings may provide habitat, though human disturbance is near and on-going.

Table 2-2 Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles RMMT Biological Assessment 2023								
Scientific Name	**Common Name**	**FedList**	**CalList**	**GRank**	**SRank**	**GenHab**	**MicroHab**	**Potential of Occurrence**
Erethizon dorsatum	North American porcupine	None	None	G5	S3	Forested habitats in the Sierra Nevada, Cascade, and Coast ranges.	Wide variety of coniferous and mixed woodland habitat.	None, no suitable habitat available.
Lasionycteris noctivagans	Silver-haired bat	None	None	G3G4	S3S4	Coniferous and riparian forest. Primarily a coastal and montane forest dweller, feeding over streams, ponds and open brushy areas.	Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes, and rarely under rocks. Needs drinking water.	Moderate, suitable habitat available. **Present during July 2022 acoustic survey sampling.**
Lasiurus cinereus	hoary bat	None	None	G5	S4	Broadleaved upland forest, cismontane woodland, lower montane and North coast conifer forests. Upland Prefers open habitats or habitat mosaics, 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, suitable habitat available. **Present during July 2022 acoustic survey sampling.**
Martes caurina humboldtensis	Humboldt marten	T	E, SSC	G5T1	S1	North coast conifer forest, old growth, Redwood forest. Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County.	Associated with late-successional coniferous forests, prefer forests with low, overhead cover.	None, no suitable habitat available.
Myotis evotis	long-eared myotis	None	None	G5	S3	Found in all brush, woodland & forest habitats from sea level to about 9000 ft. prefers coniferous woodlands & forests.	Nursery colonies in buildings, crevices, spaces under bark, & snags. Caves used primarily as night roosts.	Low, minimal suitable habitat available.
Myotis yumanensis	Yuma myotis	None	None	G5	S4	Coniferous and riparian forests. Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	High, suitable habitat available. **Present during July acoustic survey sampling.**
Pekania pennanti	fisher (west coast DPS)	None	None, SSC	G5T2-T3Q	S2S3	Intermediate to large-tree stages of conifer forests &	Uses cavities, snags, logs & rocky areas for cover &	None, no suitable habitat available.

Table 2-2
Special Status Terrestrial Animal Species List CNDDB, IPaC: Eureka and Surrounding 7.5-minute quadrangles
RMMT Biological Assessment 2023

Scientific Name	Common Name	FedList	CalList	GRank	SRank	GenHab	MicroHab	Potential of Occurrence
						deciduous-riparian areas with high percent canopy closure.	denning. Needs large areas of mature, dense forest. West Coast DPS refers to West Coast population excluding Southern Sierra Nevada DPS.	
Reptiles								
Emys marmorata	western pond turtle	None	None, SSC	G3G4	S3	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, below 6,000 ft elevation.	Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Low, minimal suitable habitat available.

1. Species indicator status as assigned by Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), and California Department of Fish and Wildlife (CDFW)

C: candidate
CT: candidate threatened
D: delisted
DPS: distinct population segment
E: endangered
ESU: evolutionarily significant unit
FP: fully protected
PT: proposed threatened
SSC: species of special concern
T: threatened
WL: watch list

2. Species Heritage rank as assigned by California Department of Fish and Wildlife (CDFW)

G1/S1: critically imperiled
G2/S2: imperiled
G3/S3: vulnerable
G4/S4: apparently secure
G5/S5: secure

Information for Planning and Consultation (IPAC) List

3

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Humboldt County, California

Local office

Arcata Fish And Wildlife Office

(707) 822-7201
(707) 822-8411

1655 Heindon Road

1033 Heindon Road
Arcata, CA 95521-4573

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. 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.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Pacific Marten, Coastal Distinct Population Segment Martes caurina Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9081	Threatened

Birds

NAME	STATUS
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl Strix occidentalis caurina Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS

NAME	STATUS
Green Sea Turtle Chelonia mydas	Threatened

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6199

Fishes

NAME	STATUS
Tidewater Goby Eucyclogobius newberryi	Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/57

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus	Candidate

Wherever found

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

Flowering Plants

NAME	STATUS
Beach Layia Layia carnosa	Threatened

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6728

Menzies' Wallflower Erysimum menziesii	Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2935

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list,click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Sep 30
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

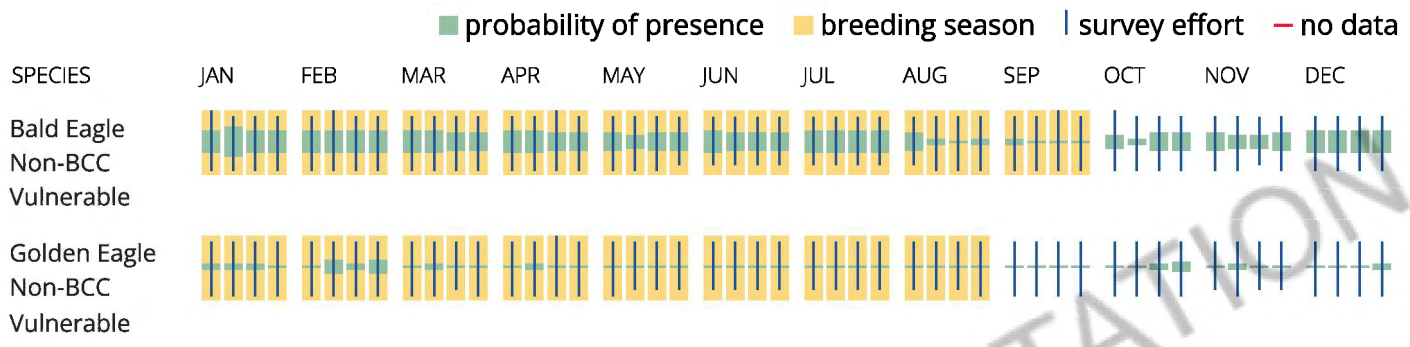
Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Allen's Hummingbird *Selasphorus sasin* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	**Breeds Feb 1 to Jul 15**
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	**Breeds Jan 1 to Sep 30**
Black Oystercatcher *Haematopus bachmani* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	**Breeds Apr 15 to Oct 31**
Black Scoter *Melanitta nigra* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	**Breeds elsewhere**
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	**Breeds Jun 15 to Sep 10**
Black Turnstone *Arenaria melanocephala* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	**Breeds elsewhere**
Black-legged Kittiwake *Rissa tridactyla* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	**Breeds elsewhere**
Brown Pelican *Pelecanus occidentalis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	**Breeds Jan 15 to Sep 30**

California Gull Larus californicus — Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cassin's Auklet Ptychoramphus aleuticus — Breeds Mar 21 to Sep 21

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/6967

Cassin's Finch Carpodacus cassinii — Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9462

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Loon gavia immer — Breeds Apr 15 to Oct 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Murre Uria aalge — Breeds Apr 15 to Aug 15

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-tailed Duck Clangula hyemalis — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/7238

Marbled Godwit Limosa fedoa — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Pomarine Jaeger Stercorarius pomarinus — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red Phalarope Phalaropus fulicarius — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-breasted Merganser Mergus serrator — Breeds elsewhere

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-necked Phalarope Phalaropus lobatus — **Breeds elsewhere**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-throated Loon Gavia stellata — **Breeds elsewhere**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Ring-billed Gull Larus delawarensis — **Breeds elsewhere**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Royal Tern Thalasseus maximus — **Breeds Apr 15 to Aug 31**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Rufous Hummingbird selasphorus rufus — **Breeds Apr 15 to Jul 15**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus — **Breeds Jun 1 to Aug 10**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Surf Scoter Melanitta perspicillata — **Breeds elsewhere**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Tufted Puffin Fratercula cirrhata This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/430	Breeds May 5 to Oct 5
Western Grebe aechmophorus occidentalis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
White-winged Scoter Melanitta fusca This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

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How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events

