

BIOLOGICAL RESOURCES REPORT

CITY OF FORT BRAGG WASTEWATER TREATMENT PLANT UPGRADE

101 West Cypress Street
(APN 008-020-07)
Fort Bragg
Mendocino County, California



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**101 WEST CYPRESS STREET (APN 008-020-07)
FORT BRAGG
MENDOCINO COUNTY, CALIFORNIA**

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Executive Summary

During January–July of 2016, William Maslach conducted biological resource surveys on the City of Fort Bragg’s wastewater treatment facility and all areas 100 feet beyond the project site. The facility is located in the City of Fort Bragg, Mendocino County, California on a 6-acre parcel (APN 008-020-07) located on a coastal bluff at 101 West Cypress Street. The purpose of the study was to determine the boundaries of sensitive coastal resources (wetlands, natural communities, special-status plants and animals) that could be considered Environmentally Sensitive Habitat Area’s under the City’s Coastal Zoning Code.

Surveys were conducted on January 12, March 23, April 15, June 6, and July 15, 2016 to determine if any ESHA occurred or could potentially occur on the project site. Those special-status species that were identifiable in the field during the time of the survey were evaluated and those that were not were evaluated for potentially occurring based on the presence of suitable habitat.

Biological resources that were considered ESHA are summarized below.

ESHA Element	Scientific Name	Acres/ Individuals	Rank	CESA/ NEPA	30-foot ESHA Buffer Encroachment (ft ²)	100-foot ESHA Buffer Encroachment (ft ²)
Wetlands						
Freshwater Marsh	-	0.05	G3 S2.1	None	0	3475
Common monkey flower seeps	Mimulus (guttatus) Alliance	< 0.00	G4 S3.2	None	0	3880
Pacific Ocean	-	-	-	-	35	7900
Vegetation						
Gum Plant Patches	(Grindelia (stricta) Provisional Herbaceous Alliance	0.22	G3? S3?	None	0	2325
Plants						
Mendocino Coast Paintbrush	Castilleja mendocinensis	1 individual	CRPR 1B.2 G4T2 S2	None	0	190
Wildlife						
Pelagic Cormorant	Phalacrocorax pelagicus	nesting colony	None	None	0	210
Merged Total (total ft ² of 30-foot and 100-foot buffer encroachment)					35	13,700

Mitigation measures were developed to avoid potential impacts to documented biological resources and those potentially occurring in the study area. Nearly the entire project takes place within a fence that surrounds the wastewater facility, and the fence ensures project activities will not impact ESHA and create new impacts to their buffers. For the small amount of work outside of the fence, measures are put into place to ensure that no impacts will occur to wildlife, particularly a nesting colony of pelagic cormorants.

1 Introduction and Background

1.1 Purpose

The purpose of this report is to provide a summary of the biological resources within and proximal to the City of Fort Bragg's wastewater treatment plant and identify any areas that can be considered environmentally sensitive habitat areas (ESHA). When ESHA elements are documented near the proposed project, mitigation measures are developed to lessen any potential impacts.

The City of Fort Bragg is endeavoring to update the wastewater treatment plant by proposing the construction of some new facilities, updating older components, and repurposing outdated structures. As part of the process, the City will need to obtain a Coastal Development Permit and complete a Mitigated Negative Declaration for the work. This report will provide an inventory of the biological resources within and adjacent to the proposed project area.

This report provides information necessary for the City of Fort Bragg Community Development Department to evaluate the potential for impacts to biological resources and some hydrology/water quality resources from the proposed project under the California Environmental Quality Act (CEQA) and to evaluate the potential for impacts to ESHA in the project area.

1.2 Scope of Work

At the request of the City of Fort Bragg, a biological resources inventory was conducted to determine the type, condition, and location of biological elements. Any sensitive coastal resources, such as wetlands or rare plants or animals and their habitats that can be considered ESHA under the City of Fort Bragg's certified local coastal program (LCP) (Fort Bragg Municipal Code (FBMC) §17.50.050) are identified and mapped. When ESHA are identified within 100 ft of any proposed development, the potential effects of the impact of the development on the ESHA are evaluated, and avoidance and mitigation measures are developed.

With this information, the project is analyzed according to the development criteria outlined in the Fort Bragg Municipal Code Section 17.50.050 (H) and mitigation measures are developed to offset the project's potential impacts to the ESHA or its buffer.

1.3 Location & Environmental Setting

The project site is a fenced 6-acre parcel located at the edge of a coastal bluff overlooking the Pacific Ocean in the City of Fort Bragg, Mendocino County, California, located at 101 West Cypress Street (APN 008-020-07), (Figures 1–3 and Appendix A). The study area, which extends in all directions 100 ft beyond the perimeter of the project site, covers 12.5 acres. The Georgia Pacific mill property borders the parcel to the north, east, and south, and to the west is the Pacific Ocean. Portions of the Georgia Pacific property may be deeded to the City of Fort Bragg sometime in the future for the purpose of connecting the northern and southern segments of the City's coastal trail.

Nearly the entire parcel is either developed or used in a manner such that ruderal vegetation is the dominant vegetative cover. The western portion of the parcel outside of the facility fence is a coastal bluff primarily vegetated with non-native iceplant and some native coastal bluff scrub. The area 100 ft beyond the parcel contains similar vegetation—ruderal vegetation on the mill property and mostly iceplant on the coastal bluff.

1.4 Land Use

The land is owned by the City of Fort Bragg and has been used as a wastewater treatment plant since November 1971 (Nute 2007). Zoning and land use within the District is regulated by both the City of Fort Bragg and Mendocino County. Specific zoning for the parcel follows:

Parcel Number:	008-020-07
Coastal Zone:	Yes
Acreage:	6.1
Lot Size (SF):	265,716
Fire Resp. Area:	Local Responsibility Area
Flood Zone:	YES
Flood Way:	NO

The project site is within the flood zone because it is adjacent to Zone V, the coastal flood zone with velocity hazard (wave action) (FEMA 2011). It is not in a low-lying flood plain.