for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
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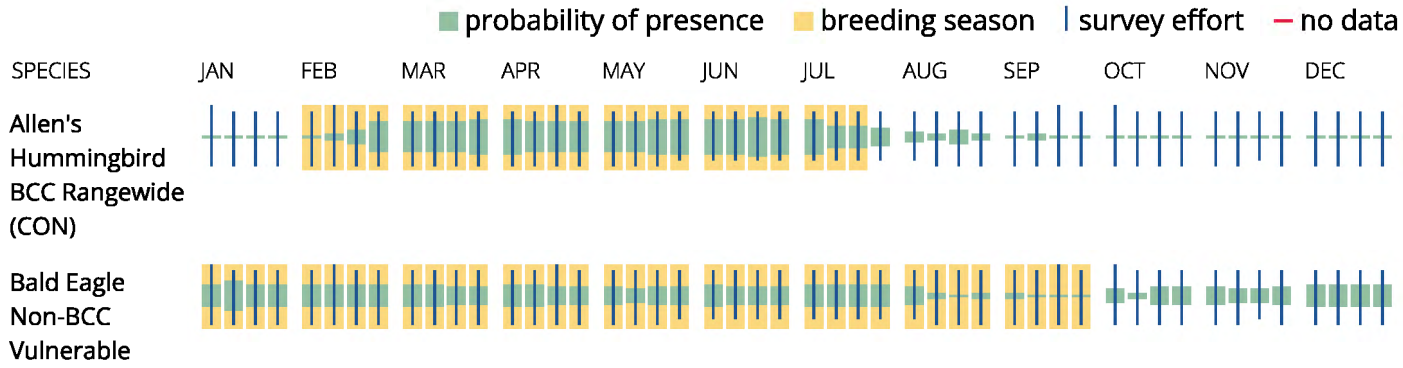
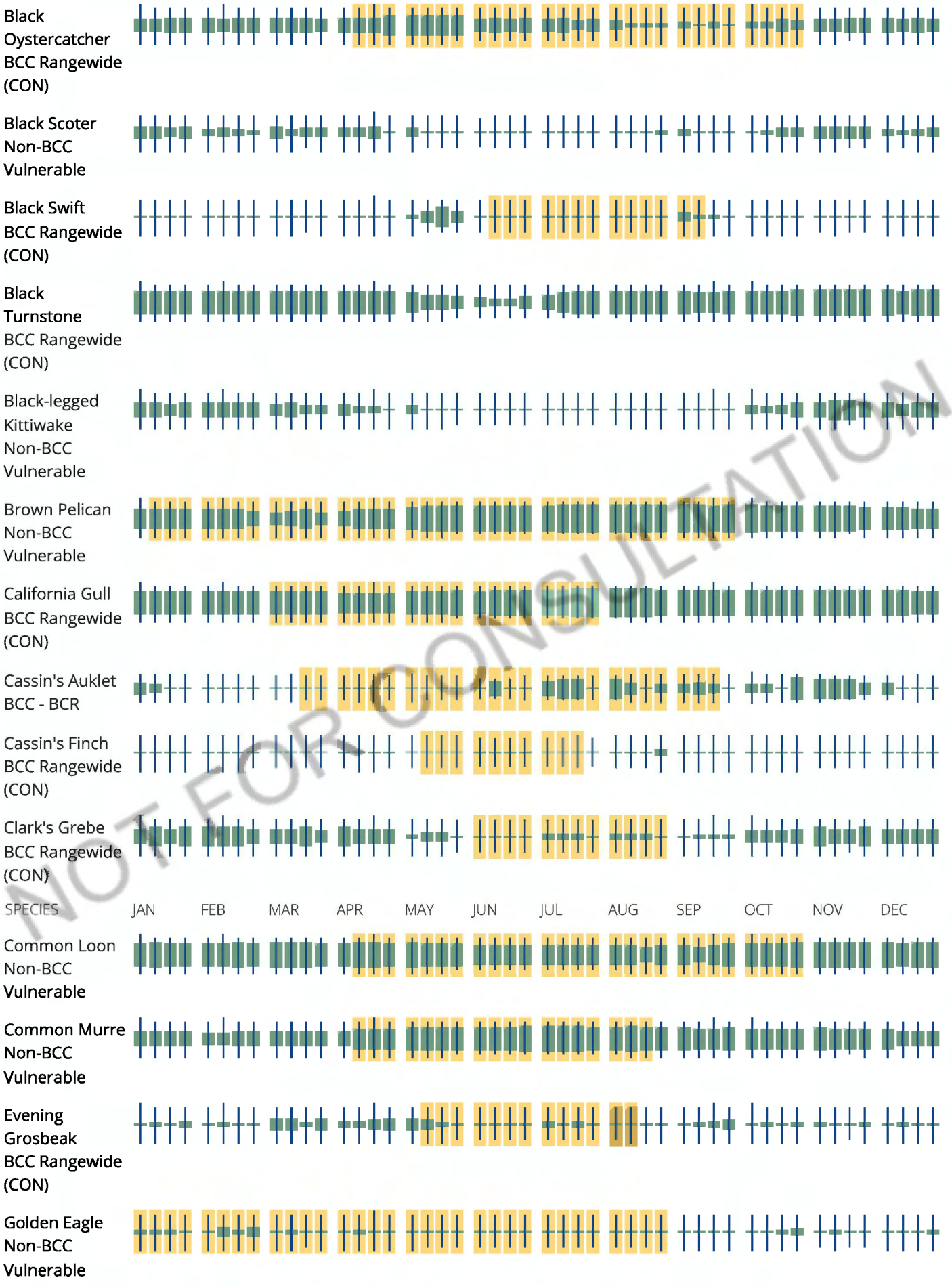
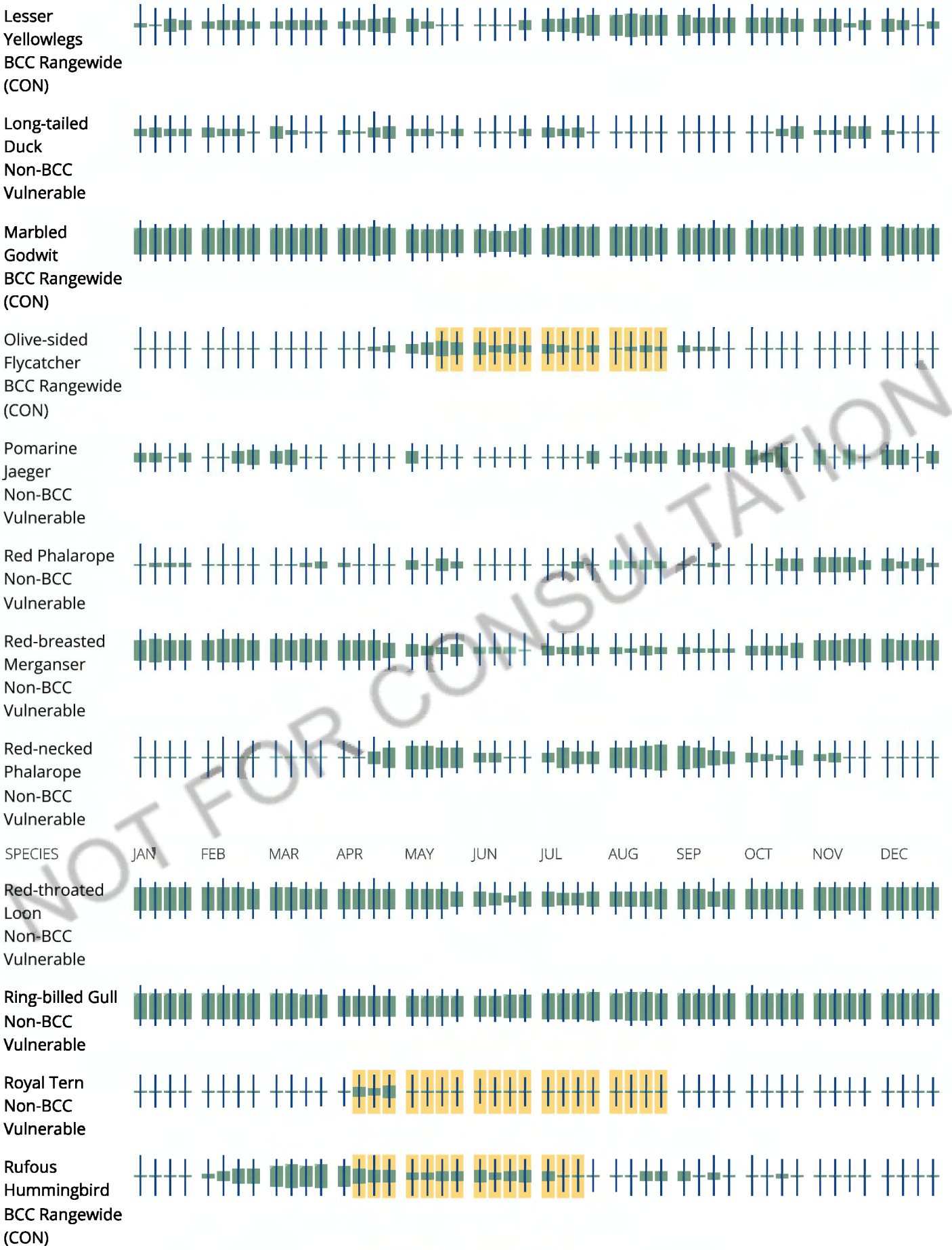
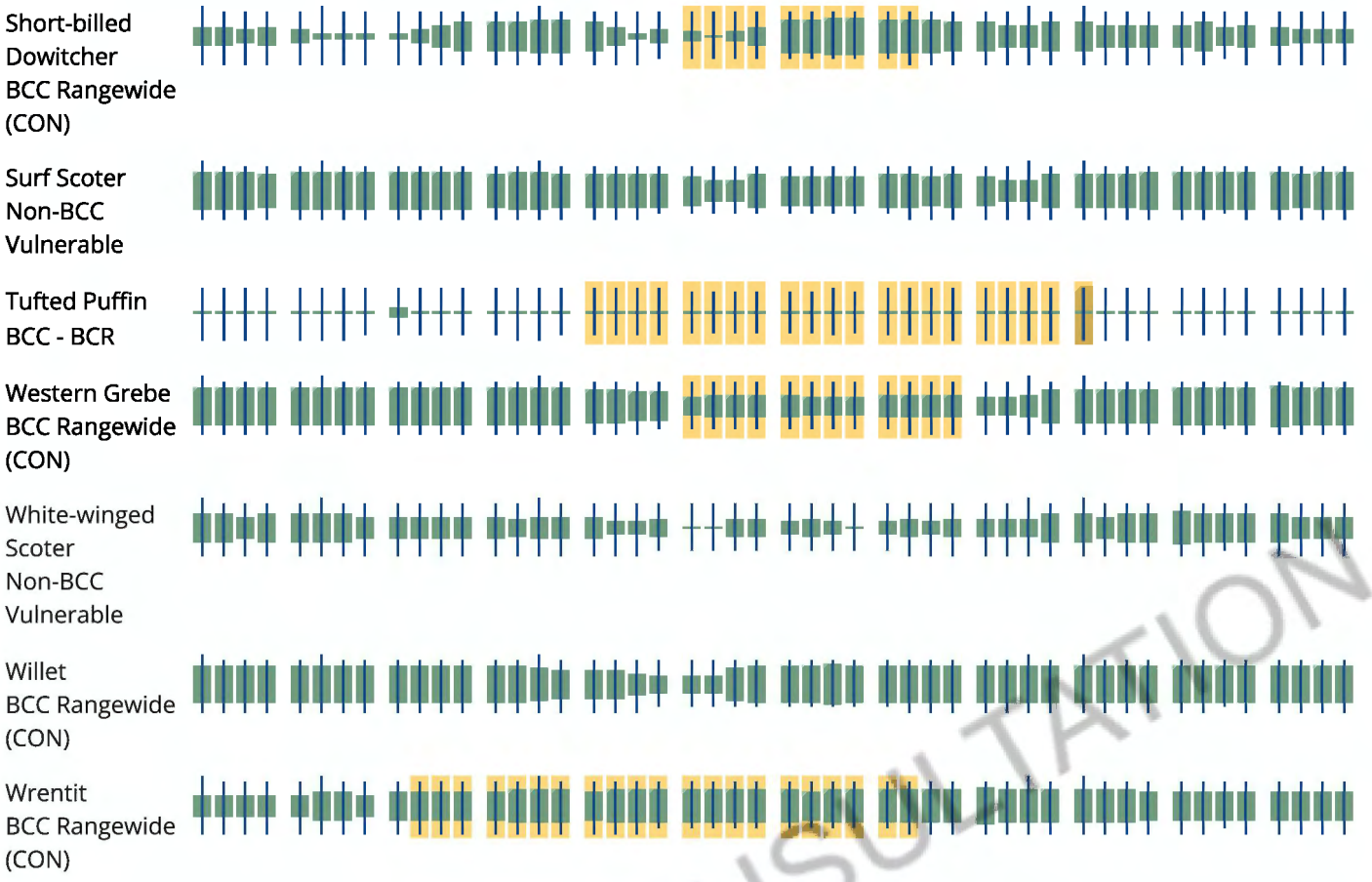
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.









Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE DEEPWATER

E1UB2L

ESTUARINE AND MARINE WETLAND

E2AB3M
E2US2N
E2EM1N

FRESHWATER EMERGENT WETLAND

PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

PSS1A

FRESHWATER POND

PAB4Hx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Observed Species Lists

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Table 4-1
Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023.
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Trees			
Acacia melanoxylon	blackwood acacia	Fabaceae	I[a]
Alnus rubra	red alder	Betulaceae	Y[b]
Cordyline australis	cabbage tree	Laxmanniaceae	N[c]
Eucalyptus globulus	bluegum	Myrtaceae	I
Hesperocyparis macrocarpa	Monterey cypress	Cuppressaceae	N
Ilex aquifolium	English holly	Aquifoliaceae	I
Malus fusca	Oregon apple	Rosaceae	Y
Malus pumila	wild apple	Rosaceae	N
Picea sitchensis	Sitka spruce	Pinaceae	Y
Pinus contorta var. *contorta*	beach pine	Pinaceae	Y
Pinus radiata	Monterey pine	Pinaceae	N
Populus trichocarpa	black cottonwood	Salicaceae	Y
Prunus cerasifera	wild plum	Rosaceae	I
Prunus persica	wild peach	Rosaceae	N
Pseudotsuga menziesii var. menziesii	Douglas fir	Pinaceae	Y
Salix hookeriana	coast willow	Salicaceae	Y
Salix lasiandra var. *lasiandra*	pacific willow	Salicaceae	Y
Salix scouleriana	Scouler's willow	Salicaceae	Y
Salix sitchensis	Sitka willow	Salicaceae	Y
Shrubs			
Arctostaphylos uva-ursi	bear mat	Ericaceae	Y
Baccharis pilularis ssp. *consanguinea*	coyote brush	Asteraceae	Y
Ceanothus prostrates var. *prostratus*	mahala mat	Rhamnaceae	Y
Cistus salvifolius	rock rose	Cistaceae	N
Cotoneaster franchetii	Franchet's cotoneaster	Asteraceae	I
Cotoneaster lacteus	milk flower cotoneaster	Asteraceae	I
Cotoneaster simonsii	Simon's cotoneaster	Asteraceae	N
Crataegus monogyna	English hawthorn	Rosaceae	I
Cydonia oblonga	quince	Rosaceae	N
Cytisus scoparius	Scotch broom	Fabaceae	I
Elaeagnus ebbingei	lemon leaf	Elaeagnaceae	N
Escallonia rubra	red escallonia	Grossulariaceae	N
Frangula purshiana ssp. *purshiana*	cascara	Rhamnaceae	Y
Fuchsia magellanica	hardy fuchsia	Onagraceae	N
Garrya elliptica	coast silk tassel	Garryaceae	Y
Genista monspessulana	French broom	Fabaceae	I
Juniperus chinensis	Chinese juniper	Cupressaceae	N
Lavandula stoechas	French lavender	Lamiaceae	N
Ligustrum ovalifolium	California privet	Oleaceae	N

Table 4-1
Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023.
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Lonicera involucrata var. *ledebourii*	coast twinberry	Caprifoliaceae	Y
Lupinus arborous	yellow bush lupine	Fabaceae	N
Morella californica	California wax myrtle	Myricaceae	Y
Ribes menziesii var. *menziesii*	canyon gooseberry	Grossulariaceae	Y
Ribes sanguineum var. *glutinosum*	flowering currant	Grossulariaceae	Y
Rosa rubiginosa	sweetbriar	Rosaceae	N
Rosa sp.			Y
Rubus armeniacus	Himalayan berry	Rosaceae	I
Rubus ursinus	California blackberry	Rosaceae	Y
Vaccinium ovatum	evergreen huckleberry	Ericaceae	Y
Ferns and Allies			
Athyrium filix-femina var. *cyclosorum*	western lady fern	Woodsiaceae	Y
Dryopteris arguta	California wood fern	Dryopteridaceae	Y
Equisetum arvense	common horsetail	Equisetaceae	Y
Equisetum laevigatum	smooth scouring rush	Equisetaceae	Y
Equisetum telmateia ssp. *braunii*	giant horsetail	Equisetaceae	Y
Pentagramma triangularis ssp. *triangularis*	gold back fern	Pteridaceae	Y
Polypodium californicum	California polypody	Polypodiaceae	Y
Polypodium glycyrrhiza	licorice fern	Polypodiaceae	Y
Polystichum munitum	sword fern	Dryopteridaceae	Y
Pteridium aquilinum var. *pubescens*	bracken fern	Pteridaceae	Y
Sceptridium multifidum	leather grape fern	Ophioglossaceae	Y
Woodwardia fimbriata	western chain fern	Blechnaceae	Y
Sedges and Rushes			
Carex harfordii	Harford's sedge	Cyperaceae	Y
Carex leptopoda	slender foot sedge	Cyperaceae	Y
Carex obnupta	slough sedge	Cyperaceae	Y
Carex pansa	sand dune sedge	Cyperaceae	Y
Cyperus eragrostis	tall flatsedge	Cyperaceae	Y
Eleocharis macrostachya	spikerush	Cyperaceae	Y
Isolepis cernua	low clubrush	Cyperaceae	Y
Juncus balticus ssp. *ater*	Baltic rush	Juncaceae	Y
Juncus bolanderi	Bolander's rush	Juncaceae	Y
Juncus breweri	Brewer's rush	Juncaceae	Y
Juncus bufonius var. *bufonius*	toad rush	Juncaceae	Y
Juncus capitatus	leafy bracted dwarfrush	Juncaceae	N
Juncus effusus ssp. *pacificus*	common rush	Juncaceae	Y
Juncus ensifolius	sword leaf rush	Juncaceae	Y
Juncus hesperius	coast rush	Juncaceae	Y
Juncus lescurii	dune rush	Juncaceae	Y
Juncus patens	spreading rush	Juncaceae	Y

Table 4-1
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Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Juncus phaeocephalus var. *phaeocephalus*	brown headed rush	Juncaceae	Y
Juncus xiphioides	iris-leaved rush	Juncaceae	Y
Luzula subsessilis	Pacific woodrush	Juncaceae	Y
Schoenoplactus americanus	chairmakers bulrush	Cyperaceae	Y
Schoenoplectus pungens var. *longispicatus*	three square	Cyperaceae	Y
Scirpus microcarpus	panicled bulrush	Cyperaceae	Y
Grasses			
Agrostis gigantea	giant bentgrass	Poaceae	N
Agrostis stolonifera	creeping bentgrass	Poaceae	I
Aira caryophyllea	silver hairgrass	Poaceae	N
Alopecurus geniculatus	marsh foxtail	Poaceae	Y
Ammophila arenaria	European beachgrass	Poaceae	I
Anthoxanthum odoratum	sweet vernal grass	Poaceae	I
Avena barbata	wild oat	Poaceae	I
Briza maxima	large quaking grass	Poaceae	I
Briza minor	small quaking grass	Poaceae	N
Bromus diandrus	ripgut brome	Poaceae	I
Bromus hordeaceus	soft chess	Poaceae	I
Bromus racemosus	smooth brome	Poaceae	N
Bromus sitchensis var. *carinatus*	California brome	Poaceae	Y
Cortaderia jubata	jubata grass	Poaceae	I
Cynodon dactylon	bermuda grass	Poaceae	I
Cynosurus echinatus	dogtail grass	Poaceae	I
Dactylis glomerata	orchard grass	Poaceae	I
Deschampsia caespitosa ssp. *holciformis*	coast tufted hairgrass	Poaceae	Y
Digitaria sanguinalis	hairy crabgrass	Poaceae	N
Distichlis spicant	salt grass	Poaceae	Y
Elymus mollis ssp. *mollis*	American dune grass	Poaceae	Y
Festuca arundinacea	tall fescue	Poaceae	I
Festuca bromoides	brome fescue	Poaceae	N
Festuca idahoensis	Idaho fescue	Poaceae	Y
Festuca myuros	six-weeks grass	Poaceae	I
Festuca perennis	Italian wildrye	Poaceae	I
Festuca rubra ssp. *pruinosa*	red fescue	Poaceae	Y
Gastridium phleoides	nit grass	Poaceae	N
Glyceria declinata	waxy mannagrass	Poaceae	I
Holcus lanatus	velvet grass	Poaceae	I
Hordeum brachyantherum ssp. *brachyantherum*	meadow barley	Poaceae	Y
Hordeum marinum var. *gussoneanum*	barley	Poaceae	N

Table 4-1
Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023.
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Hordeum murinum ssp. *murinum*	wall barley	Poaceae	N
Panicum acuminatum	panic grass	Poaceae	Y
Parapholis incurva	sicklegrass	Poaceae	N
Phalaris arundinacea	canary reedgrass	Poaceae	I
Poa annua	annual bluegrass	Poaceae	N
Poa confinus	beach bluegrass	Poaceae	Y
Poa trivialis	rough bluegrass	Poaceae	N
Polypogon monspeliensis	annual beardgrass	Poaceae	I
Rytidoperma penicillatum	hairy oatgrass	Poaceae	I
Spartina densiflora	dense cordgrass	Poaceae	I
Herbs			
Abronia latifolia	yellow sand verbena	Nyctaginaceae	Y
Achillea millefolium	yarrow	Asteraceae	Y
Acmispon americanus var. *americanus*	American bird's foot trefoil	Fabaceae	Y
Acmispon parviflorus	hill lotus	Fabaceae	Y
Agapanthus praecox	African lily	Liliaceae	N
Alisma lanceolatum	lanceleaf water plantain	Alismataceae	N
Alisma triviale	northern water plantain	Alismataceae	Y
Allium triquetrum	white flowered onion	Alliaceae	N
Ambrosia chamissonis	silver beachweed	Asteraceae	Y
Anaphalis margaritacea	pearly everlasting	Asteraceae	Y
Angelica lucida	seacoast angelica	Apiaceae	Y
Anthemis cotula	dog fennel	Asteraceae	N
Aphanes occidentalis	lady's mantle	Rosaceae	Y
Arctotheca prostrata	creeping capeweed	Asteraceae	I
Armeria maritima ssp. *californica*	sea thrift	Plumbaginaceae	Y
Artemisia douglasii	California mugwort	Asteraceae	Y
Artemisia pycnocephala	beach sagewort	Asteraceae	Y
Atriplex prostrata	fat-hen	Chenopodiaceae	N
Baccharis glutinosa	saltmarsh baccharis	Asteraceae	Y
Barbarea vulgaris	yellow rocket	Brassicaceae	N
Bellardia trixago	Mediterranean linseed	Orobanchaceae	I
Bellis perennis	English daisy	Brassicaceae	N
Bergenia crassifolia	elephant ear saxifrage	Saxifragaceae	N
Brassica nigra	black mustard	Brassicaceae	I
Brassica rapa	common mustard	Brassicaceae	I
Cakile maritima	sea rocket	Brassicaceae	I
Calandrinia menziesii	red maids	Montiaceae	Y
Callitriche heterophylla var. *heterophylla*	starwort	Plantaginaceae	Y
Calystegia silvatica	false bindweed	Convolvulaceae	N
Calystegia soldanella	beach morning glory	Convolvulaceae	Y
Camissoniopsis cheiranthifolia ssp. *cheiranthifolia*	beach evening primrose	Onagraceae	Y

Table 4-1 Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023. Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.			
Scientific Name	Common Name	Family	Native?
Capsella bursa-pastoris	shepherd's purse	Brassicaceae	N
Cardamine oligosperma	bittercress	Brassicaceae	Y
Cardionema ramosissimum	sand mat	Caryophyllaceae	Y
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	Asteraceae	I
Carpobrotus chilensis	seafig	Aizoaceae	I
Carpobrotus edulis	iceplant	Aizoaceae	I
Castilleja ambigua var. *humboldtiensis*	Humboldt Bay owl's clover	Orobanchaceae	Y
Castilleja attenuata	narrowleaf owl's clover	Orobanchaceae	Y
Centranthus ruber	red valerian	Valerianaceae	N
Cerastium fontanum ssp. *vulgare*	small mouse-ear	Caryophyllaceae	N
Chloropyron maritimum	Point Reyes bird's-beak	Orobanchaceae	Y
Cirsium arvense	Canada thistle	Asteraceae	I
Cirsium vulgare	bull thistle	Asteraceae	I
Claytonia parviflora ssp. *parviflora*	narrowleaf miner's lettuce	Monitaceae	Y
Claytonia perfoliata ssp. *perfoliata*	miner's lettuce	Montiaceae	Y
Claytonia rubra	redstem spring beauty	Montiaceae	Y
Conium maculatum	poison hemlock	Apiaceae	I
Corethrogyne filaginifolia var. *californica*	California sandaster	Asteraceae	Y
Cotula coronopifolia	brass buttons	Asteraceae	I
Crassula connata	sand pygmy weed	Crassulaceae	Y
Crocosmia x crocosmiiflora	montbretia	Liliaceae	I
Cryptantha leiocarpa	coast cryptantha	Boraginaceae	Y
Cuscuta pacifica var. *pacifica*	dodder	Convolvulaceae	Y
Daucus carota	Queen Anne's lace	Apiaceae	N
Daucus pusillus	American wild carrot	Apiaceae	Y
Dipsacus fullonum	teasel	Dipsacaceae	I
Epilobium brachycarpum	annual fireweed	Onagraceae	Y
Epilobium ciliatum ssp. *ciliatum*	willowherb	Onagraceae	Y
Epilobium densiflorum	willow herb	Onagraceae	Y
Epipactis gigantea	stream orchid	Orchidaceae	Y
Erigeron canadensis	Canada horseweed	Asteraceae	Y
Eriogonum latifolium	coast buckwheat	Polygonaceae	Y
Erodium cicutarium	coast heron's bill	Geraniaceae	I
Erodium moschatum	white stem filaree	Geraniaceae	N
Eschscholzia californica	California poppy	Papaveraceae	Y
Euphorbia oblongata	eggleaf spurge	Euphorbiaceae	N
Euphorbia peplus	petty spurge	Euphorbiaceae	N
Foeniculum vulgare	fennel	Apiaceae	I
Fragaria chiloensis	beach strawberry	Rosaceae	Y
Fumaria officinalis	fumitory	Papaveraceae	N
Galium aparine	cleaver plant	Rubiaceae	Y
Galium parisiense	wall bedstraw	Rubiaceae	N