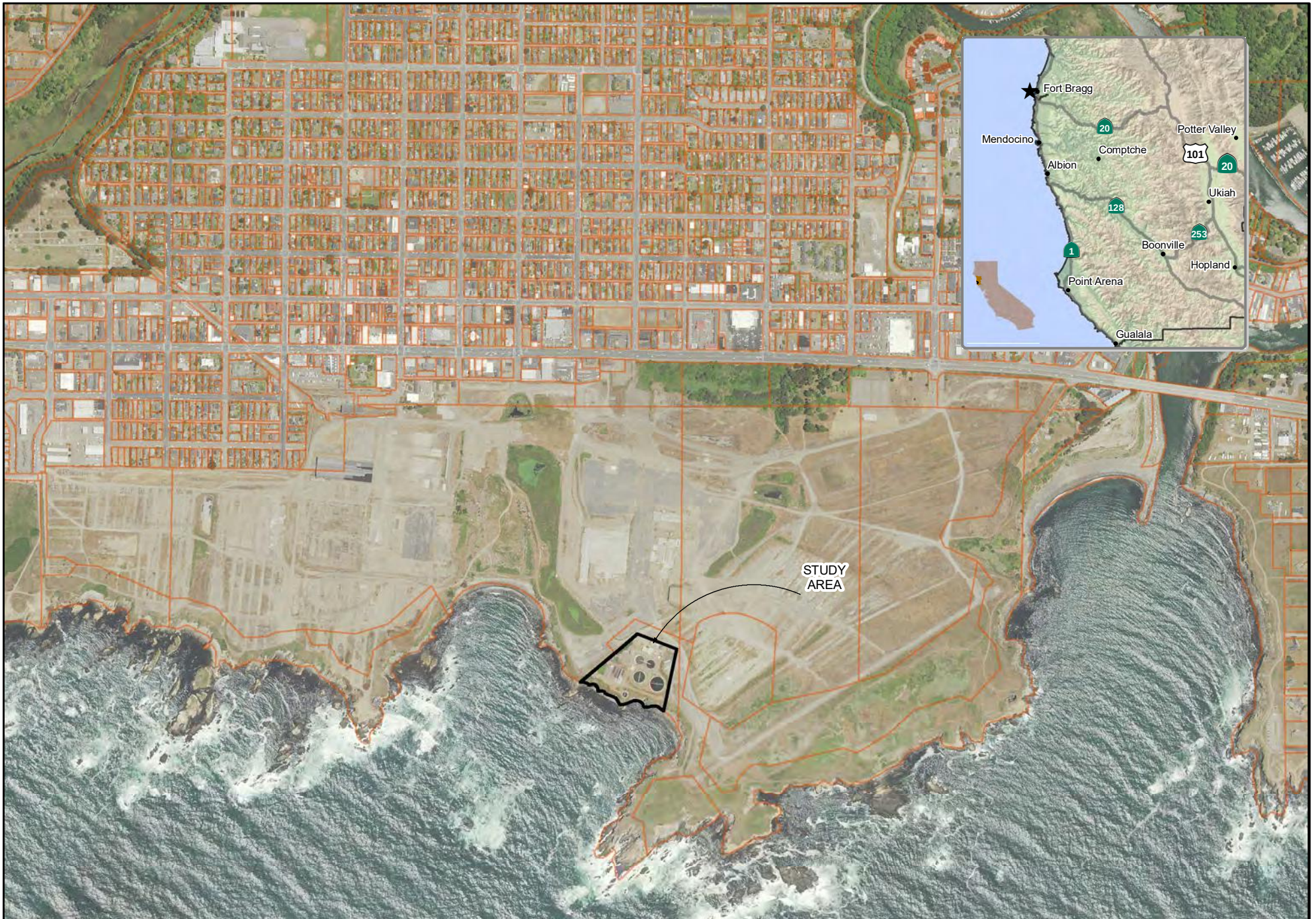
1.5 Site Directions

From the intersection of Highway 1 and Cypress St. in the city of Fort Bragg,

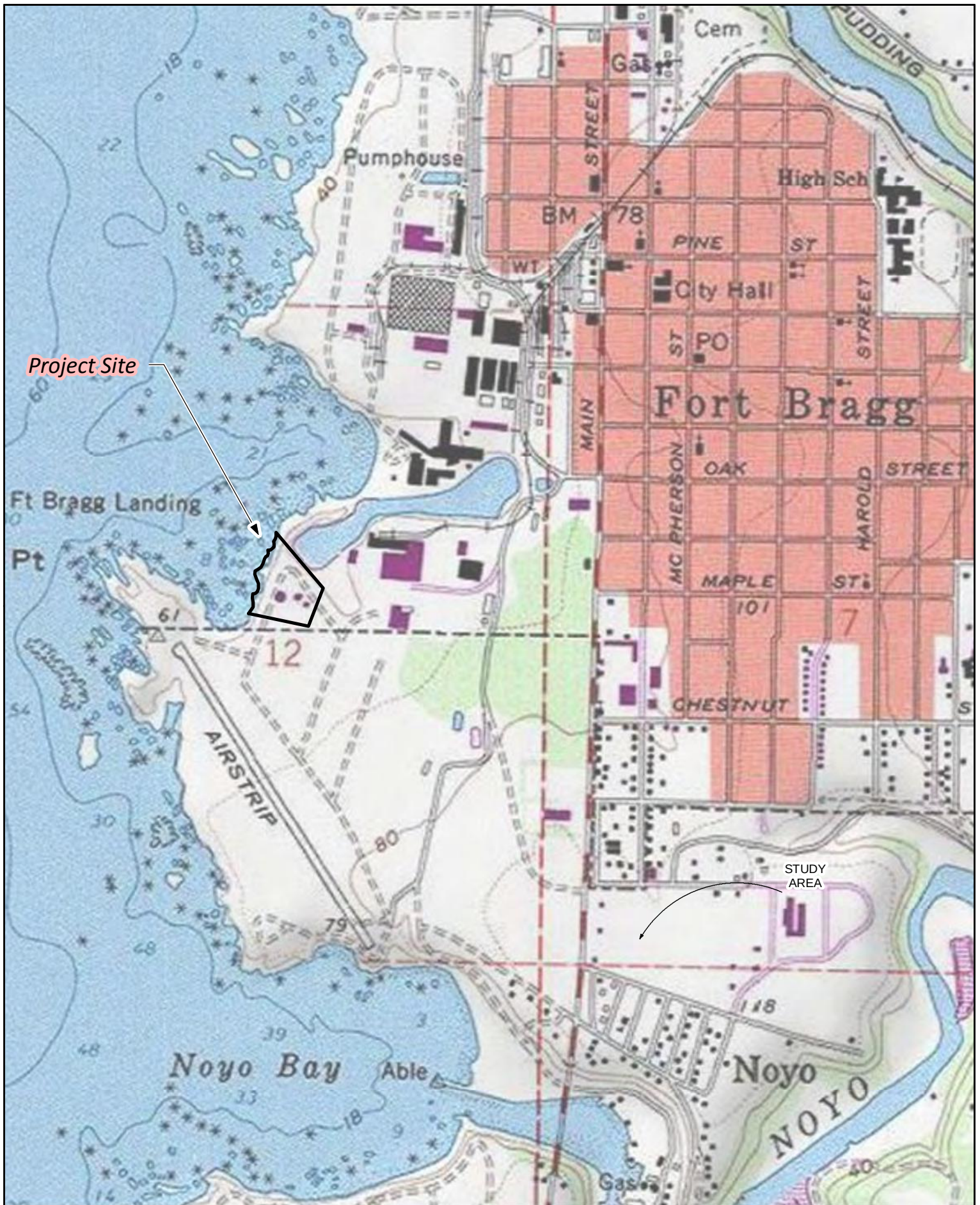
- Head west onto the Noyo Headlands 0.4 miles to the bluff parking lot
- Turn right through the gate (with permission only) – continue north ~ 0.7 mi
- The road winds around the facility and the entrance is on the left.

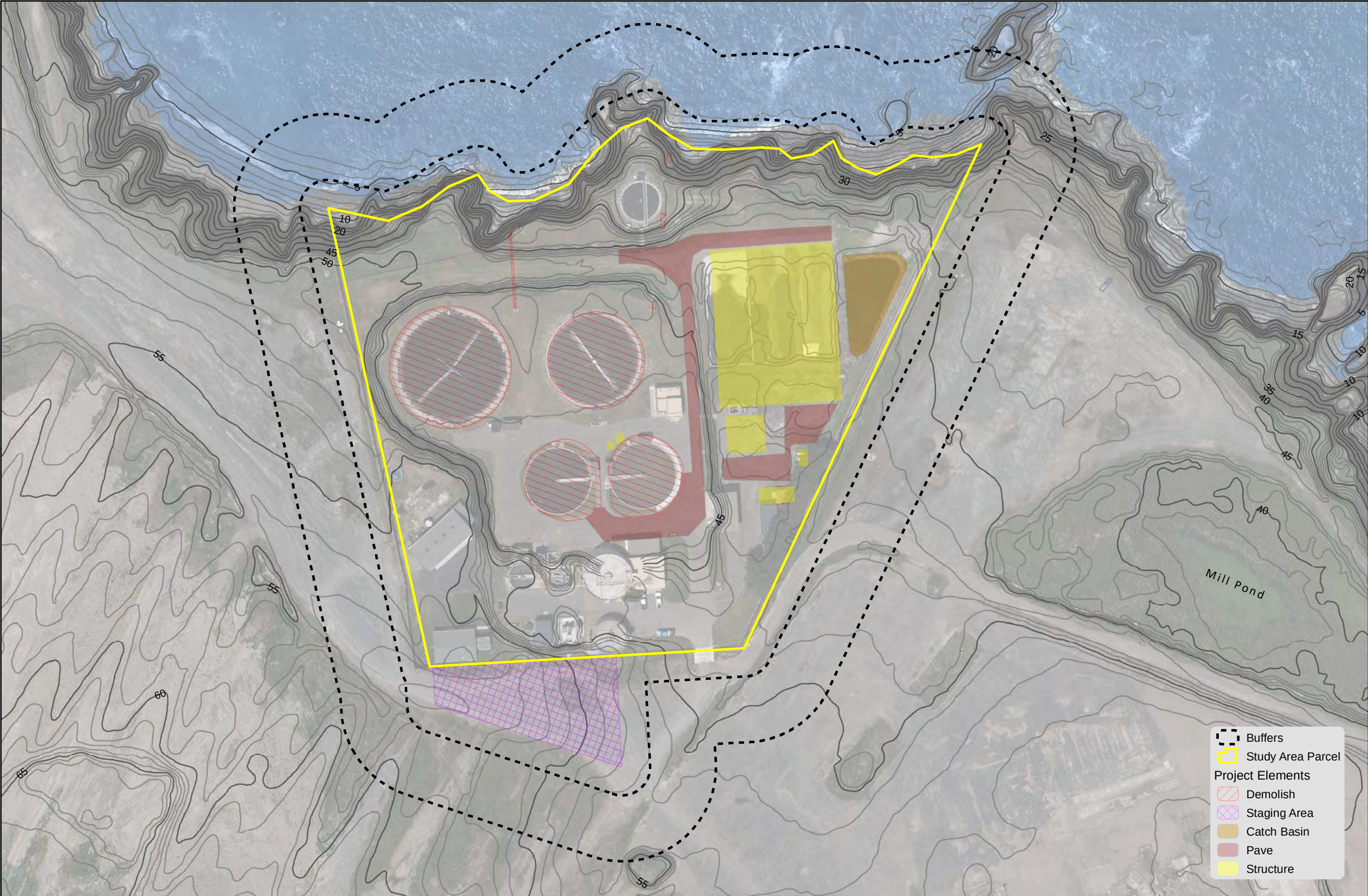
1.6 Project Description

The Fort Bragg Municipal Improvement District No. 1 is proposing the Fort Bragg Wastewater Treatment Plant Upgrade Project. Fort Bragg's Wastewater Treatment Plant (WTP) is an aging facility which is to be renovated and upgraded to current technological standards utilizing an activated sludge treatment process. Major elements include replacing the wastewater pump station to allow for peak flow pumping capacity, repainting, paving, abandoning storm drain outfalls, demolishing sludge piping, installing a biological treatment facility, and demolishing clarifiers and open-air biofilters (Figure 3). For detailed plans and descriptions beyond the scope of this project see the City of Fort Bragg's Wastewater Treatment Plant Upgrades Project 100% design submittal.



SCALE: 1 in = 1,000 ft 1:12,000	Imagery: NAIP 2014		Regional and Vicinity Map of Study Area	
DATE: 07/17/2016	Land Owner: City of Fort Bragg		City of Fort Bragg Wastewater Treatment Facility Biological Resources Report	
PCS: UTM Zone 10, NAD83	GP Mill property borders study area.			
DRAWN: William Maslach	101 West Cypress St, Fort Bragg CA APN: 008-020-07			
			Figure 01	





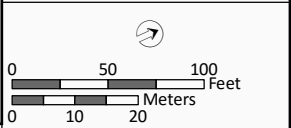
No liability is made either for any errors, omissions, or inaccuracies in the information provided regardless of the cause of such or for any decision made, action taken, or action not taken by the user in the reliance upon any maps or information provided herein. The information on these maps is not intended to replace engineering, financial or primary records research.

NOTES: Parcel boundary layer from Mendocino Co parcel data contains some spatial inaccuracies. Contours derived from 2011 LiDAR data.

101 West Cypress St
(APN 008-020-07)
Fort Bragg, CA

Base Map & Site Plan
City of Fort Bragg Wastewater Treatment Facility Upgrade

DATE: 08/01/2016
PCS: UTM Zone 10, NAD 83
DRAWN: Maslach
SCALE: 1:1,200 1 in = 100 ft



A 30-foot and 100-foot buffer were drawn around the fenced parcel as well as the staging area outside of the fence. The study area included all areas within the 100-foot buffer. All areas of demolition that are to be rebuilt with new structures are not shown, but all demolition and new construction, except for the storm water pipe demolition, are contained within the fenced parcel. For a detailed description of the demolition and construction, see the City of Fort Bragg's Wastewater Treatment Plant Upgrades Project 100% design submittal. Contour elevations were derived from 2011 coastal LIDAR data.

Figure 03

2 Regulatory Background

2.1 California Coastal Act

The purpose of this background is to provide the framework describing the regulatory authority for development in the coastal zone and to describe the sensitive coastal resources that determine how development may occur.

The coastal zone is statutorily defined as that area of land and water “extending seaward to the state’s outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea.” (Pub. Res. Code (PRC) § 30103 (a).) In some areas, the inland boundary of the coastal zone may vary from the 1,000-yard standard. (*Id.*, subd. (b).)

The California Coastal Commission (CCC, Coastal Commission), in partnership with coastal counties, cities, and ports, plans and regulates the use of land and water in the California coastal zone. It is the geographical area over which they exercise coastal development permit (CDP, coastal permit) jurisdiction. The California Coastal Act of 1976 (Coastal Act) (PRC § 30000 et seq.) requires local agencies to have a Local Coastal Program (LCP), including a Land Use Plan (LUP), that meets the requirements of, and implements the policies of, the Coastal Act at the local government level. (PRC §§ 30108.6, 30100.5.) Once a local agency, e.g., Mendocino County and Cities of Fort Bragg and Point Arena, has a Local Coastal Program certified by the Coastal Commission, that agency assumes responsibility for issuing coastal development permits.

Projects in the coastal zone that require discretionary approval, i.e., those actions requiring public review and approval by the Zoning Administrator, Planning Commission, or Board of Supervisors, require a coastal permit. Variances, use permits, and subdivision applications are examples of projects with discretionary approval. Projects in the coastal zone that require issuance of a building permit require review by the local agency’s coastal planning staff to determine if a coastal permit is required. Only in certain areas where the Coastal Commission retains jurisdiction, does the Commission issue coastal permits. They are also responsible for reviewing amendments to a local agency’s LCP or reviewing coastal permits issued by local agencies that have been appealed to the Coastal Commission or appealed by the Coastal Commission itself.