Table 4-1 Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023. Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.			
Scientific Name	Common Name	Family	Native?
Gamochaeta ustulata	featherweed	Asteraceae	Y
Geranium dissectum	cutleaf geranium	Geraniaceae	I
Geranium molle	cranes bill geranium	Geraniaceae	N
Geranium robertianum	Robert's geranium	Geraniaceae	N
Grindelia stricta var. *stricta*	coastal gumplant	Asteraceae	Y
Helminthotheca echioides	bristly ox-tongue	Asteraceae	I
Hirschfeldia incana	hoary mustard	Brassicaceae	I
Hyacinthoides non-scripta	blue bells	Asparagaceae	N
Hypericum perforatum ssp. *perforatum*	Klamathweed	Hypericaceae	I
Hypochaeris glabra	smooth cat's ear	Asteraceae	I
Hypochaeris radicata	hairy cat's-ear	Asteraceae	I
Jaumea carnosa	marsh jaumea	Asteraceae	Y
Lamium purpureum	purple dead nettle	Lamiaceae	N
Lapsana communis	common nipplewort	Asteraceae	N
Lathyrus latifolius	sweet pea	Fabaceae	N
Lathyrus littoralis	beach pea	Fabaceae	Y
Lemna minor	smaller duckweed	Araceae	Y
Leontodon saxatilis	hawkbit	Asteraceae	N
Lepidium didymum	lesser swinecress	Brassicaceae	N
Leucanthemum vulgare	oxeye daisy	Asteraceae	I
Limonium californicum	marsh rosemary	Plumbaginaceae	Y
Linum bienne	flax	Linaceae	N
Lobularia maritima	sweet alyssum	Brassicaceae	I
Lotus corniculatus	bird's foot trefoil	Fabaceae	N
Lupinus bicolor	annual lupine	Fabaceae	Y
Lupinus rivularis	riverbank lupine	Fabaceae	Y
Lysimachia arvensis	scarlet pimpernel	Myrsinaceae	N
Lythrum hyssopifolia	Hyssop loosestrife	Lythraceae	I
Malva nicaeensis	bull mallow	Malvaceae	N
Malva parviflora	cheeseweed mallow	Malvaceae	N
Malva pseudolavatera	Cretan mallow	Malvaceae	N
Matricaria discoidea	pineapple weed	Asteraceae	Y
Medicago polymorpha	bur clover	Fabaceae	I
Melilotus albus	white sweet clover	Fabaceae	N
Melilotus indicus	annual yellow sweetclover	Fabaceae	N
Mentha pulegium	pennyroyal	Lamiaceae	I
Modiola caroliniana	Carolina bristle mallow	Malvaceae	N
Myosotis discolor	forget-me-not	Boraginaceae	N
Nasturtium officinale	watercress	Brassicaceae	Y
Navarretia squarrosa	skunkweed	Polemoniaceae	Y
Nuttallanthus canadensis	toad flax	Scrophulariaceae	Y
Oenanthe sarmentosa	water parsley	Apiaceae	Y
Oenothera glazioviana	red sepal primrose	Onagraceae	N
Oxalis corniculata	creeping woodsorrel	Oxalidaceae	N

Table 4-1
Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023.
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Oxalis pes-caprae	Bermuda buttercup	Oxalidaceae	I
Oxalis purpurea	purple wood sorrel	Oxalidaceae	N
Parentucellia viscosa	yellow glandweed	Orobanchaceae	I
Persicaria hydropiper	common smartweed	Polygonaceae	N
Petrorhagia dubia	windmill pink	Caryophyllaceae	N
Piperia elegans ssp. *elegans*	elegant piperia	Orchidaceae	Y
Plantago coronopus	buckhorn plantain	Plantaginaceae	N
Plantago elongata	coastal plantain	Plantaginaceae	Y
Plantago erecta	California plantain	Plantaginaceae	Y
Plantago lanceolata	English plantain	Plantaginaceae	I
Plantago major	common plantain	Plantaginaceae	N
Plantago maritima	maritime plantain	Plantaginaceae	Y
Platystemon californicus	cream cups	Papaveraceae	Y
Plectritis congesta ssp. *congesta*	sea blush	Valeriancaeae	Y
Polycarpon tetraphyllum var. *tetraphyllum*	four leaf allseed	Caryophyllaceae	N
Polygonum aviculare ssp. *aviculare*	prostrate knotweed	Polygonaceae	N
Polygonum paronychia	dune knotweed	Polygonaceae	Y
Potentilla anserina ssp. *pacifica*	silverweed	Rosaceae	Y
Pseudognaphalium luteoalbum	Jersey cudweed	Asteraceae	N
Ranunculus muricatus	buttercup	Ranunculaceae	N
Ranunculus repens	creeping buttercup	Ranunculaceae	I
Raphanus sativus	wild radish	Brassicaceae	I
Rumex acetosella	sheep sorrel	Polygonaceae	I
Rumex conglomeratus	clustered dock	Polygonaceae	N
Rumex crispus	curly dock	Polygonaceae	I
Rumex salicifolius	willow dock	Polygonaceae	Y
Sagina apetala	dwarf pearlwort	Caryophyllaceae	N
Sagina decumbens	western pearlwort	Caryophyllaceae	Y
Sagina procumbens	pearlwort	Caryophyllaceae	Y
Salicornia depressa	pickleweed	Chenopodiaceae	Y
Salicornia pacifica	pickleweed	Chenopodiaceae	Y
Sanicula crassicaulis	Pacific sanicle	Apiaceae	Y
Scrophularia californica	bee plant	Scrophulariaceae	Y
Sedum album	white stonecrop	Crassulaceae	N
Senecio glomeratus	cutleaf burnweed	Asteraceae	I
Senecio minimus	coast burnweed	Asteraceae	N
Senecio vulgaris	common groundsel	Asteraceae	N
Silene gallica	common catchfly	Caryophyllaceae	N
Silybum marianum	blessed milk thistle	Asteraceae	Y
Solanum americanum	common nightshade	Solanaceae	Y
Solanum aviculare	New Zealand nightshade	Solanaceae	I
Solidago spathulata	dune goldenrod	Asteraceae	Y
Sonchus asper	prickly sow thistle	Asteraceae	N
Sonchus oleraceus	sow thistle	Asteraceae	N

Table 4-1
Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023.
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Sparaxis tricolor	wandflower	Iridaceae	N
Spergula arvensis	corn spurry	Caryophyllaceae	N
Spergula marina	saltmarsh sand spurry	Caryophyllaceae	Y
Spergularia rubra	pink sand-spurry	Caryophyllaceae	N
Spiranthes romanzoffiana	hooded ladies tresses	Orchidaceae	Y
Stachys arvensis	field hedgenettle	Lamiaceae	N
Stachys rigida var. *rigida*	rough hedge nettle	Lamiaceae	Y
Symphyotrichum chilense	pacific aster	Asteraceae	Y
Tanacetum bipinnatum	dune tansy	Asteraceae	Y
Tanacetum parthenium	feverfew	Asteraceae	N
Taraxacum officinale ssp. *officinale*	dandelion	Asteraceae	N
Trifolium arvense	rabbit foot clover	Fabaceae	N
Trifolium dubium	shamrock clover	Fabaceae	N
Trifolium fragiferum	strawberry clover	Fabaceae	N
Trifolium glomeratum	clustered clover	Fabaceae	N
Trifolium repens	white clover	Fabaceae	N
Trifolium subterraneum	subterranean clover	Fabaceae	N
Triglochin maritima	seaside arrow grass	Juncaginaceae	Y
Triphysaria eriantha ssp. *eriantha*	butter n' eggs	Orobanchaceae	Y
Tropaeolum majus	garden nasturtium	Tropaeolaceae	N
Typha latifolia	cattail	Typhaceae	Y
Verbascum blattaria	moth mullein	Scrophulariaceae	N
Veronica arvensis	speedwell	Plantaginaceae	N
Vicia hirsuta	hairy vetch	Fabaceae	N
Vicia sativa ssp. *sativa*	spring vetch	Fabaceae	N
Vicia villosa ssp. *villosa*	hairy vetch	Fabaceae	N
Vinca major	large vinca	Apocynaceae	I
Zantedeschia aethiopica	calla lily	Araceae	I
Zeltnera muehlenbergii	Muhlenberg's centaury	Gentianaceae	Y
Zostera marina	eelgrass	Zosteraceae	Y
Vines			
Hedera helix	English ivy	Araliaceae	I
Lonicera hispidula	pink honeysuckle	Caprifoliaceae	Y
Toxicodendron diversilobum	poison oak	Anacardiaceae	Y
Lichens, Bryophytes, Fungi			
Alsia californica	California alsia	Leucodontaceae	Y
Anthocerotophyta sp.	hornwort species	Anthocerotophyta	Y?
Antitrichia californica	California antitrichia moss	Leucodontaceae	Y
Armellea mellea	honey fungus	Physalacriaceae	Y
Bryum argenteum	silver bryum	Bryaceae	Y
Ceratodon purpureus	purple shank moss	Ditrichaceae	Y
Cetraria chlorophylla	foliose lichen	Parmeliaceae	Y
Cladonia cariosa	split peg lichen	Cladoniaceae	Y

Table 4-1
Botanical Species Observed 4/28, 4/30, 6/4, 8/5, and 8/13/2020; 4/5-4/8, 4/13, 4/19, 4/21, 5/3, 5/6, 5/11, and 7/7/2022; and 6/28/2023.
Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project Biological Assessment, Samoa, CA.

Scientific Name	Common Name	Family	Native?
Cladonia chlorophaea	mealy pixie cup lichen	Cladoniaceae	Y
Cladonia concinna	slender ladder lichen	Cladoniaceae	Y
Cladonia coniocraea	powderhorn lichen	Cladoniaceae	Y
Cladonia portentosa	coastal reindeer lichen	Cladoniaceae	Y
Cladonia verruculosa	warty reindeer lichen	Cladoniaceae	Y
Frullania nisquallensis	millipede liverwort	Frulaniaceae	Y
Gemmabryum caespiticum	gemmabryum moss	Bryaceae	Y
Homalothecium arenarium	golden curl moss	Brachytheciaceae	Y
Hypogymnia heterophylla	tube lichen	Parmeliaceae	Y
Isothecium cristatum	cristate moss	Lembophyllaceae	Y
Kindbergia oregana	feather moss	Brachytheciaceae	Y
Orthotrichum consimile	orthotrichum moss	Orthotrichaceae	Y
Parmotrema perlatum	black stoneflower	Parmeliaceae	Y
Physconia perisidiosa	appressed foliose lichen	Phyciaceae	Y
Polytrichum commune	common haircap moss	Polytrichaceae	Y
Porella navicularis	tree ruffle liverwort	Porellaceae	Y
Ramalina menziesii	lace lichen	Ramalinaceae	Y
Tortula muralis	sidewalk moss	Pottiaceae	Y
Usnea cornuta	beard lichen	Parmeliaceae	Y
346 Species			51% Native

a: Invasive species
b: Native species
c: Non-native species

Table 4-2 Animal Species Observed April 2020, April, June, July, 2022 Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Biological Assessment, Samoa CA		
Scientific Name	Common Name	Listing Status
Birds		
Turdus migratorius	American robin	None
Mareca americana	American wigeon	None
Spinus tristis	American goldfinch	None
Calypte anna	Anna's Hummingbird	None
Pluvialis squatarola	Black-bellied plover	None
Poecile atricapillus	**Black-capped chickadee**	**Watch List (CDFW)**
Nycticorax nycticorax	**Black-crowned night-heron**	**None, Special Animals List (CDFW)**
Euphagus cyanocephalus	Brewer's blackbird	None
Psaltriparus minimus	Bushtit	None
Pelecanus occidentalis californicus	**California brown pelican**	**Delisted (CDFW, USFWS)**
Callipepla californica	California quail	None
Branta canadensis	Canada goose	None
Hydroprogne caspia	Caspian Tern	None
Poecile rufescens	Chestnut-backed chickadee	None
Gavia immer	Common loon	None
Corvus corax	Common raven	None
Accipiter cooperii	**Cooper's hawk**	**Watch List (CDFW)**
Nannopterum auritum	**Double-crested cormorant**	**Watch List (CDFW)**
Strptopelia decaocto	Eurasian collard-dove	None (non-native)
Sturnus vulgaris	European starling	None
Zonotrichia atricapilla	Golden-crowned sparrow	None
Ardea Herodias	**Great blue heron**	**Sensitive (CDFW)**
Haemorhous mexicanus	House finch	None
Falco columbarius	**Merlin**	**Watch List (CDFW)**
Leiothlypis celata	Orange-crowned warbler	None
Pandion haliaetus	**Osprey**	**Watch List (CDFW)**
Falco peregrinus	**American peregrine falcon**	**Delisted, Fully Protected**
Corthylio calendula	Ruby-crowned kinglet	None
Limnodromus griseus	Short-billed dowitcher	None
Melospiza melodia	Song sparrow	None
Catharus ustulatus	Swainson's thrush	None
Tachycineta bicolor	Tree swallow	None
Tachycineta thalassina	Violet-green swallow	None
Aechmophorus occidentalis	Western grebe	None
Larus occidentalis	Western gull	None
Calidris mauri	Western sandpiper	None
Numenius phaeopus	Whimbrel	None
Zonotrichia leucophrys	White-crowned sparrow	None
Chamaea fasciata	Wrentit	None