2.2 Environmentally Sensitive Habitat Area (ESHA)

To afford protection to the natural resources within the coastal zone, the Coastal Act, by way of environmentally sensitive habitat area policy, focuses conservation on a species’ habitat rather than on the conservation of individual species. A specimen of the species itself does not constitute ESHA; it is the area it inhabits. Fort Bragg Coastal Land Use and Development Code (FBCLUDC) (See § 17.100.020.) has adopted the Coastal Act’s definition of an ESHA:

Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. (PRC § 30107.5.)

By this definition, the conjunctive “and” sets up a two-part test for determining the presence of an ESHA. The first test is to answer whether or not a certain geographic area contains plants, animals, or their habitats, that are either (1) rare, or (2) especially valuable because of their special nature or role in an ecosystem. The second test for determining an ESHA asks if the geographic area occupied by these species and/or its habitat could be easily disturbed or degraded by human activities and developments. If it passes both tests then it is considered environmentally sensitive habitat.

2.2.1 Rarity

By the first part of the ESHA test, a definition of “rare” must be established in order to consider species or habitat for inclusion within an ESHA. The “species” component of the ESHA definition clearly includes those plants and animals listed under the Federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). However, the California Environmental Quality Act (CEQA), modeled after the National Environmental Quality Act (NEPA), broadens the definition of “rare” to include species not only *listed* as “endangered,” “rare,” or “threatened” in California but those that meet the *criteria* for listing. In other words, just because the Fish and Game Commission, in coordination with the California Department of Fish and Wildlife (CDFW), has not accepted, evaluated, and approved a petition for a species to be listed under CESA, doesn’t mean the species is not rare. Both the “listed” species and those not on any list are defined as “rare” in the CEQA Guidelines. (Cal. Code Regs. (CCR) § 15380.):

- (a) "Species" as used in this section means a species or subspecies of animal or plant or a variety of plant.
- (b) A species of animal or plant is:
 - (1) "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors; or
 - (2) "Rare" when either:
 - (A) Although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or
 - (B) The species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the Federal Endangered Species Act.
- (c) A species of animal or plant shall be presumed to be endangered, rare or threatened, as it is listed in:
 - (1) Sections 670.2 or 670.5, Title 14, California Code of Regulations; or
 - (2) Title 50, Code of Federal Regulations Sections 17.11 or 17.12 pursuant to the Federal Endangered Species Act as rare, threatened, or endangered.
- (d) *A species not included in any listing identified in subdivision (c) shall nevertheless be considered to be endangered, rare or threatened, if the species can be shown to meet the criteria in subdivision (b).* [Emphasis added.]
- (e) This definition shall not include any species of the Class Insecta which is a pest whose protection under the provisions of CEQA would present an overwhelming and overriding risk to man as determined by:
 - (1) The Director of Food and Agriculture with regard to economic pests; or
 - (2) The Director of Health Services with regard to health risks.

Defining the “habitat” component of the ESHA definition is not so cut and dried; there are no vegetation communities listed as rare or endangered, per se. However, there are measures in law that may afford protection to vegetation communities under certain circumstances (Wagner 2006). Aside from one of the overarching legislative declarations that framed CEQA, to “[...] preserve for future generations representations of all plant and animal communities [...]” (PRC §21001 (c).), the CEQA guidelines (PRC § 15065 (a)(1).) require the proponents of a project to consider a mandatory finding of significance where a project has the potential to “[...] threaten to eliminate a plant or animal community; [or] substantially reduce the number or restrict the range of an endangered, rare or threatened species; [...]”.

While some governmental entities' LCPs outline the protection of only a few vegetation communities, CDFW has described many and has assigned them rarity rankings. By this process, certain vegetation communities can thus be considered environmentally sensitive habitat when the local LCP does not explicitly categorize them as such.

The California Natural Diversity Database (CNDDDB), a natural heritage program maintained by CDFW, uses a standard method to rank the degrees of rarity of a species or natural community based on population size and extent, threats and vulnerability, and long- and short-term trends (Master et al. 2012). This method, called the NatureServe conservation status, was developed by The Nature Conservancy in the 1980's and is now maintained by the non-profit organization NatureServe.

By this method, a global rank (G rank) describes the entire distribution of a taxon or vegetation community (often called elements), and a state rank (S rank) describes its distribution for the state. (See Appendix B for further explanation.) Collectively, this is referred to as "Element Ranking." A numeric value of 1 - 5 is then assigned to the element based on the criteria mentioned above, with a "1" given to elements that are critically imperiled and a "5" given to elements that are demonstrably widespread and secure.

To categorize rarity of California's flora, the California Native Plant Society (CNPS) developed a similar ranking system. Formerly this was called the CNPS List but now it has been adopted by CDFW as the California Rare Plant Rank (CRPR). Plants are categorized into 4 groups based on their distribution and occurrence in California and elsewhere, with "1" being the rarest. CNPS further describes the vulnerability associated with the plants by adding a Threat Rank extension of 0.1 - 0.3, (seriously threatened–not very threatened). Threat ranks are given to all CRPR species listed as 1B, 2B, 4, and the majority of 3.

With the global and state ranks for plants, wildlife, and vegetation communities, and the CRPR for rare plants, a general assessment of an element's rarity is standardized and easily determined. Plant or animal species with a state ranking of 2 or less, and plant species of a CRPR 2 or less, are highly imperiled and meet the definition of "endangered" or "threatened" under CESA (Fish and Game Code § 2062 & 2067.) and are eligible for state listing. The CRPR 3 category is essentially a holding tank for plants not assigned to CRPR 2 or 4. Therefore, some plants may meet the same definitions under CESA or the Native Plant Protection Act. (Fish and Game Code § 1902.)

Although there is no formal avenue for listing a vegetation community, those with a state rank of 3 or less are nevertheless imperiled and should be considered during a project evaluation under CEQA. These vegetation communities are generally considered ESHA because any vegetation community that is imperiled is inherently rare. Plants with a CRPR 4 are plants of limited distribution, and an element with a ranking of S4 signifies that a species or vegetation community is not rare but rather uncommon, with some concern for a long-term trend towards a declining population. As such, biological reports should disclose these elements to determine if they should be considered ESHA.

2.2.2 Especially Valuable

The second part to the first test of an ESHA determination asks if a species or its habitat is especially valuable because of its special nature or role in an ecosystem. (See Dixon 2003.) As all species and their habitats play a special role in the ecosystem, a biological survey should address the degree to which these elements function in the ecosystem. Unique assemblages of species, outstanding examples of vegetation communities, range extensions, and disjunct populations are all cases where species or their habitats are especially valuable.

A species or vegetation community is especially important when it plays a key role in the success of another species or maintains the structure of an ecological community. Habitat or a given geographic area may also play an equally important role when it is vital to the long-term reproductive success of a species. "Especially valuable" species or habitat doesn't necessarily have to be rare to be worthy of protection. For instance, the common western dog violet (*Viola adunca*) is the host plant for the rare Behrens's silverspot butterfly. Although

the plant is not on any list because it is common and widespread, it is the only plant species that a particular rare butterfly uses as a substrate to lay its eggs. The crucial role this plant plays in the lifecycle of the butterfly warrants surveys for the western dog violet to ensure that it is not impacted by development.

2.2.3 Disturbance

The second test of determining ESHA asks if a species or its habitat could be easily disturbed or degraded by human activities and developments. Many species and vegetation communities are adapted to certain natural disturbance regimes such as flooding, landslides, forest openings from windthrow, fire, and reduced competition from herbivory. However, today many of these natural processes are absent from the ecosystem. Most fires are suppressed before moving across the landscape, rivers are confined to engineered channels to reduce meander, and forest openings are now created by roads.

Although some rare species benefit from recently disturbed areas, they are not necessarily free of susceptibility to disturbance. For example, a rare Mendocino cypress growing on an old logging road may be easily disturbed if the road is to be reopened. However, a rare coast lily growing in mowed roadside vegetation may benefit from frequent disturbance to reduce competition. In the latter case, a lack of properly timed disturbance may be the disturbance itself. Thus, intensity and frequency of disturbance and the species' resilience to disturbance should all be examined.

Disturbance can also be measured cumulatively, and the gradual change or reduction in size of a species' habitat can happen at a slow enough pace to go unnoticed until the longevity of the species is seriously threatened. Increasing habitat fragmentation from rural development, the spread of exotic species from landscaping, and fuel clearance for fire hazard reduction around houses (PRC § 4291.), are all activities that can make it harder for plants to reproduce and that can make viable populations more susceptible to disturbance.

3 Types of ESHA's

The City of Fort Bragg's Coastal Zoning Code Section 20.496.010 defines coastal resources that constitute ESHA's:

- Any habitat area that is rare or especially valuable because of their special nature or role in an ecosystem and is easily degraded or disturbed by human activities or developments.
- Any habitat area of plant or animal species designated as rare, threatened, or endangered under State or Federal law.
- Any habitat area of species designated as Fully Protected or Species of Special Concern under State law or regulations.
- Any habitat area of plant species for which there is compelling evidence of rarity, for example, those designated 1b (Rare or endangered in California and elsewhere) or 2 (rare, threatened or endangered in California but more common elsewhere) by the California Native Plant Society.

The sections below describe the types of ESHA's listed above.

3.1 Wetlands and Aquatic Features

3.1.1 Wetlands

Depending on the type of wetland, wetlands can be regulated by the US Army Corps of Engineers, the State Water Resources Control Board, the California Department of Fish and Wildlife, the California Coastal Commission, or the City of Fort Bragg. The definition of wetland upon which the Coastal Commission relies is found in the Coastal Act:

Wetland means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. (PRC § 30121.)

While these definitions may evoke images of cattail-rimmed ponds replete with waterfowl, the diversity of the California landscape lends itself to an extensive range of wetland habitats—from seeps, vernal pools, and seasonally wet meadows below the ground surface to muddy banks of estuarine inlets. For this reason, wetlands may not be readily apparent to the casual observer. The presence of hydrophytes (plants adapted for aquatic environments) and/or the presence of hydric soils (soils developed under saturated conditions long enough to form anaerobic conditions) are additional parameters used to identify wetlands under the Coastal Act. The Coastal Commission’s regulations for determining jurisdictional boundaries establish a “one parameter definition” requiring the presence of only one of three parameters: wetland hydrology, plants, or soils, to establish wetland conditions:

1. Wetland means lands which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. Wetlands are usually lands where the water table is at, near or above the land surface long enough to do either of the following: a) promote the formation of (hydric) soils that are saturated with water at or near the surface and are deficient of oxygen long enough during the growing season to result in soil properties that reflect dominate wetness characteristics near the soils surface (within 10"); or b) support the growth of hydrophytic plants which grow in water or in wet habitats, and include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. The upland limit of a wetland shall be defined as:
 - A. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;
 - B. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or
 - C. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.
2. The term “wetland” shall not include wetland habitat created by the presence of and associated with agricultural ponds and reservoirs where:
 - A. the pond or reservoir was in fact constructed by a farmer or rancher for agricultural purposes; and
 - B. there is no evidence (e.g., aerial photographs, historical survey, etc.) showing that wetland habitat pre-dated the existence of the pond or reservoir. Areas with drained hydric soils that are no longer capable of supporting hydrophytes shall not be considered wetlands. (FBMC § 17.100.020, see also 14 CCR § 13577 (b).)