Table 4-2 Animal Species Observed April 2020, April, June, July, 2022 Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Biological Assessment, Samoa CA		
Scientific Name	Common Name	Listing Status
Mammals		
Canis latrans	Coyote (sign)	None
Didelphis virginiana	North American Opossum	None
Eptesicus fuscus	Big brown bat	None
Lasionycteris noctivagans	**Silver-haired bat**	**None, Special Animals List (CDFW)**
Lasiurus cinereus	**Hoary bat**	**None, Special Animals List (CDFW)**
Lepus californicus	Black-tailed jack rabbit	None
Mephitis mephitis	Striped skunk	None
Myotis lucifugus	Little brown bat	None
Myotis yumanensis	**Yuma myotis**	**None, Special Animals List (CDFW)**
Tadarida brasiliensis	Mexican free-tailed bat	None
Procyon lotor	Raccoon	None
Urocyon cinereoargenteus	Gray fox	None
51 Species		

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Photographs

Photo 1: Study Area looking South. Humboldt Bay on left, Pacific Ocean on right. Photo taken April 16, 2022.

Photo 2: Study Area looking North. Humboldt Bay on right, Pacific Ocean on left. Photo taken April 16, 2022.

Photo 3: Study area conditions in the northern portion of the study area. Ruderal vegetation in foreground, coast willow/Sitka willow thicket in background. Photo taken April 13, 2022.

Photo 4: Study area conditions in the northern portion of the study area along the railroad alignment. Salt marsh slough beyond railroad. Photo taken April 13, 2022.

Photo 5: Coastline conditions within the study area looking northeast. Note piles and osprey nests on light poles on existing dock. Photo taken April 13, 2022.

Photo 6: Study area conditions showing paved, former drying shed foundation and minimal ruderal vegetation, looking north. Photo taken May 6, 2022.

Photo 7: Former drying shed foundation in the mid-western portion of the study area looking south. Note ruderal vegetation along edges of concrete and in cracks. Photo taken May 6, 2022.

Photo 8: Decaying asphalt with ruderal vegetation looking northeast, typical in large portions of the study area. Photo taken May 6, 2022.

Photo 9: Decaying asphalt with ruderal vegetation looking southeast, typical in large portions of the study area. Photo taken May 6, 2022.

Photo 10: Concrete foundation with ruderal vegetation growing in cracks. Note ruderal vegetation over asphalt in background and coast willow/Sitka willow thicket beyond. Photo taken May 6, 2022.

Photo 11: Bare concrete foundation, more common in the southern portion of the study area, looking south. Photo taken May 6, 2022.

Photo 12: Large expanse of asphalt with minimal vegetation cover typical within the study area, looking north. Note isolated coast willow/Sitka willow thicket in background and continued industrial use. Photo taken May 6, 2022.

Photo 13: Large expanse of asphalt with no vegetation cover typical within the southern portion of the study area, looking northeast. Photo taken May 6, 2022.

Photo 14: Concrete with some ruderal vegetation growing in cracks, typical within the southern portion of the study area, looking east. Photo taken July 29, 2022.

Photo 15: Fly ash landfill looking west. Note mowed non-native grasses and forbs mapped as ruderal. Photo taken June 30, 2023.

Photo 16: Fly ash landfill looking south. Note mowed non-native grasses and forbs mapped as ruderal. Photo taken June 30, 2023.

Photo 17: Fly ash landfill looking south. Note dense mowed non-native grasses and forbs mapped as ruderal. Photo taken June 30, 2023.

Photo 18: Fly ash landfill looking southwest. Note Himalayan blackberry scrub and dense mowed non-native grasses and forbs. Photo taken June 30, 2023.

Photo 19: Woodley Island mariculture relocation area looking east. Note regularly mowed non-native grasses and forbs mapped as ruderal due to the mixed non-native species composition. Photo taken June 30, 2023.

Photo 20: Woodley Island mariculture relocation area looking north. Note regularly mowed non-native grasses and forbs mapped as ruderal due to the mixed non-native species composition. Photo taken June 30, 2023.

Photo 21: Non-native grassland looking east. Conditions representative of non-native grassland in the study area. Note high cover by non-native grasses and minimal forbs. Photo taken May 17, 2022.

Photo 22: Non-native grassland looking west. Conditions representative of non-native grassland in the study area. Note high cover by non-native grasses and minimal forbs. Photo taken May 12, 2022.

Photo 23: Non-native grassland looking northeast. Conditions representative of non-native grassland in the study area. Note high cover by non-native grasses and minimal forbs. Photo taken May 12, 2022.

Photo 24: Himalayan blackberry scrub within the study area. Note extremely dense Himalayan blackberry cover. Conditions representative of Himalayan blackberry scrub in the study area. Photo taken July 29, 2022.

Photo 25: Point Reyes bird's beak in the study area. Note dense cover and flowering individuals. Photo taken July 7, 2022.

Photo 26: Point Reyes bird's beak in the study area, Occurrence 1 shown. Note dense cover and flowering individuals. Photo taken July 7, 2022.

Photo 27: Point Reyes bird's beak in the study area, Occurrence 1 shown. Note dense cover and flowering individuals. Photo taken July 7, 2022.

Photo 28: Point Reyes bird's beak in the study area, Occurrence 1 shown. Note dense cover and flowering individuals. Photo taken July 7, 2022.

Photo 29: Humboldt Bay owl's clover in the study area. Note flowering individuals within diverse mid-high salt marsh habitat. Photo taken April 29, 2022.

Photo 30: Humboldt Bay owl's clover in the study area. Note flowering individuals within diverse mid-high salt marsh habitat. Photo taken April 29, 2022.

Photo 31: Seacoast angelica in the study area, Occurrence 3 shown. Note vegetative individual under light coast willow cover. Photo taken April 5, 2022.

Photo 32: Seacoast angelica in the study area, Occurrence 3 shown. Note vegetative individual with invasive pampas grass. Photo taken April 5, 2022.

Photo 33: Coast willow/Sitka willow thicket conditions at RA2 looking north. Note abundant willow cover and presence of Himalayan blackberry. Photo taken July 6, 2022.

Photo 34: Coast willow/Sitka willow thicket conditions at RA2 looking into canopy. Note abundant coast willow cover. Photo taken July 6, 2022.

Photo 35: Coast willow/Sitka willow thicket conditions at RA5 looking west. Note abundant California and Himalayan blackberry cover in understory. Photo taken July 6, 2022.

Photo 36: Coast willow/Sitka willow thicket conditions at RA8 looking north. Note Sitka willow dominant at this location with Himalayan blackberry in the understory. Photo taken July 8, 2022.

Photo 37: Coast willow/Sitka willow thicket conditions at RA10 looking south. Note dense mixed willow cover and slough sedge in the understory. Photo taken July 28, 2022.

Photo 38: Coast willow/Sitka willow thicket conditions at RA10 looking north. Note dense mixed willow cover and litter with minimal herbaceous cover. Photo taken July 28, 2022.

Photo 39: Wax myrtle scrub conditions at RA1 looking south. Note extremely dense cover and high level of invasion by Himalayan blackberry. Photo taken July 6, 2022.

Photo 40: Wax myrtle scrub conditions at RA1 looking into the canopy. Note extremely dense cover and high level of invasion by Himalayan blackberry. Photo taken July 6, 2022.

Photo 41: Wax myrtle scrub conditions at RA11 looking south at the edge of the natural community. Note mature individuals with little break in cover. Photo taken July 28, 2022.

Photo 42: Wax myrtle scrub conditions at RA11 looking west at the edge of the natural community. Note mature individuals with little break in cover. Photo taken July 28, 2022.

Photo 43: Mid-High Elevation salt marsh conditions at R4 between Railroad and Vance Avenue, looking north. Note salt marsh transitions into open water toward the center of the slough. Photo taken July 6, 2022.

Photo 44: Mid-High Elevation salt marsh conditions at R4, looking north. Note dense cover by a diverse assemblage of native salt marsh species. Photo taken July 6, 2022.

Photo 45: Mid-High Elevation salt marsh conditions at R7, looking south. Note transition from upland vegetation to salt marsh vegetation at lower elevation. Photo taken July 6, 2022.

Photo 46: Low-elevation salt marsh, transitioning to unvegetated regularly flooded intertidal mudflats. Note dense-flowered cordgrass dominance and abrupt edge of vegetation. Looking southeast. Photo taken July 11, 2022.

Photo 47: Beach pine forest and woodland conditions at R6, looking south. Note mature trees and some saplings with dense shrub cover. Photo taken July 6, 2022.

Photo 48: Beach pine forest and woodland conditions at R6, looking north. Note mature trees and some saplings with dense shrub cover and open canopy. Photo taken July 6, 2022.

Photo 49: Coast buckwheat patch conditions at R3, looking north. Note abundant coast buckwheat on sandy soils, with significant non-native species component. Photo taken July 6, 2022.

Photo 50: Coast buckwheat patch at R3, looking east at surrounding conditions. Buckwheat patch is isolated and surrounded by development/ disturbed conditions. Photo taken July 6, 2022.

Photo 51: Pickleweed mat at R12, looking north. Note pickleweed mat is restricted to a narrow band of elevation closely associated with the MHHW (located at wrack line) and hardened shoreline with concrete rubble that extends up to asphalt. Ruderal vegetation abuts pickleweed mat. Photo taken August 2, 2022.

Photo 52: Pickleweed mat at R12, looking northwest. Note dense cover by pickleweed with minimal dense cordgrass cover. Concrete rubble substrate present. Photo taken August 2, 2022.

Photo 53: Pickleweed mat at R12, looking south. Note pickleweed mat is restricted to a narrow band closely associated with the MHHW. Hardened shoreline with concrete rubble that extends up to asphalt. Ruderal vegetation abuts pickleweed mat and dense flowered cordgrass cover varies. Photo taken August 2, 2022.

Photo 54: Pickleweed mat cover at R12, looking northwest. Note dense cover by pickleweed with minimal dense-flowered cordgrass cover. Concrete rubble substrate present. Photo taken August 2, 2022.

Photo 55: Sand dune sedge marsh conditions at R9, looking north. Note cover by sand dune sedge, sandy soils and native herbaceous species dominance. This location is at the western edge of the study area. Photo taken July 18, 2022.

Photo 56: Pacific silverweed marsh conditions within the central portion of the study area. Note discrete area with dense Pacific silverweed cover corresponds to depression with wetland conditions within an otherwise upland area. Photo taken May 3, 2022.

Photo 57: Pacific silverweed marsh conditions within the central portion of the study area looking southwest with some encroaching willow cover. Note discrete area with dense Pacific silverweed cover corresponds to depression with wetland conditions within an otherwise upland area. Photo taken May 3, 2022.

Photo 58: Estuarine intertidal to subtidal mudflats looking north. This area represents non-vegetated ESHA addressed in other reports. Photo taken April 21, 2023.

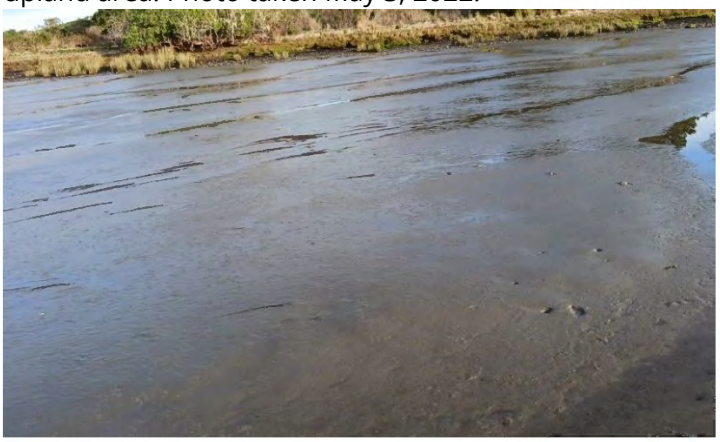

Photo 59: Estuarine intertidal to subtidal mudflats looking north. This area represents non-vegetated ESHA addressed in other reports. Photo taken April 21, 2023.

Photo 60: Abandoned buildings with standing rainwater on pavement. Photo taken April 13, 2022.

Photo 61: Active osprey nest on power pole. Photo taken April 13, 2022.

Photo 62: Jackrabbit captured by trail camera at Location 2 (see Appendix 1, Figure 11). Photo taken July 13, 2022.

Photo 63: Racoon captured by trail camera at Location 3 (see Appendix 1, Figure 11). Photo taken July 19, 2022.

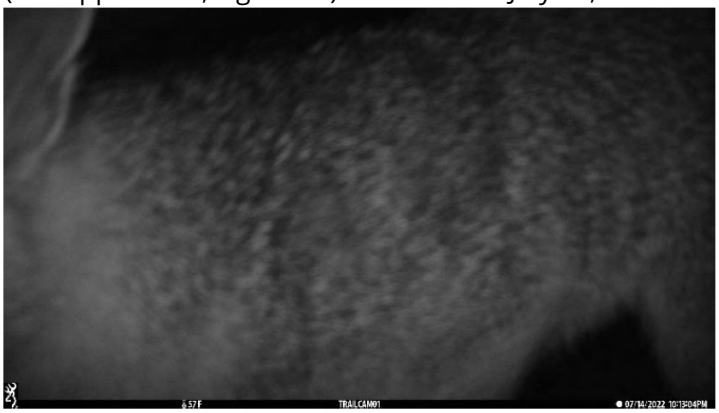

Photo 64: Gray fox captured by trail camera at Location 2 (see Appendix 1, Figure 11). Photo taken July 14, 2022.

Photo 65: North American opossum captured by trail camera at Location 2 (see Appendix 1, Figure 11). Photo taken July 13, 2022.

Bat Survey Results

6

Appendix 6 Bat Species Detected July 11 & 18, 2022 Humboldt Bay Offshore Wind Heavy Lift Marine Terminal Project, Samoa, CA		
Scientific Name	**Common Name**	**California Special Animals Listing?**
July 11, Station 1		
Eptesicus fuscus	Big brown bat	No
Myotis yumanensis	Yuma myotis	No
Lasionycteris noctivagans	Silver-haired bat	Yes
Tadarida brasiliensis	Mexican free-tailed bat	No
July 18, Station 2		
Eptesicus fuscus	Big brown bat	No
Myotis yumanensis	Yuma myotis	Yes
Lasionycteris noctivagans	Silver-haired bat	Yes
Tadarida brasiliensis	Mexican free-tailed bat	No
Lasiurus cinereus	Hoary bat	Yes
Myotis lucifugus	Little brown bat	Yes
July 18, Station 3		
Eptesicus fuscus	Big brown bat	No
Lasionycteris noctivagans	Silver-haired bat	No
Tadarida brasiliensis	Mexican free-tailed bat	No

Releve' and Rapid Assessment Forms

7

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Database #:	Date: 7/6/22	Name of recorder: Joseph Sale
		Other surveyors: Cindy Wilcox
	UID:	Location Name: RA #1 RMMT

GPS name: Trimble R1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME ____ UTMN ____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.87m

Decimal degrees: LAT 40.819820° LONG -124.179470

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID ____ Projected UTMs: UTME ____ UTMN ____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Canopy view and ground cover view.

Stand Size (acres): (<1), 1-5, >5 | Plot Area (m²): 100 / ____ | Plot Dimensions ____ x ____ m | RA Radius 10 m

Exposure, Actual °: 40 NE NW SE SW (Flat) Variable | Steepness, Actual °: 1 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid lower (bottom) | Micro: convex (flat) concave undulating

Geology code: MIAL Soil Texture code: Loam | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: Ø BA Stems: 2 Litter: 97.5 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: 0.25 Gravel: Ø Fines: 0.25 =100%

% Current year bioturbation Ø Past bioturbation present? Yes / (No) | % Hoof punch Ø

Fire evidence: Yes (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Wax myrtle stand has developed within the last 30 yrs after cessation of industrial activities. The area had been used for industrial lumber operations for over 100 yrs prior. fill soils and invasive species present as well as developed areas surrounding stand.

Disturbance code / Intensity (L,M,H): 01 / L 05 / M 07 / L ___ / ___ ___ / ___ "Other" ____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), (T3 (6-11" dbh)), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature (1-25% dead)), S4 decadent (>25% dead)

Herbaceous: (H1) (<12" plant ht.), H2 (>12" ht.) No herbaceous species cover

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Wax Myrtle Scrub

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: Coastal dune willow / NE ____ / ____

Confidence in Alliance identification: L M (H) Explain: ____

Phenology (E,P,L): Herb NA Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

SPECIES SHEET

Database #: ________

IV. VEGETATION DESCRIPTION

% NonVasc cover: 1 **Total % Vasc Veg cover:** 95

% Cover - **Conifer tree / Hardwood tree:** 10 / Ø **Regenerating Tree:** 10 **Shrub:** 85 **Herbaceous:** Ø

Height Class - Conifer tree / Hardwood tree: 5 / Ø **Regenerating Tree:** 5 **Shrub:** 4 **Herbaceous:** Ø

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, (5=5-10m), 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

	Stratum	Species	% cover	C	Final species determination
Y	T	Pinus contorta var. contorta	10		
Y	S	Morella californica	85		
N	S	Rubus armeniacus	20		
Y	S	Rubus ursinus	5		
N	H	Leontodon saxatilis	T		

Unusual species: ________

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Database #: | Date: 7/6/22 | Name of recorder: Joseph Sabor | Other surveyors: Cindy Wilcox | UID: | Location Name: R2 RMMT

GPS name: Trimble R1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME ____ UTMN ____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.95 m

Decimal degrees: LAT 40.820200° LONG -124.178994°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME ____ UTMN ____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Canopy view and understory view

Stand Size (acres): (<1), 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions ____ x ____ m | RA Radius 20 m

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | Steepness, Actual °: 1 0° (1-5°) > 5-25° > 25

Topography: Macro: top upper mid lower (bottom) | Micro: convex (flat) concave undulating

Geology code: MIAL Soil Texture code: SiCL | Upland or (Wetland/Riparian) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: 3 Litter: 97 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 0 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Willow stand has developed within the past 30 years after cessation of industrial activities. The area had been used for industrial lumber operations for over 100 years prior. Fill soils and invasive species present as well as developed areas surrounding stand. A linear, likely drainage wetland passes through the stand.

Disturbance code / Intensity (L,M,H): 01 / M 05 / M 07 / L ___ / ___ ___ / ___ "Other" _____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), (T4 (11-24" dbh)), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature) (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2 (>12" ht.))

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Coastal Dune Willow - Sitka Willow Thickets

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Wax Myrtle Shrubland / S ____ / ____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: Ø **Total % Vasc Veg cover:** 100

% Cover - **Conifer tree / Hardwood tree:** 0 / 85 **Regenerating Tree:** 5 **Shrub:** 80 **Herbaceous:** 10

Height Class - Conifer tree / Hardwood tree: Ø / 5 **Regenerating Tree:** 4 **Shrub:** 4 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + - <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

	Stratum	Species	% cover	C	Final species determination
Y	T	Salix hookeriana	75		
Y	T	Salix sitchensis	10		
N	S	Rubus armeniacus	72		
Y	S	Rubus ursinus	8		
Y	H	Blechtichum muritum	7		
Y	H	Scirpus microcarpus	2		
N	H	Vicia sativa	T		
Y	H	Athyrium filix-femina var. cyclosorum	1		
N	H	Holcus lanatus	T		
N	H	Hedera helix	T		
N	H	Vicia tetrasperma	T		
Y	H	Juncus effusus ssp. pacificus	1		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 7/6/22	Name of recorder: Joseph Sater
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R#3 RMMT

GPS name: Trimble R1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.55m

Decimal degrees: LAT 40.821093° LONG -124.180051°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m)____ bearing °____ inclination °____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Ground level view

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): (100) _____ | Plot Dimensions 10 x 10 m | RA Radius____ m

Exposure, Actual °: ____ NE NW SE SW (Flat) Variable | Steepness, Actual °: 4 0° (1-5°) >5-25° >25

Topography: Macro: top upper (mid) lower bottom | Micro: convex flat concave (undulating)

Geology code: DUNE Soil Texture code: Sand | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: Ø BA Stems: 1 Litter: 70 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: Ø Gravel: Ø Fines: 29 =100%

% Current year bioturbation 5 Past bioturbation present? (Yes) / No | % Hoof punch Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Remnant sand dune community at this location appears to have developed on top of imported local sand. Sand is piled in a berm along the road and in mounds. Remnant historical dunes exist in surrounding area and are mapped as such.

Disturbance code / Intensity (L,M,H): 01/M 05/H 07/M 15/L 19/L "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), (T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

Trees and shrubs occur within community but are outside of relevé plot.

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Dune Mat / Buckwheat patch

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Wax myrtle shrubland, NE ; Beach Pine forest, W

Confidence in Alliance identification: L (M) H Explain: History of disturbance and non-native cover.

Phenology (E,P,L): Herb P, L Shrub Ø Tree Ø Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 2 **Total % Vasc Veg cover:** 70

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 70

Height Class - Conifer tree / Hardwood tree: 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

	Stratum	Species	% cover	C	Final species determination
Y	H	Eriogonum latifolium	20		
N	H	Anthoxanthum odoratum	5		
Y	H	festuca idahoensis	10		
N	H	Rumex acetosella	10		
Y	H	Polygonum paronychia	2		
N	H	Briza maxima	30		
N	H	Daucus carota	3		
N	H	Hypochaeris glabra	1		
Y	H	Solidago spathulata	1		
N	H	Vicia sativa	T		
Y	H	fragaria chiloensis	T		
N	H	Raphanus sativa	T		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 7/6/2022	Name of recorder: Joseph Sqler
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R#4 RMMT

GPS name: TrimbleR1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.53 m

Decimal degrees: LAT 40.823006° LONG -124.175194°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Ground level cover

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / 50 | Plot Dimensions 5 x 10 m | RA Radius ____ m

Exposure, Actual °: ____ (NE) NW SE SW (Flat) Variable | Steepness, Actual °: 0.5 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid lower (bottom) | Micro: convex flat (concave) undulating

Geology code: MIAL Soil Texture code: MuL | Upland or (Wetland/Riparian) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diám) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H₂0: 1 BA Stems: 3 Litter: 30 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 67 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Mid-elevation saltmarsh occurs between railbed (SE) and Vance ave (NW) Vegetation community is incredibly intact and organic soils present suggesting that this saltmarsh has been minimally impacted at the location of the relevé point, although it is a fragment of what it once was. Minimal to no recent disturbance

Disturbance code / Intensity (L,M,H): 01/M 07/M 08/L ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead) No trees or shrubs

Herbaceous: (H1) (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Mid elevation salt marsh

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Coast dune willow thicket / S+W. Dune Mat / W

Confidence in Alliance identification: L (M) H Explain: Not a described veg. community

Phenology (E,P,L): Herb P+L Shrub 0 Tree 0 Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: Ø **Total % Vasc Veg cover:** 90

% Cover - **Conifer tree / Hardwood tree:** Ø / Ø **Regenerating Tree:** Ø **Shrub:** Ø **Herbaceous:** 90

Height Class - Conifer tree / Hardwood tree: Ø / Ø **Regenerating Tree:** Ø **Shrub:** Ø **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Triglochin maritimum	10		
H	Linanium californicum	5		
H	Parapholis incurva	T		
H	Pt. Reyes birds beak	2		Chloropyron maritimum ssp. palustre
H	Humboldt Bay owls clover	T		Castilleja ambigua var. humboldtiensis
H	Distichlis spicata	7		
H	Cuscuta pacifica	T		
H	Salmea carnosa	50		
H	Annual pickleweed	10		
H	Perennial pickleweed	8		
H	Spartina densiflora	5		
H	Isolepis cernua	T		
H	Juncus leseurii	1		
H	Spergularia marina	T		
H	Atriplex prostrata	T		

Unusual species: Castilleja ambigua var. humboldtiensis and Chloropyron Maritimum ssp. palustre

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Database #:	Date: 7/6/22	Name of recorder: Joseph Soler
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R#5, RMMT

GPS name: Trimble R1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.57

Decimal degrees: LAT 40.821580° LONG -124.177470°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Canopy view and understory view

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions ____ x ____ m | RA Radius 20 m

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | Steepness, Actual °: N/A 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid (lower) bottom | Micro: convex (flat) concave undulating

Geology code: MIAL Soil Texture code: Loam | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: Ø BA Stems: 3 Litter: 97 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: Ø Gravel: Ø Fines: Ø =100%

% Current year bioturbation No Past bioturbation present? Yes / (No) | % Hoof punch Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Willow+Rubus stand has developed within the past 30 years after cessation of industrial activities. The area has been used for industrial timber operations for over 100 years prior. fill soils present. Mix of invasive species dominate area around willow/rubus community, with high cover by Rubus armeniacus.