The US Army Corps of Engineers, on the other hand, in most circumstances requires the presence of all three parameters to satisfy the definition of “wetland” under the Clean Water Act.

The California Department of Fish and Wildlife, under CEQA, acts as a trustee agency responsible for conserving, protecting, and managing California’s fish, wildlife, and native plant resources. By commenting on projects through the CEQA process, CDFW can impose conditions or mitigations even when the applicant does not directly acquire a permit through the agency. Therefore, the agency’s definition of a wetland is used when

delineating wetlands. After implementing the *California Wetlands Conservation Policy* (Executive Order W-59-93), commonly referred to as the no-net-loss of wetlands policy, CDFW further defined “wetlands” by adopting the U.S. Fish and Wildlife Service (USFWS) nonregulatory, technical definition:

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin, 1979).

This definition includes, swamps; freshwater, brackish water, and saltwater marshes; bogs; vernal pools, periodically inundated saltflats; intertidal mudflats; wet meadows; wet pastures; springs and seeps; portions of lakes, ponds, rivers and streams; and all other areas which are periodically or permanently covered by shallow water, or dominated by hydrophytic vegetation, or in which the soils are predominantly hydric in nature.

While hydrology is the underlying feature that creates wetlands, the Coastal Commission’s “Statewide Interpretive Guidelines for Wetlands and Other Wet Environmentally Sensitive Habitat Areas” (1981) recognizes that there may be situations where the mere presence of just one parameter may not be representative of wetland conditions. They state, “... the presence or absence of hydrophytes and hydric soils make excellent physical parameters upon which to judge the existence of wetland habitat areas for the purposes of the Coastal Act, but they are not the sole criteria.” The wetland delineator must determine if the soils and plants indicative of hydrology actually arose from hydrologic condition or by some other means.

3.1.2 Watercourses (Streams and Rivers)

As CDFW exercises jurisdiction or agency review for wetlands, by way of the CEQA process they can similarly administer permits for activities that affect water watercourses and other bodies of water or impose conditions on a project that affects these resources. The regulatory authority (Fish & Game Code § 1602.) requiring applicants to notify CDFW of potential impacts to watercourses applies to any river, lake, or stream, including those that are perennial, ephemeral, or intermittent and defines “stream,” which includes creeks and rivers, as:

[...] a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.” (4 CCR § 1.72.)

The Coastal Commission (1981) states: A “stream or a “river” is a natural watercourse as designated by a solid line or dash and three dots symbol shown on the United States Geological Survey map most recently published, or any well-defined channel with distinguishable bed and bank that shows evidence of having contained flowing water as indicated by scour or deposit of rock, sand, gravel, soil, or debris.”

The Forest Practice Rules use a similar definition for watercourses except it includes man-made watercourses. The lowest order of natural watercourse (Class III) is defined as one with “No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high water flow conditions [...]. (14 CCR § 916.5 [936.5, 956.5], Table 1.)

In the Coastal Zone, streams are described further when the Coastal Commission’s jurisdictional boundaries are defined:

Measure 100 feet landward from the top of the bank of any stream mapped by USGS on the 7.5 minute quadrangle series, or identified in a local coastal program. The bank of a stream shall be

defined as the watershed and relatively permanent elevation or acclivity at the outer line of the stream channel which separates the bed from the adjacent upland, whether valley or hill, and serves to confine the water within the bed and to preserve the course of the stream. In areas where a stream has no discernable bank, the boundary shall be measured from the line closest to the stream where riparian vegetation is permanently established. For purposes of this section, channelized streams not having significant habitat value should not be considered. (14 CCR § 13577 (a).)

The City of Fort Bragg echoes the definition “stream” in the Coastal Act, with the last sentence omitted (FBCLUDC § 17.100.020.) They provide a definition of “riparian corridor” associated with watercourses:

A general term for lands running parallel to and along a creek or stream, which lands constitute the ecosystem and potentially environmentally sensitive habitat for animal and plant life of said creek or stream. (FBCLUDC § 17.100.020.)

The City also describes non-wetland, or “waters of the United States:”

Waters of the United States. Surface watercourses and water bodies as defined at 40 CFR § 122.2. including all natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry storm water at and during all times and seasons. (FBCLUDC § 17.100.020.)

3.1.3 Estuaries

Estuaries are transition zones between rivers and oceans and therefore have at least one watercourse flowing into them and have a connection to the open ocean. The City of Fort Bragg, and the Coastal Commission (1981) in part, defines estuaries as such:

A coastal water body, usually semi-enclosed by land, having open, partially obstructed, or intermittent exchange with the open ocean, and in which ocean water is at least occasionally diluted by freshwater from the land. The salinity level may be periodically increased to above that of the open ocean due to evaporation. The mean high tide line shall be defined as the statistical mean of all the high tides over the cyclical period of 18.6 years, and shall be determined by reference to the records and elevations of tidal benchmarks established by the National Ocean Survey. In areas where observations covering a period of 18.6 years are not available, a determination may be made based on observations covering a shorter period, provided they are corrected to a mean value by comparison with observations made at some suitably located control tide station. (FBCLUDC § 17.100.020.)

The Commission (1981) further distinguishes between wetlands and estuaries by using the USFWS’s definition of “shallow water” to define estuaries, and “open coastal waters,” as anything deeper than the extreme low water of spring tide for tidal areas and 2 meters for non-tidal areas. Any waters above would be considered wetlands.

3.1.4 Lakes

Although the difference between a lake and pond is arbitrary, it is generally accepted that a lake is the larger of the two. The Coastal Commission (1981) defines “lakes” as such:

“A “lake” is a confined, perennial water body mapped by the United States Geologic Survey on the most current 7.5 minute quadrangle series. (p. 34.) [...] or identified in a local coastal program.” (p. 88.)

3.1.5 Open Coastal Waters and Coastal Waters

The term “open coastal waters” refers to what would generally be called “ocean” with a distinction made between “estuary” and “ocean.” The Coastal Commission (1981) states:

The terms "open coastal waters" or "coastal waters" refer to the open ocean overlying the continental shelf and its associated coastline. Salinities exceed 30 parts per thousand with little or no dilution except opposite mouths of estuaries.

Some portions of open coastal waters, generally areas without especially significant plant or animal life, may not be considered environmentally sensitive habitat areas. Environmentally sensitive habitat areas within open coastal waters may include "Areas of Special Biological Significance", as identified by the State water Resources Control Board, habitats of rare or endangered plant and animal species, nearshore reefs, rocky intertidal areas (such as tidepools), and kelp beds.

3.2 Vegetation Communities

3.2.1 Natural Communities

The standard for vegetation classification in California is *A Manual of California Vegetation, 2nd Edition* (MCV) (Sawyer, Keeler-Wolf, & Evens 2009), which is maintained by CDFW's Vegetation Classification and Mapping Program (VegCAMP) and is based on the National Vegetation Classification System (NVCS). This system is comprised of two levels of hierarchy: vegetation alliances, which are vegetation patterns defined by dominant species at a landscape or statewide level, and vegetation associations, which are patterns or combinations of plant species viewed at a more local level, such as ecological regions, mountain ranges, or preserves.

CDFW maintains the List of Vegetation Alliances and Associations (Natural Communities List) (CDFW 2010) in the CNDDDB and has assigned global and state rankings to many vegetation alliances. Those alliances and all associations under them with a state ranking of S1-S3 are considered to be highly imperiled and can be considered ESHA under most circumstances.

3.2.2 Riparian Habitat

Riparian habitat is associated with a hydric feature such as a stream, pond, or sometimes tidewater; however, it is not necessarily a wetland feature as defined in the Coastal Act. While the US Fish and Wildlife Service's Cowardin classification system of wetlands and deepwater habitats includes riparian areas as a kind of wetland, the Coastal Commission (1981) has made a distinction between “wetland” and “riparian habitat,” with the latter referring to riparian vegetation and the animals that live in or use these plants. Mendocino County has made the same distinction (General Plan, Coastal Element Appendix 8).

In the same document the Coastal Commission makes the following definition: “A ‘riparian habitat’ is an area of riparian vegetation. This vegetation is an association of plant species which grows adjacent to freshwater watercourses, including perennial and intermittent streams, lakes, and other bodies of fresh water.” These plant species that make up the riparian vegetation either require or tolerate high levels of soils moisture, and are therefore considered hydrophytic. The extent of riparian vegetation is determined by the extent of vegetation where riparian hydrophytes are predominant, and it is measured from the source of water to the upland limit of vegetation where riparian hydrophytes are no longer predominant.

The City of Fort Bragg defines “riparian corridor” as, “A general term for lands running parallel to and along a creek or stream, which lands constitute the ecosystem and potentially environmentally sensitive habitat for animal and plant life of said creek or stream.” (FBMC § 17.100.020.)

3.3 Special-Status Species

“Special-status species” is a general term for plant and animal species that warrant special consideration and/or protection due to their rarity. They can include species listed as endangered or threatened under the Federal or California Endangered Species Acts, species listed as rare under the California Native Plant Protection Act, or species not formally listed but considered rare or uncommon by government agencies or non-government organizations, such as species on the periphery of their range or those with unique or highly specific habitat requirements. (See Leppig & White 2006.)

3.3.1 Special-Status Plants

CDFW maintains a list of plants, including some bryophytes and lichen, inventoried by the California Natural Diversity Database (CNDDDB) (CDFW 2016). For the purposes of this document, special status plants include all plant species that meet one or more of the following criteria outlined in this list, entitled “Special Vascular Plants, Bryophytes, and Lichens List”:

- Taxa listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR § 17.12).
- Taxa listed or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code § 2050 et seq.). A species, subspecies, or variety of plant is endangered when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code § 2062). A plant is threatened when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code § 2067).
- Taxa listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 et seq.). A plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code § 1901).
- Listed as a Sensitive Species by the Bureau of Land Management, U.S. Fish and Wildlife Service, or U.S. Forest Service Sensitive;
- Listed in the California Native Plant Society’s Inventory of Rare and Endangered Plants of 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 that meet the definition of rare or endangered under CEQA § 15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
 - Species considered by the California Department of Fish and Wildlife to be “rare, threatened or endangered in California” (California Rare Plant Rank 1A, 1B, 2A, and 2B);
 - Species that may warrant consideration on the basis of local significance or recent biological information;
 - Some species included on the California Natural Diversity Database’s (CNDDDB) Special Plants, Bryophytes, and Lichens List (CDFW 2015);
 - Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA § 15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.
- Plants of regional or specific interest not on any list above.

3.3.2 Special-Status Animals

3.3.2.1 California Natural Diversity Database

The California Department of Fish and Wildlife maintains a list of animals through the CNDDB and assigns rarity ranks to those taxa on the list. These species, often called “special-status species” are those taxa used for developing a scoping list of potential occurrence in a particular study area, and are those taxa that may be considered for creating ESHA. The “Special Animals List” (CDFW 2016) outlines the criteria for inclusion on the list:

The Special Animals list includes 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 CNDDB to be rare, restricted, declining, or threatened across their range in California.

3.3.2.2 Migratory Bird Regulations

The Migratory Bird Treaty Act of 1918 (MBTA) was enacted in part to stop the commercial trade of birds and their feathers. It protects almost all native nesting birds, with or without special status, by making it illegal to hunt, capture, kill, possess, or sell, among other restrictions, any migratory bird, part, nest, egg, or product. Therefore, projects that propose to modify nesting habitat, such as brush removal, tree trimming, and building demolition, should do so during the non-breeding season or have a biologist survey for birds during the breeding season, February 1 – August 31. Some non-native or domesticated birds are not covered by the MBTA such as feral (rock) pigeon, European starling, house sparrow, Eurasian collared-dove, and domestic waterfowl, including domesticated mallards.

4 Methods

4.1 Historical Landscape

Maps, illustrations, photographs, and oral or written accounts all can be used to illustrate the geographic extent of preexisting conditions. Whenever available, documents were used to estimate the past conditions of vegetation types, inundation, wetlands, and other natural features. With the abundance of aerial photographs available online, recent landscape conditions (usually within the past 25 years) can be estimated. When available, anecdotal and historical information are used to embellish the understanding of the historical landscape.

This report drew on information from topographic maps from 1873 and 1909 and imagery from 1948 and 2014. The two topographic maps, also called t-sheets or coastal surveys, were shoreline surveys created to provide an authoritative definition of the US high-water line and they also include land features such as structures, roads, waterbodies, stream and vegetation. The surveys were undertaken by the U.S. Coast Geodetic Survey for the need to provide accurate navigational charts for maritime trade and commerce (Grossinger et al. 2005). Digital copies of the topographic maps were georeferenced in GIS (Geographic Information System) using known coordinates and reference points. A more recent perspective of the landscape was used by georeferencing a 1948 aerial photo and acquiring spatially-referenced detailed aerial imagery of the City of Fort Bragg from 2014.

Specifically, these historical maps and photos were used to describe a ditch with freshwater marsh vegetation that occurred within 100 ft to the north of the project site.

4.2 Wetlands

A wetland inventory was conducted on March 23 and June 6 2016 to determine the presence or absence of wetlands and other waters in or adjacent to the study area. This type of scoping survey provides basic information about the site's wetland and hydrological characteristics and is used to determine if a wetland delineation (routine or comprehensive) was needed. Published information and data recorded during a site survey were used to complete the wetland inventory. Background information of wetlands mapped by the National Wetland Inventory (NWI) (2015b) and soils mapped by the Natural Resource Conservation Service (NRCS) was gathered to determine if wetlands have previously been mapped in the area and if the soil is mapped as hydric or partially hydric. Hydrologic indicators, if any, were visually observed and documented and all vegetation communities were mapped, noting if there were areas with a dominance of hydrophytic vegetation.

The USFWS produces wetland maps and geospatial wetland data for the United States and makes these data available to the public (USFWS 2014, 2015). Wetlands are primarily mapped by identifying them from aerial imagery and then classified using the Cowardin system (FGDC 2009). These maps are a supplemental tool for onsite wetland inventories and are used with caution as all wetlands have not been mapped and the maps can be limited by scale. Nonetheless, they can provide good background information about the presence of wetlands before the field visit. Geospatial data was used to overlay any NWI wetlands in the study area or vicinity prior to the field visit.

The presence of one of the three wetland indicators (plants, soils, or hydrology) usually warrants the need for a wetland delineation. In such case, and particularly when there are potential impacts to wetlands, each of the three wetland parameters (hydrophytic vegetation, hydric soils, and hydrology) are investigated further in a wetland delineation according to federal standards (Environmental Laboratory 1987, USACE 2010).

4.2.1 Hydrophytic Vegetation

The indicator status assigned to a species designates the probability of that species occurring in a wetland. A species with an indicator of OBL, FACW, or FAC is considered to be typically adapted for life in a wetland (hydrophytic vegetation). A species indicator of FACU and UPL signifies an upland species (Table 1). For species reviewed but given no regional indicator (NI) or species with no known occurrence in the region at the time the list was compiled (NO), the indicator status assigned to the species in the nearest adjacent region is applied. If the species is listed but no adjacent regional indicator is assigned, the species is not used to calculate hydrophytic vegetation indicators. In general, species that are not listed on the wetland plant list are assumed to be upland (UPL) species. If however, it is believed that FAC, NI, NO, or unlisted plant species are functioning as hydrophytes on a particular site, certain procedures outlined in the Regional Supplement (USACE 2010) can be used.

Table 1. Wetland Indicator Status Groups

Wetland Indicator Status	Definition
Obligate Wetland (OBL)	Almost always occur in wetlands
Facultative Wetland (FACW)	Usually occur in wetlands, but may occur in non-wetlands
Facultative (FAC)	Occur in wetlands or non-wetlands
Facultative Upland (FACU)	Usually occur in non-wetlands, but may occur in wetlands
Obligate Upland (UPL)	Almost never occur in wetlands
No Indicator (NI)	Reviewed but given no regional indicator
Not Occurrence (NO)	No known occurrence in the region at the time the list was compiled

To the greatest extent possibly, vegetation is classified using the vegetation classification of alliances in Manual of California Vegetation (2009). Each species' wetland indicator status was checked from the most recent list of hydrophytic plants (Lichvar 2016) and if there was a concentration of hydrophytic plants in any area, this was noted and further study recommended. Hydric vegetation is the predominant indicator that warrants further study for a wetland delineation.

4.2.2 Hydric Soils

The Natural Resource Conservation Service defines a hydric soil as: "... a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." (Federal Register 1994.) Soils formed over long periods of time under wetland (anaerobic) conditions sometimes possess characteristics that indicate they meet the definition of hydric soils. NRCS maintains published soil surveys for counties across the United States that provide information on the origin of soils, their composition and texture, and their use for agriculture. Additionally, NRCS maintains the "Hydric Soils List of California," which lists soils from county soil surveys that are sufficiently wet in the upper part to develop anaerobic conditions during the growing season.

The most current list of hydric soils (NRCS 2014) was reviewed prior to the field visit and a soil map and report of the study area were produced using NRCS's online Web Soil Survey (NRCS 2015). These reports are useful in determining the composition of the soil map units, which are rarely comprised of entirely the same soil. For example, many soils that are listed as "hydric" are comprised of other non-hydric soils. The soil map units were overlaid on the project site using GIS data from the Soil Survey Geographic (SSURGO) Data Base, the same data as the Web Soil Survey. Essentially, this data is the digitized version of the original county soil survey. Both of these sources are excellent off-site ancillary tools to aid on-site field investigations of wetland determinations.

If the study area contains hydric or partially soils listed previously mapped by the Natural resource Conservation Service, further may be recommended. Generally, mapped or unmapped areas that truly have hydric soils will have at least some areas with hydrophytic vegetation. Rarely is further study recommended when hydric soils are mapped by the NRCS but there is no predominance of hydrophytes.

4.2.3 Wetland Hydrology

Wetland hydrology is a term which encompasses hydrologic characteristics of areas that are periodically inundated or saturated within 12 inches of the surface at some time during the growing season. Recorded data can be used when available to determine wetland hydrology. Recorded data showing inundation or saturation within 12 inches of the surface for a minimum of five percent of the growing season (approximately 14 days) is considered evidence of wetland hydrology. When studies are conducted at a time of year when surface water, ground water, or saturated soils cannot be observed, evidence of wetland hydrology is based on observation of the hydrologic indicators described in the Regional Supplement (USACE 2010). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, surface sediment deposits, and drift lines, or indirect indicators (secondary indicators), such as oxidized root channels, algal mats, or geomorphic position. If indirect or secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The study area examined was examined for primary and secondary hydrologic indicators during the field visits.

4.3 Watercourses

Before the field survey, USGS topographic quads were reviewed to check for any blue line intermittent or perennial streams. If present, they were confirmed in the field and the presence of any watercourses not on the quads was noted and mapped, including the associated riparian vegetation.

Natural channels and excavated ditches that are potentially watercourses as defined in the Regulatory Background above are examined for their ability of being capable to transport sediment to larger watercourses downstream under normal high water flow.

Some general measurements of the watercourse bed, bank, and channel are described, such as streambed width and bankfull width. For well-defined streams these measurements may be useful in determining the flood plain zone, or flood prone width, to determine any potential interaction with proposed activities if streamflow is greater than bankfull.

4.4 Natural Communities

A scoping list of vegetation alliances occurring in coastal Mendocino County with a global and state ranking in CNDDDB was derived from the California Department of Fish and Wildlife's "List of Vegetation Alliances and Associations" (2010) (Appendix B). Vegetation communities were mapped during field visits by ground-truthing aerial photography and then described using the naming convention in *The Manual of California Vegetation, 2nd Edition* (MCV2), (Sawyer et al. 2009) whenever the vegetation conformed to the standards. Any vegetation communities with a global or state ranking were noted. When discrete stands of vegetation could not be adequately described using MCV2, the Holland (1986) vegetation type (CDFW 2010) was used. Some stands did not fall into either category and were described by the dominant species or land cover type.

4.5 Botanical Resources

Four field surveys were conducted on January 12, March 23, April 15, June 6, and July 15 to document all plant species occurring in the study area. A target list of sensitive plants potentially occurring on site (Table 2) was developed from a larger scoping list of sensitive plants occurring throughout the coastal region of southern Humboldt to northern Sonoma counties. The scoping list includes plants with a California Rare Plant Rank of 1-4 and any plants with regional significance not on any list (Appendix B). The focal target species includes those plants with a moderate or high potential for occurrence within the study area based on the species' habitat preferences.

Sometimes rare plants are known from the immediate area—sometimes as close as a quarter mile or less—but they are not included in the target list based on the absence of a specific habitat such as wetlands or coastal bluffs. This is especially true on smaller sites of several acres where survey coverage of all habitat areas is nearly 100% or when the target list for a smaller site is further reduced after the first early-season visit. While the target list is meant to focus attention on a smaller suite of species, all species from the scoping list, even those not on the scoping list, are considered because all plants are identified to the level of species. In general, larger study areas have larger target lists.

Table 2. Target List of Special Status Plants Potentially Occurring in the Study Area.