Disturbance code / Intensity (L,M,H): 01 / L 05 / M 07 / L ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), (T4 (11-24" dbh)) T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature) (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1) (<12" plant ht.), H2 (>12" ht.) Herbaceous Species

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Coast dune Willow-Sitka Willow Thicket

Field-assessed Association name (optional): Salix hookeriana / Rubus ursinus

Adjacent Alliances/direction: Wax myrtle Shrubland / W ____/____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb N/A Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)

Database #: ________

SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: Ø **Total % Vasc Veg cover:** 100

% Cover - **Conifer tree / Hardwood tree:** Ø / 88 **Regenerating Tree:** Ø **Shrub:** 90 **Herbaceous:** T

Height Class - **Conifer tree / Hardwood tree:** Ø / 5 **Regenerating Tree:** Ø **Shrub:** 4 **Herbaceous:** 1

☐ ☐ ☐

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

YYZZ

Stratum	Species	% cover	C	Final species determination
T	Salix hookeriana	88		
S	Rubus ursinus	75		
S	Rubus armeniacus	15		
H	Geranium dissectum	T		

Unusual species: ________

Attribution Method: Air Photo Interpretation
Field Survey
Field Reconnaissance

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance ___ Association ___

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: Relevé or (RA)

Database #:	Date: 7/6/22	Name of recorder: Joseph Saler
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R#6 RMMT

GPS name: Trimble R1 — For Relevé only: **Bearing°**, left axis at ID point____ of **Long / Short** side

UTME ______ **UTMN** ______ **Zone: 11 NAD83** GPS error: **ft./ m./ PDOP** 0.73 m

Decimal degrees: **LAT** 40.821423° **LONG** -124.181578°

GPS within stand? (Yes) / No — If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** ______ **Projected UTMs: UTME** ______ **UTMN** ______

Camera Name: Samsung **Cardinal photos at ID point:** Yes — ***See notes on bottom of pg 2; record info on photo sheet

Other photos: Canopy view, groundcover view

Stand Size (acres): (<1), 1-5, >5 | **Plot Area (m²): 100 /** ____ | **Plot Dimensions** ____ x ____ m | **RA Radius** 20 m

Exposure, Actual °: ____ NE NW SE SW Flat (Variable) | **Steepness, Actual °:** ____ 0° 1-5° (>5-25°) >25

Topography: Macro: (top) (upper) (mid) (lower) bottom | **Micro:** (convex) flat concave (undulating)

Geology code: DUNE **Soil Texture code:** SL | (Upland) or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: Ø **BA Stems:** 3 **Litter:** ____ **Bedrock:** Ø **Boulder:** Ø **Stone:** Ø **Cobble:** Ø **Gravel:** Ø **Fines:** ____ =100%

% Current year bioturbation T **Past bioturbation present?** (Yes) / No | **% Hoof punch** Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:
Stand occupies top of old stabilized dune. Portions of the dune have been excavated for roads and other development. Beach pines are old, many have blown down or are standing dead. Shrub lyr is well developed.

Roadedness, Clearing, or other conditions (disturbances, sudden oak death, ect.)
Invasive Hedera helix and Cytisus arboreus are present. Roads and development surround Beach pine woodland at this location.

Disturbance code / Intensity (L,M,H): 01 / H 05 / H 07 / M ___ / ___ ___ / ___ **"Other"** ______ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), (**T4** (11-24" dbh)), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), (**S3** mature) (1-25% dead), (**S4** decadent) (>25% dead)

Herbaceous: H1 (<12" plant ht.), (**H2** (>12" ht.))

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name:[1,2] Beach Pine forest and Woodland

Field-assessed Association name (optional): ______

Adjacent Alliances/direction: Dune Mat / S, ______ / ___

Confidence in Alliance identification: L M (H) **Explain:** ______

Phenology (E,P,L): Herb L **Shrub** P **Tree** P **Other identification or mapping information:**

# of individual target species (e.g. redwood within Redwood Forest Alliance)
12-15 mature Beach pine w/i study area. More adjacent.

1) Sensitive or herbaceous map to alliance - note sensitive associations within each stand.
2) Non-sensitive upland map to alliance - map sensitive associations.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET UID:

IV. VEGETATION DESCRIPTION

Absolute % NonVasc cover: 0 Total % Vasc Veg cover: 98

Absolute % Cover - Conifer tree / Hardwood tree: 50/8 Regenerating Tree: 15 Shrub: 80 Herbaceous: 30

Height Class - Conifer tree / Hardwood tree: 6/8 Regenerating Tree: 4 Shrub: 4 Herbaceous: 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular (see below)

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Native Yes/No	Stratum	Species	% cover Absolute	C	Final species determination
Y	T	Pinus contorta var. contorta	35		
N	T/SA	Pinus radiata	10		
Y	S	Vaccinium ovatum	50		
N	S	Cotoneaster lacteus	1		
Y	S	Garrya elliptica	15		
Y	S	Ribes sanguineum	2		
N	S	Hedera helix	2		
Y	H	Polypodium scouleri	T		
Y	H	Pteridium aquilinum var. pubescens	3		
Y	SA	Pinus contorta var. contorta	5		
N	S	Lupinus arboreus	5		
N	H	Agrostis stolonifera	4		
N	H	Anthoxanthum odoratum	5		
N	H	Holcus lanatus	T		
Y	H	Polypodium glycyrrhiza	T		
N	H	Briza maxima	2		
Y	S	Symphoricarpos mollis	T		
Y	S	Morella californica	5		
Y	S	Arctostaphylos uva-ursi	1		
		* Woody vegetation - record at 1% increments			

Unusual species: _____

Required Photos: 1) Dominant and representative native vegetation; 2) Dominant & representative invasive vegetation; 3) Plants outside known range; 4) Special status species present; 5) Representative photo of stand

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 7/6/22	Name of recorder: Joseph Sisler
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R# 7 RMMT

GPS name: Trimble R1 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.6 m

Decimal degrees: LAT 40.823718° LONG -124.174015

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m)____ bearing °____ inclination °____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Grandeur view, representative conditions

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m^2): 100 / _____ | Plot Dimensions 3 x 15 m | RA Radius____ m

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | Steepness, Actual °: _____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid lower (bottom) | Micro: convex (flat) (concave) undulating

Geology code: MTAL Soil Texture code: Gr Loam | (Upland) or (Wetland/Riparian) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: Ø BA Stems: 2 Litter: 98 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: Ø Gravel: Ø Fines: Ø =100%

% Current year bioturbation Ø Past bioturbation present? Yes / (No) | % Hoof punch Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Juncus breweri dominant within small localized areas. Appears to be stable with no evidence of recent disturbance. Railroad tracks exist on the west side of the veg. community, Humboldt bay and Saltmarsh exist immediately east of the veg community.

Encroaching non-native vegetation a potential threat to long term viability of high quality upper saltmarsh

Disturbance code / Intensity (L,M,H): 01 / L 05 / H 07 / M ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), (S2) young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead) No trees.

Herbaceous: (H1) (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: High salt Marsh

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Saltmarsh / E+W. _____ / _____

Confidence in Alliance identification: L (M) H Explain: Small stand size and other dominant species

Phenology (E,P,L): Herb P Shrub E Tree N/A Other identification or mapping information:

Juncus breweri dominance restricted to small localized area as mapped.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 5 **Total % Vasc Veg cover:** 95

% Cover - **Conifer tree / Hardwood tree:** Ø / Ø **Regenerating Tree:** Ø **Shrub:** 5 **Herbaceous:** 90

Height Class - Conifer tree / Hardwood tree: Ø / Ø **Regenerating Tree:** Ø **Shrub:** 2 **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Juncus breweri	62		
H	Scrophularia Californica	5		
H	Anthoxanthum odoratum	25		
H	Cortaderia jubata	5		
H	Raphanus sativa	2		
H	Holcus lanatus	1		
S	Rubus ursinus	1		
H	Rumex crispus	T		
H	Vicia sativa	T		
H	Sonchus oleraceus	T		
S	Baccharis glutinosum	3		
S	Lupinus arboreus	2		
H	Epilobium ciliatum	T		
H	Galium aparine	2		
H	Senecio vulgaris	T		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Database #:	Date: 7/8/22	Name of recorder: Joseph Sabo
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R#8 RMMT

GPS name: Trimble DA2 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.41 m

Decimal degrees: LAT 40.818208° LONG -124.185118°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Canopy + Groundcover views

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions ___ x ___ m | RA Radius 12 m

Exposure, Actual °: _____ NE NW SE SW Flat (Variable) | Steepness, Actual °: _____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid (lower) bottom | Micro: convex (flat) concave undulating

Geology code: DUNE Soil Texture code: LOAM | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 5 BA Stems: 3 Litter: 92 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 0 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Willow Stand has developed within a drainage ditch within the last 30 years after the cessation of industrial activities. The area had been used for industrial lumber operations for over 100 years prior. Fill soils and invasives species are present as well as intact asphalt under portions of the willow canopy. Developed spaces and vaccat concrete surround veg. community.

Disturbance code / Intensity (L,M,H): 01 / M 05 / H 07 / L ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), (T3 (6-11" dbh)), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature (1-25% dead)), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2 (>12" ht.))

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Coastal Dune Willow-Sitka Willow Thickets

Field-assessed Association name (optional): Sitka willow dominant

Adjacent Alliances/direction: None ___/___ ___/___

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

Stand restricted to Sitka willow dominance (10 ind.) surrounded by pavement or other development of invasive species.