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Blooming Period
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	1B.1	G4G5T2	S1	None	None	June - October
<i>Agrostis blasdalei</i>	Blasdale's bent grass	1B.2	G2	S2	None	None	May - July
<i>Angelica lucida</i>	sea-watch	4.2	G5	S2S3	None	None	May - September
<i>Blennosperma nanum</i> var. <i>robustum</i>	Point Reyes blennosperma	1B.2	G4T2	S2	CR	None	February - April
<i>Calamagrostis bolanderi</i>	Bolander's reed grass	4.2	G4	S4	None	None	May - August
<i>Calamagrostis foliosa</i>	leafy reed grass	4.2	G3	S3	CR	None	May - September
<i>Castilleja ambigua</i> subsp. <i>ambigua</i>	johnny-nip	4.2	G4T3T4	S3	None	None	March - August
<i>Castilleja littoralis</i>	Oregon coast paintbrush	2B.2	G4G5T4	S3	None	None	June
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	1B.2	G2	S2	None	None	(vegetation: all year)
<i>Ceanothus gloriosus</i> var. <i>gloriosus</i>	Point Reyes ceanothus	4.3	G4T4	S4	None	None	(vegetation: all year)
<i>Chorizanthe howellii</i>	Howell's spineflower	1B.2	G1	S1	CT	FE	May - July
<i>Clarkia amoena</i> subsp. <i>whitneyi</i>	Whitney's farewell-to-spring	1B.1	G5T1	S1	None	None	June - August
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	1B.2	G1	S1	None	None	April - June
<i>Cuscuta pacifica</i> var. <i>papillata</i>	Mendocino dodder	1B.2	G5T1	S1	None	None	July - October
<i>Erigeron supplex</i>	supple daisy	1B.2	G2	S2	None	None	May - July
<i>Erysimum concinnum</i>	bluff wallflower	1B.2	G3	S3	None	None	March - May
<i>Erysimum menziesii</i>	Menzies wallflower	1B.1	G1	S1	CE	FE	March - June
<i>Gilia capitata</i> subsp. <i>chamissonis</i>	blue coast gilia	1B.1	G5T2	S2	None	None	April - July
<i>Gilia capitata</i> subsp. <i>pacifica</i>	Pacific gilia	1B.2	G5T3T4	S2	None	None	April - August
<i>Gilia millefoliata</i>	dark-eyed gilia	1B.2	G2	S2	None	None	April - July
<i>Glehnia littoralis</i> subsp. <i>leiocarpa</i>	American glehnia	4.2	G5T5	S3.2	None	None	May - August
<i>Hemizonia congesta</i> subsp. <i>congesta</i>	white seaside tarplant	1B.2	G5T2T3	S2S3	None	None	April - November
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	1B.2	G4T2T3	S2S3	None	None	March - June
<i>Horkelia marinensis</i>	Point Reyes horkelia	1B.2	G2	S2	None	None	May - September
<i>Hosackia gracilis</i>	harlequin lotus	4.2	G4	S3	None	None	March - July
<i>Iris longipetala</i>	coast iris	4.2	G3	S3	None	None	March - May
<i>Lasthenia californica</i> subsp. <i>bakeri</i>	Baker's goldfields	1B.2	G3TH	SH	None	None	April - October
<i>Lasthenia californica</i> subsp. <i>macrantha</i>	perennial goldfields	1B.2	G3T2	S2	None	None	January - November
<i>Layia carnosa</i>	beach layia	1B.1	G2	S2	CE	FE	March - July
<i>Oenothera wolfii</i>	Wolf's evening-primrose	1B.1	G1	S1	None	None	May - October
<i>Phacelia insularis</i> var. <i>continentis</i>	North Coast phacelia	1B.2	G2T1	S1	None	None	March - May
<i>Polemonium carneum</i>	royal sky pilot	2B.2	G3G4	S2	None	None	April - September
<i>Sanguisorba officinalis</i>	great burnet	2B.2	G5?	S2	None	None	July - October
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	4.2	G3	S3	None	None	March - August
<i>Sidalcea malviflora</i> subsp. <i>patula</i>	Siskiyou checkerbloom	1B.2	G5T2	S2	None	None	May - August
<i>Stellaria littoralis</i>	beach starwort	4.2	G3	S3	None	None	March - July
<i>Triquetrella californica</i>	coastal triquetrella	1B.2	G1	S1	None	None	all year

4.6 Wildlife Resources

Five field surveys for special status animals were conducted on the same dates as the botanical surveys: January 12, March 23, April 15, June 6, and July 15 2016. A target list was developed from a scoping list of special-status animals from the California Department of Fish and Wildlife with potential for occurrence in coastal Mendocino County (Table 3) (Appendix B). The target list was developed in the same manner as the target list of plants mentioned above.

Table 3. Target List of Special Status Animals Potentially Occurring in the Study Area.

Scientific name Common name	ESA (Federal)	CESA (State)	Global Rank	State Rank	Potential for Occurrence within Project Area
INVERTEBRATES					
Snails, Slugs, and Abalone (<i>GASTROPODA</i>)					
<i>Noyo intersepta</i> Ten Mile shoulderband	None	None	G2	S2	Potential occurrence – known from Glass Beach.
Ants, Bees, & Wasps (<i>INSECTA, Hymenoptera</i>)					
<i>Bombus occidentalis</i> Western bumble bee	None	None	G2G3	S1	Potential habitat based on limited information.
AMPHIBIANS & REPTILES					
Frogs (<i>RANIDAE</i>)					
<i>Rana aurora aurora</i> northern red-legged frog	None	None	G4 [T2]	S2?	Potential upland habitat because freshwater marsh close by.
BIRDS					
Cormorants (<i>PHALACROCORACIDAE</i>)					
<i>Phalacrocorax auritus</i> double-crested cormorant (nesting colony)	None	None	G5	S3	Potential nesting site.
Hawks, Kites, Harriers, & Eagles (<i>ACCIPITRIDAE</i>)					
<i>Circus cyaneus</i> Northern harrier (nesting)	None	None	G5	S3	Potential nesting habitat nearby.
<i>Pandion haliaetus</i> osprey (nesting)	None	None	G5	S3	Potential nesting habitat on sea stacks.
<i>Falco peregrinus anatum</i> American peregrine falcon (nesting)	Delisted	Delisted	G4T4	S3S4	Potential nesting habitat on sea stacks, offshore rocks.
Oystercatchers (<i>HAEMATOPODIDAE</i>)					
<i>Haematopus bachmani</i> Black oystercatcher (nesting)	None	None	G5	S4	Potential habitat for nesting on offshore rocks.
Gulls & Terns (<i>LARIDAE</i>)					
<i>Larus californicus</i> California gull (nesting)	None	None	G5	S2	Poor habitat due to lack of offshore islands.
Auklets, Puffins, & Relatives (<i>ALCIDAE</i>)					
<i>Fratercula cirrhata</i> tufted puffin (nesting colony)	None	None	G5	S2	Potential habitat for nesting on offshore rocks and cliff faces.
Owls (<i>STRIGIDAE</i>)					
<i>Athene cunicularia</i> burrowing owl (burrow sites and some winter sites)	None	None	G4	S3	Low potential habitat in ground squirrel burrows.
Sparrows, Buntings, Warblers, & Relatives (<i>EMBERIZIDAE</i>)					
<i>Ammodramus savannarum</i> grasshopper sparrow (nesting)	None	None	G5	S2	Potential nesting habitat.
<i>Passerculus sandwichensis alaudinus</i> Bryant's savannah sparrow (nesting)	None	None	G5T2T3	S2S3	Potential nesting habitat.
MAMMALS					
Evening Bats (<i>VESPERTILIONIDAE</i>)					
<i>Lasiurus blossevillei</i> western red bat	None	None	G5	S3?	Not good potential habitat.
<i>Lasiurus cinereus</i> hoary bat	None	None	G5	S4?	Potential winter roosting habitat.
<i>Myotis yumanensis</i> Yuma myotis	None	None	G5	S4?	Low potential for roosting.
Sea Lions & Fur Seals (<i>OTARIIDAE</i>)					
<i>Arctocephalus townsendi</i> Guadalupe fur-seal	Threatened	Threatened	G1	S1	Potential haulout on beach or rocks.
<i>Callorhinus ursinus</i> northern fur-seal	None	None	G3	S1	Potential haulout on beach or rocks.
<i>Eumetopias jubatus</i> Steller (=northern) sea-lion	Delisted	None	G3	S2	Potential haulout on beach or rocks.

5 Results

5.1 Historical Landscape

An historical perspective of the Fort Bragg headlands is available from maps made in 1873 and 1909 by the Coast and Geodetic Surveys of the Department of Commerce and Labor, later renamed the Department of Commerce (Figure 4). These maps—also called coastal surveys, t-sheets, or topographic sheets—are shoreline surveys that show the U.S. high-water line and other features such as road, structures, and vegetation. Often, the surveyor creating the map would use detailed symbology to differentiate vegetation types. For instance, the small 5-acre coastal marsh that occurred in Soldier’s Bay to the north of the study area was drawn using two symbols, indicating two distinct patterns in estuarine or marsh vegetation. The maps also included symbols for the sandy beach, transitional vegetation between the marsh and woods, and wooded areas, as well as detailed sinuosity of the creek.

The map from 1873 shows the study area occurring in an area without any symbology for vegetation. However, most of the coastal bluffs were covered in trees, which is remarkably different than the open headlands of today. Based on soil and proximity to the coast, most likely the trees on the headlands were a mix of bishop pines (*Pinus muricata*) and shore pine (*Pinus contorta* subsp. *contorta*), or a predominance of one or the other species, and not predominantly redwood (*Sequoia sempervirens*). The 1909 map depicts the study area with a symbol for low-lying vegetation or grass, and it shows the change in vegetation that followed the growth of Fort Bragg—namely cultivation and clearing of the pine forest. By this time, the coastal marsh in Soldier’s Bay was developed and the small streams on the headlands were dammed.