Combined Vegetation Rapid Assessment and Relevé Field Form
(Revised March 27, 2018)
SPECIES SHEET

Database #: ________

IV. VEGETATION DESCRIPTION

% NonVasc cover: Ø **Total % Vasc Veg cover:** 82

% Cover - **Conifer tree / Hardwood tree:** Ø / 15 **Regenerating Tree:** 5 **Shrub:** 50 **Herbaceous:** 30

Height Class - **Conifer tree / Hardwood tree:** Ø / 5 **Regenerating Tree:** 2 **Shrub:** 3 **Herbaceous:** 2

☐ ☐ ☐

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular
% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

	Stratum	Species	% cover	C	Final species determination
Y	T	Salix sitchensis	60		
Y	T	Salix lasiandra var. lasiandra	10		
N	S	Rubus armeniacus	50		
Y	S	Morella californica	5		
N	H	Cortaderia jubata	20		
Y	H	Scirpus microcarpus	7		
Y	H	Equisetum telmateia	3		
N	H	Lotus corniculatus	T		
N	H	Holcus lanatus	T		
Y	H	Triglochin maritimum	T		
Y	H	Oenanthe sarmentosa	T		

Unusual species: ____________________

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 7/19/22	Name of recorder: Joseph Saler
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R9

GPS name: TrimbleDA2 — For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.30m

Decimal degrees: LAT 40.810271° LONG -124.195679°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Grand view, representative conditions

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions 20 x 20 m | RA Radius ____ m

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | Steepness, Actual °: _____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid (lower) bottom | Micro: convex flat concave undulating

Geology code: DUNE Soil Texture code: Sand | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: Ø BA Stems: 3 Litter: 90 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: Ø Gravel: Ø Fines: 7 =100%

% Current year bioturbation <1 Past bioturbation present? (Yes) / No | % Hoof punch Ø

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Carex barsa is dominant within slightly raised portions of the deflation plain. Carex barsa dominance is in areas bordering 3° deflation plain wetlands but is not found on adjacent dune mat areas. Conditions appear stable and invasive species cover is low. New Navy base road exists west of the area and a large water line bisects the Carex barsa veg community and adjacent wetlands.

Disturbance code / Intensity (L,M,H): 01 / L 05 / M ___ / ___ ___ / ___ ___ / ___ "Other" _____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), (S2 young) (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1 (<12" plant ht)), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Sand dune Sedge Marsh Juncus-Carex(barsa) Herbaceous Alliance

Field-assessed Association name (optional): Carex barsa

Adjacent Alliances/direction: Coast willow-Sitka willow thicket / E , Dune Mat / W

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 5 **Total % Vasc Veg cover:** 115

% Cover - **Conifer tree / Hardwood tree:** Ø / Ø **Regenerating Tree:** Ø **Shrub:** 15 **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: Ø / Ø **Regenerating Tree:** Ø **Shrub:** 1 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

	Stratum	Species	% cover	C	Final species determination
Y	H	Carex pansa	67		
Y	S	Rubus ursinus	15		
Y	H	Fragaria chiloensis	5		
N	H	Briza maxima	10		
Y	H	Carex obnupta	4		
Y	H	Juncus breweri	3		
Y	H	Poa confinis	1		
N	H	Agrostis stolonifera	5		
Y	H	Achillea millefolia	1		
N	H	Sonchus oleraceus	T		
N	H	Vicia sativa	2		
N	H	Ammophila arenaria	1		
N	H	Lotus corniculatus	1		
Y	H	Armeria maritima ssp. californica	T		
Y	H	Polygonum paronychia	T		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Database #:	Date: 7/28/22	Name of recorder: Joseph Saker
		Other surveyors:
	UID:	Location Name: R10

GPS name: TrimbleDA2 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.78m

Decimal degrees: LAT 40.814302° LONG -124.185736°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes

Other photos: Ground cover, canopy cover.

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions 30 x 75 m | RA Radius ____ m

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | Steepness, Actual °: _____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid lower (bottom) | Micro: convex (flat) concave undulating

Geology code: MIAL Soil Texture code: Sand | Upland or (Wetland/Riparian) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: Ø BA Stems: 3 Litter: 96 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: Ø Gravel: Ø Fines: 1 =100%

% Current year bioturbation 1 Past bioturbation present? (Yes) / No | % Hoof punch Ø

Fire evidence: Yes (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

~30 year old stand of wax myrtle and mixed willow species (Salix Lasiandra, Salix hookeriana + Salix sitchensis) dating back to the cessation of industrial use and demolition of facilities. Entire stand appears to have grown up within the footprint of a former warehouse that did not have a concrete floor.

Stand is surrounded on all four sides by concrete/pavement with non native/invasive species dominant

Disturbance code / Intensity (L,M,H): 01/H 05/L 07/M ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), (T3 (6-11" dbh)), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature (1-25% dead)), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2 (>12" ht.))

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Coastal Dune Willow-Sitka Willow Thickets

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Concrete and Asphalt / _____

Confidence in Alliance identification: L (M) H Explain: The mixed willow composition varies widely

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 100

% Cover - **Conifer tree / Hardwood tree:** 2 95 **Regenerating Tree:** 5 **Shrub:** 24 **Herbaceous:** 42

Height Class - Conifer tree / Hardwood tree: 6 5 **Regenerating Tree:** 4 **Shrub:** 4 **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T	Morella californica	30		
T	Salix sitchasis	20		
T	Salix hookeriana	33		
T	Salix lasiandra var. lasiandra	5		
T	Picea sitchensis	2		
S	Rubus armeniacus	11		
H	Carex obnupta	37		
S	Rubus ursinus	2		
H	Equisetum laevigatum	2		
S	Hedera helix	10		
H	Cortaderia jubata	2		
H	Sorghus oleaceus	r		
H	Holcus lanatus	1		
H	Polystichum munitum	r		
H	Equisetum telmateja	r		
S	Lupinus arboreus	1		
H	Epilobium ciliatum	r		
H	Symphyotrichum chilense	r		
H	Juncus effusus ssp. pacificus	r		
H	Agrostis gigantea	r		
H	Potentilla anserina ssp. pacifica	r		
SA	Crataegus monogyna	r		
S	Lonicera involucrata var. ledebourii	r		
H	Agrostis stolonifera	r		
SA	Morella californica	3		
SA	Salix hookeriana	1		
SA	Salix lasiandra var. lasiandra	1		

Unusual species: _____

Attribution Method: Air Photo Interpretation / Field Survey / Field Reconnaissance

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Database #:	Date: 7/28/22	Name of recorder: Joseph Sater
		Other surveyors:
	UTD:	Location Name: R11

GPS name: Trimble DA2 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.3m

Decimal degrees: LAT 40.811162° LONG -124.193236°

GPS within stand? Yes / (No) If No, cite from GPS to stand: distance (m) 2 bearing° ____ inclination° 0

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: Yes ***See notes on bottom of pg 2; record info on photo sheet

Other photos: Representative conditions

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions 15 x 30 m | RA Radius____ m

Exposure, Actual °: _____ NE NW SE SW (Flat) Variable | Steepness, Actual °: _____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid (lower) bottom | Micro: convex flat concave (undulating)

Geology code: MIAL Soil Texture code: Sand | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: Ø BA Stems: 3 Litter: 97 Bedrock: Ø Boulder: Ø Stone: Ø Cobble: Ø Gravel: Ø Fines: Ø =100%

% Current year bioturbation ~1% Past bioturbation present? (Yes) / No | % Hoof punch Ø

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Wax myrtle scrub likely <30 yrs old, probably originating after the cessation of industrial activity in the area. Veg community occurs within unpaved area with railroad tracks and evidence of chip storage for the former pulp mill.

Roadedness, Clearing, or other conditions (disturbances, sudden oak death, ect.)

Unused railroad tracks on west and eastside of veg community. Concrete and pavement surround wax myrtle scrub as well as non-native vegetation.

Disturbance code / Intensity (L,M,H): 01/M 05/M __/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), (T3 (6-11" dbh)), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature (1-25% dead)), S4 decadent (>25% dead)

Herbaceous: (H1 (<12" plant ht.)), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name:[1, 2] Wax Myrtle Scrub

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: N/A _____/_____, _____/_____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

# of individual target species (e.g. redwood within Redwood Forest Alliance)

20-30 wax myrtle present

1) Sensitive or herbaceous map to alliance - note sensitive associations within each stand.

2) Non-sensitive upland map to alliance - map sensitive associations.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

SPECIES SHEET

Database #: _____ UID:

IV. VEGETATION DESCRIPTION

Absolute % NonVasc cover: 0 Total % Vasc Veg cover: 140

Absolute
% Cover - Conifer tree / Hardwood tree: 0 / 90 Regenerating Tree: 0 Shrub: 30 Herbaceous: 20

Height Class - Conifer tree / Hardwood tree: 0 / 5 Regenerating Tree: 0 Shrub: 2 Herbaceous: 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Trec, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular (see below)

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Native Yes/No	Stratum	Species	% cover Absolute	C	Final species determination
Y	T	Morella californica	90		
Y	S	Baccharis pilularis ssp consanguinea	5		
Y	S	Rubus ursinus	22		
N	S	Lupinus arboreus	3		
N	H	Vicia villosa	3		
N	H	Briza Maxima	7		
N	H	Carpobrutus edulis	4		
N	H	Holcus lanatus	1		
N	S	Rubus armeniacus	1		
N	H	Festuca myuros	5		
		* Woody vegetation - record at 1% increments			

Unusual species: _____

Required Photos
1) Dominant and representative native vegetation
2) Dominant & representative invasive vegetation
3) Plants outside known range
4) Special status species present
5) Representative photo of stand

Attribution Method: Air Photo Interpretation
Field Survey
Field Reconnaissance

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 8/2/2022	Name of recorder: Joseph Saler
		Other surveyors: Cindy Wilcox
	UID:	Location Name: R12

GPS name: Trimble DA2 — For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP 0.3m

Decimal degrees: LAT 40.815305° LONG -124.184060°

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Samsung Cardinal photos at ID point: yes ***See notes on bottom of pg 2; record info on photo sheet

Other photos: Representative conditions

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): 100 / ____ | Plot Dimensions 2 x 15 m | RA Radius____ m

Exposure, Actual °: ____ NE NW SE SW Flat (Variable) | Steepness, Actual °: ____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid lower (bottom) | Micro: convex flat concave (undulating)

Geology code: OTHE Soil Texture code: ROCK | Upland or (Wetland/Riparian) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: BA Stems: 3 Litter: 20 Bedrock: 0 Boulder: 0 Stone: 5 Cobble: 30 Gravel: 35 Fines: 7 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

The entire shoreline in this area was manipulated for industrial use including riprap, concrete, pilings, pipes, gravel, asphalt. Pickleweed mat is growing on top of anthropogenic surfaces in a highly manipulated setting.

Roadedness, Clearing, or other conditions (disturbances, sudden oak death, ect.)

Entire area has been used for industrial purposes in the past. Has sat vacant and decaying for ~30yrs, however hardscaped surfaces remain.

Disturbance code / Intensity (L,M,H): 01 / H 05 / M 08 / M 32 / H ___ / ___ "Other" _____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1 (<12" plant ht.)), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name:[1, 2] Pickleweed Mat

Field-assessed Association name (optional): Salicornia pacifica-Jaumea carnosa-Distichlis spicata

Adjacent Alliances/direction: N/A ____/____, ____/____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub ____ Tree ____ Other identification or mapping information:

# of individual target species (e.g. redwood within Redwood Forest Alliance)

100's of pickleweed individuals comprise the mat at this location

1) Sensitive or herbaceous map to alliance - note sensitive associations within each stand.
2) Non-sensitive upland map to alliance - map sensitive associations.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET UID:

IV. VEGETATION DESCRIPTION

Absolute % NonVasc cover: 0 Total % Vasc Veg cover: 80

Absolute % Cover - Conifer tree / Hardwood tree: 0 / 0 Regenerating Tree: 0 Shrub: 0 Herbaceous: 80

Height Class - Conifer tree / Hardwood tree: 0 / 0 Regenerating Tree: 0 Shrub: 0 Herbaceous: 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular see below

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Native Yes/No	Stratum	Species	% cover Absolute	C	Final species determination
Y	H	Salicornia pacifica	50		
N	H	Spartina densiflora	25		
Y	H	Distichlis spicata	4		Saltgrass
Y	H	Jaumea carnosa	1		Marsh jaumea
		* Woody vegetation - record at 1% increments			

Unusual species: _____

Required Photos: 1) Dominant and representative native vegetation; 2) Dominant & representative invasive vegetation; 3) Plants outside known range; 4) Special status species present; 5) Representative photo of stand

Eureka, CA | Arcata, CA | Redding, CA | Willits, CA | Fort Bragg, CA | Coos Bay, OR | Klamath Falls, OR