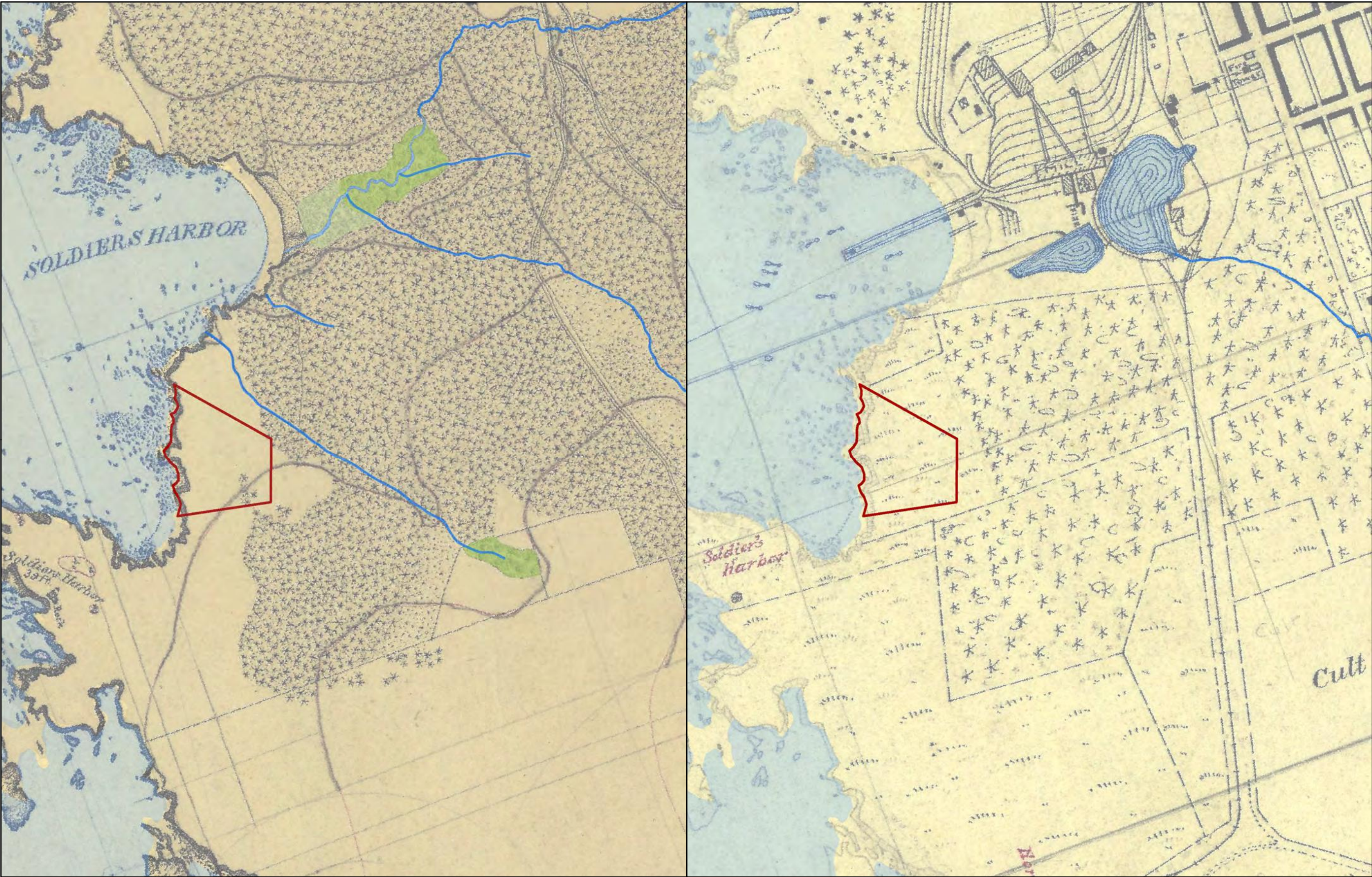
A comparison of 1948 and 2014 aerial photos reveals even more alteration of the hydrology in the vicinity of the study area (Figure 5). In 1948 the mill pond used to extend further south and east. Because of the lack of detail from the aerial photo and the presence of a tree canopy, it is unclear if the mill pond extended even further west towards a series of excavated ponds that are present today. Most notably the mill pond and excavated ponds occur in the same alignment as the creek that was drawn in the 1873 topographical survey map. The maps and photos bracketed by over 140 years shows that a small wetland ditch of today is actually a modified remnant of the natural stream that once occurred in the same location.

5.1 Wetlands and Aquatic Features

The wetland inventory conducted on January 12, March 23, and June 6, 2016 used background information of wetlands mapped by the National Wetland Inventory (USFWS 2015a), soils mapped by the NRCS (2015a), and historical maps in combination with onsite vegetation mapping and inspection of hydrological indicators to determine if a routine wetland delineation was needed. Several areas were documented as wetlands and waters of the U.S. The wetlands and waters documented from the study area were the Pacific Ocean, considered as “waters of the U.S.”, a freshwater marsh, and several freshwater seeps on the coastal bluff (Figure 6).

The sludge ponds, clarifiers, and biofilters were not considered wetlands based on the Clean Water Act § 401.11 (2) (vi), which explicitly defines “detention and retention basins built for wastewater recycling; [...] percolation ponds built for wastewater recycling; and water distributary structures built for wastewater” as not being “waters of the U.S.”

The freshwater seeps were inaccessible on the steep bluff face and were documented on the bluff top with binocular, which proved sufficient for analyzing wetland conditions. A wetland inventory was sufficient for analyzing wetland parameters of the freshwater marsh (ditch) where a fence and locked gate separated the wetland from the project site and where the equipment staging area was 50 ft at the nearest point over nearly level ground to the wetland ditch.



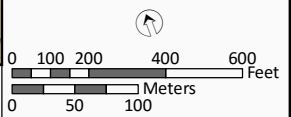
No liability is made either for any errors, omissions, or inaccuracies in the information provided regardless of the cause of such or for any decision made, action taken, or action not taken by the user in the reliance upon any maps or information provided herein. The information on these maps is not intended to replace engineering, financial or primary records research.

NOTES: Original t-sheets can be downloaded from <http://historicalcharts.noaa.gov/historicals/search#mainTitle>. For further information on t-sheets from a coastal wetland mapping project from southern CA see: <http://www.caltsheets.org/>

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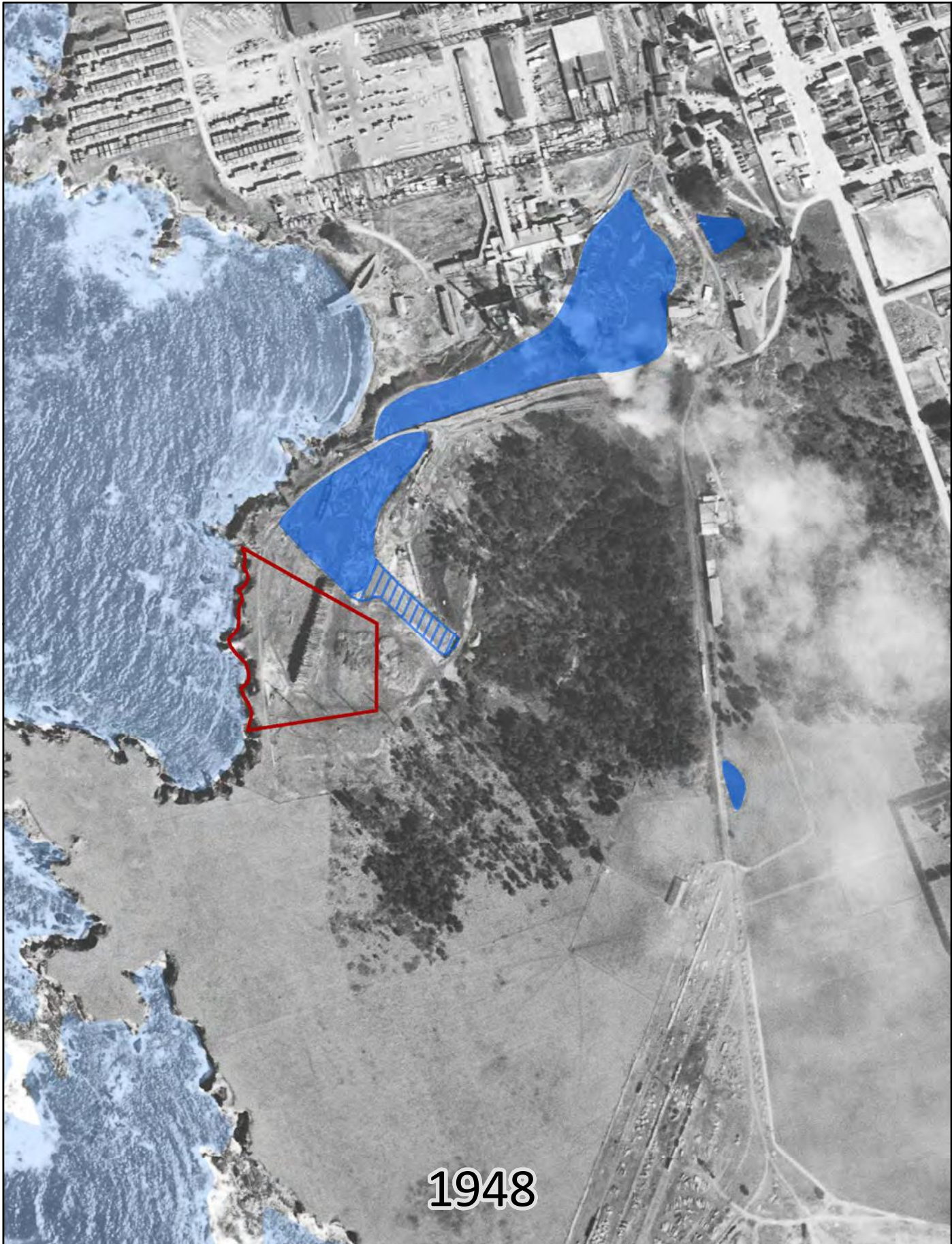
Historical Survey Maps, 1873 & 1909
City of Fort Bragg Wastewater Treatment Facility Upgrade

DATE: 06/28/2016
PCS: UTM Zone 10, NAD 83
DRAWN: Maslach
SCALE: 1:6,000 1 in = 500 ft



Two topographic maps, or t-sheets, are laid side by side--on the left, a map from 1873, on the right a map from 1909. The site of the present-day City of Fort Bragg Wastewater Treatment Facility is outlined in red on digital copies of the original parchment maps. The Pacific Ocean, streams, ponds, and marshes are colored to highlight their place on the landscape, but all other text, symbols, and marks are from the original maps. With the perspective of an historical landscape, it is interesting to note that the stream and 5-acre coastal marsh in Soldier's Bay from the 1873 map had been converted to a human-made mill pond by 1909. However, it's doubtful that all the streams appearing on the 1873 map that flow into Soldier's Bay were obliterated by 1909 simply because they don't appear on the newer map. Some change, although not quantified, would likely be attributed to the change in personnel as different surveyors mapped the same area years later. Without doubt, these maps show that the Fort Bragg Headlands were mostly wooded areas with streams and marshes in the low-lying areas before development of the mill began.

Figure 04



1948



2014

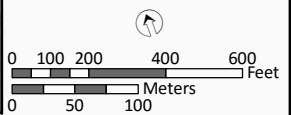
No liability is made either for any errors, omissions, or inaccuracies in the information provided regardless of the cause of such or for any decision made, action taken, or action not taken by the user in the reliance upon any maps or information provided herein. The information on these maps is not intended to replace engineering, financial or primary records research.

NOTES: Hydrological features were digitized from aerial photos and not from field delineations. Some errors likely occur from misinterpreting the edge of ponds and missing potential ponds in the forested areas. Hatched lines represent areas of possible surface water.

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Aerial Photos, 1948 & 2014
City of Fort Bragg Wastewater Treatment Facility Upgrade

DATE: 06/28/2016
PCS: UTM Zone 10, NAD 83
DRAWN: Maslach
SCALE: 1:6,000 1 in = 500 ft



A comparison of aerial photographs from 1948 and 2014 illustrates the change in vegetation and development that occurred over 65 years on and near the City of Fort Bragg's wastewater treatment facility property (study area shown in red). Most notably, the large stand of trees, which are likely bishop pine, had been removed for the construction of new facilities for the mill, and by 2014, nearly all of the structures associated with the mill had been demolished. Also noteworthy is the change in shape of the mill pond. Where a portion of the pond used to extend south and eastward, today only a remnant wetland ditch occurs in the same area. Furthermore, the pond and wetland ditch occur in nearly the same alignment as the natural stream and marsh shown in the 1873 topographic map in Figure 4.

Figure 05

Summary of Hydrological Features within the Study Area						
Hydrological Feature	Coastal Act	Clean Water Act	Hydrophytic Vegetation	Hydric Soil	Hydrology	Area within Study Area
Pacific Ocean	Waters of the US	Waters of the US	NA	NA	NA	2 acres
Monkey Flower Seeps	Wetland	Other Waters	Yes	Not Examined	Yes	140 sq ft
Freshwater Marsh	Wetland	Potential Wetland	Yes	Not Examined	Yes	0.064 acres
Sludge Ponds	Not a Wetland	Not a Wetland	NA	NA	NA	NA

The soil map unit for the study area and the entire extent of this map is mapped as "Urban land."

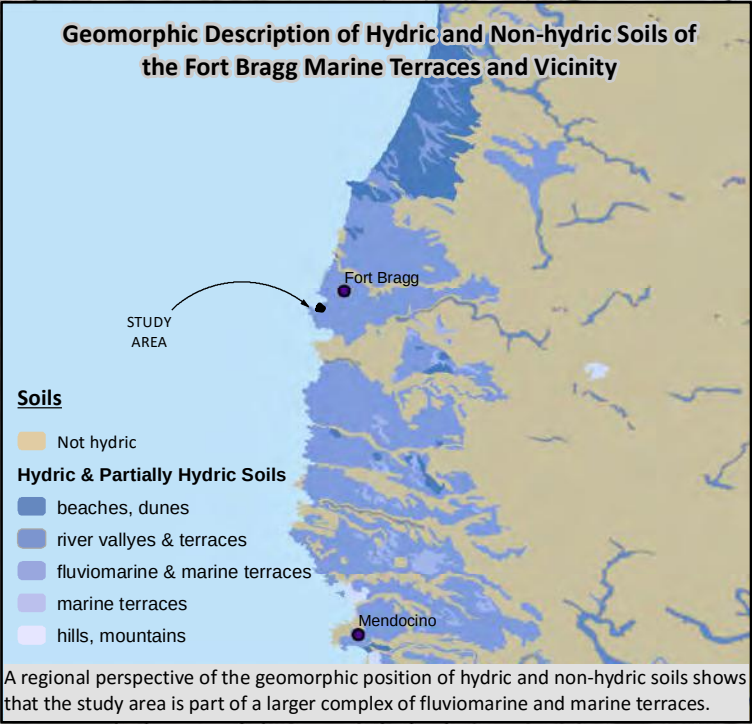
Characteristics	Soil Map Units
Major components	Urban land: 75%
Minor components	8 other units, 3% each (see soil report in Appendix)
Runoff class	Very high
Frequency of ponding	0-14%
Hydric Classification	Partially hydric

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NOTES: NWI wetland data from USFWS, 2015; www.fws.gov/wetlands/Data/Data-Download.html. NRCS soil data from SSURGO database, 2015; <http://sdmdataaccess.nrcs.usda.gov/>; 2014 aerial imagery from the City of Fort Bragg.

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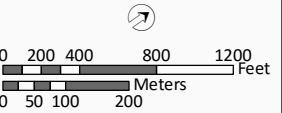
Wetland Inventory Map
City of Fort Bragg Wastewater Treatment Facility Upgrade



Legend

- Study Area Parcel
- Project Elements
- Buffers (30' & 100')
- Sample Point
- Wetland Ditch
- Monkey Flower Seeps
- Historical Stream
- NWI Wetlands**
 - Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
 - Freshwater Pond

DATE: 08/08/2016
PCS: UTM Zone 10, NAD 83
DRAWN: Maslach
SCALE:1:12,000; 1 in = 1,000 ft



The NWI mapped most surface waters of the treatment plant as wetlands; however, these are not considered wetlands under the Clean Water Act. A wetland inventory from this 2016 study identified the Pacific Ocean and freshwater seeps as “waters of the U.S.” and a ditch with hydrophytic vegetation as a freshwater marsh. The ditch drains to a mill pond, which flows to the ocean. A review of an 1873 topographical map shows that a stream used to flow in the area of the ditch and mill pond (Figure 4). Soils in the study area were mapped by the NRCS as “Urban Land, 75%,” with 8 other soil mapping units comprising the remaining 25%. The hydric soils shown in the study area on the inset map are attributed to the minor components of the soil unit. Predominantly the soil in the study area has been highly modified.

Figure 06

If potential impacts could have occurred to the freshwater marsh, a wetland delineation—and not a wetland inventory—would be necessary to examine the wetland parameters in greater detail. Although the site has been highly disturbed, a cursory investigation of the ditch showed that it was probably hydrologically connected to the larger mill pond, and it ultimately drained to the Pacific Ocean. After reviewing historical maps predating the mill, it was apparent that the southern portion of the mill pond and the freshwater wetland ditch were associated with the original stream (See Figures 4–6). Presumably, the stream was excavated, damned, and filled in various places to serve the needs of mill operations. Today there is little indication that a stream once flowed over this area (See Figure 11). Although this site did not have hydric soils, it is hydrologically connected to waters of the US and further investigation such as a wetland delineation and significant nexus test should be conducted if there were impacts to the ditch. For this project there are no impacts.

A summary of the wetlands, potential wetlands, and waters of the U.S. is given below. An explanation of the three wetland parameters examined in each of the hydrological features in Table 4 follows.

Table 4. Summary of Wetlands and Potential Wetlands in the Study Area.

Hydrological Feature	Coastal Act	Clean Water Act	Hydrophytic Vegetation	Hydric Soil	Hydrology	Area within Study Area
Pacific Ocean	Waters of the US	Waters of the US	NA	NA	NA	2 acres
Monkey Flower Seeps	Wetland	Other Waters	Yes	Not Examined	Yes	140 sq ft
Freshwater Marsh	Wetland	Potential Wetland	Yes	No	Yes	0.064 acres
Sludge Ponds	Not a Wetland	Not a Wetland	NA	NA	NA	NA

5.1.1 Hydrophytic Vegetation

Within the study area the dominant plant communities did not show a predominance of wetland vegetation. The two land cover types comprising most of the study area were ruderal upland vegetation and developed areas. However, two types of wetland vegetation were documented—freshwater seep and freshwater marsh—as well as waters of the U.S.

Common Monkey Flower Seeps

Four areas were identified as freshwater seeps on the bluff face outside of the facility. One was associated with the stormwater outfall pipe and the others were natural seeps from water emerging on the bluff face (See Fig 14). Dominant plants growing in the seeps were yellow monkey flower (*Mimulus guttatus*) (OBL), Mexican plantain (*Plantago subnuda*) (FACW), and low bulrush (*Isolepis cernua*) (OBL).

Because there was no safe access to the cove below the project site and scaling the bluffs was not feasible, the freshwater seeps were observed through binoculars at vantage points where the seep vegetation was visible. While other plants may have been present, they were not obvious or in such abundance as those described above. Because the documented dominant plants covered greater than 50% of the vegetation and all plants were either OBL or FACW, a predominance of hydrophytic vegetation existed in these sites.

Freshwater Marsh

The vegetation in a 3–5-foot wide ditch outside of the facility on Georgia Pacific property had a predominance of wetland vegetation upon visual inspection. A 3' x 6' plot was established to sample vegetation according to the ACOE standards for determining the parameter for hydrophytic vegetation. Plant cover was predominantly (60%) tall flatsedge (*Cyperus eragrostis*) (FACW) and to a lesser extent with bird's foot trefoil (*Lotus corniculatus*) (FAC) (20%) and purple velvet grass (*Holcus lanatus*) (FAC) (25%). By the 50/20 Rule (USACE 2010) for determining if hydrophytic vegetation occurs in the plot, the rule was satisfied.

Sludge Ponds

The lagoons constructed to provide secondary biological treatment for blackwater waste had some areas of emergent aquatic vegetation but they were without sufficient cover to be characterized as “pond vegetation.” The two plants were pennywort (*Hydrocotyle ranunculoides*) (OBL) and cattails (*Typha latifolia*) (OBL). However, the sludge pond is maintained by keeping vegetation from becoming established so the secondary treatment of the waste can occur. By the time of the July site visit, most of the vegetation had been removed.

Upland of the pond edge was an interrupted 2-foot wide band of hyssop loosestrife (*Lythrum hyssopifolia*) (OBL) and occasionally gumweed (*Grindelia stricta*) (FACW). This strip of vegetation that contained hydrophytic plants was predominantly bare ground and Bermuda grass (*Cynodon dactylon*) (Figure 7).



Figure 7. Sludge Pond Vegetation. Scattered patches of water hyssop grew along the edge of the sludge pond.

5.1.2 Hydric Soils

The soil map unit name for the entire study area is a partially hydric “Urban land” comprised of 8 other minor soil units, each of 3%. Some of these other units are listed as hydric, which contributes to the classification of this urban land as hydric (See Figure 6). Most of the soil in the study area is compacted and highly disturbed, either from the construction of the wastewater facility or from mill operations before the facility was built. The soil profile visible at the bluff face had a top layer, about 3–4 ft deep, of mixed soil with large angular rocks not typical of native soil (Figure 8). Presumably, this soil was pushed to the bluff edge for grading of the wastewater facility or mill operations, and evidence can be seen from aerial photos (See Appendix A, Figure A-1, oval inset).



Figure 8. Bluff Edge Soil Profile. A top layer containing rubble and large angular rocks was evident in the top 3–4 feet of the soil profile.

The frequency for ponding on this soil type is categorized as 0–14% and the runoff class is “very high,” attributing to the developed nature of urbanized land.

Sludge Ponds

Soils around the sludge ponds were highly disturbed from forming the berm to contain the secondary treatment of effluent water. No soil pits were dug in the contaminated soils around the sludge ponds, which are human-made aquatic features.

Common Monkey Flower Seeps

No soil pits were taken at the seeps due to lack of access. However, freshwater seeps on coastal bluff faces do not typically have a soil profile given the steep topography. These waters may not be “wetlands,” per se, under the Clean Water Act but they would fall under “other waters.” Based on vegetation and the presence of water, these seeps are wetlands under the California Coastal Act.

Freshwater Marsh

Like the soils in many areas of the facility, the soil in the ditch was highly modified, and from the large angular rocks (1–6 in) it was apparent that the ditch was excavated from fill material. The soils in a 12-inch pit were similar in color, texture, and content to the walls of the 1-foot ditch. Soil color was 7.5 YR 3/4; texture was loam; and it contained many small to medium angular rocks 1–6 inches.

By examining the aerial photos in Figure 5, it is evident that the southwestern portion of the mill pond had been filled sometime after 1948. Presumably, the grading that occurred extended into the area where the ditch now occurs. It is likely that native soil is well below 24 in. In conclusion, the ditch was excavated from upland fill. The atypical situation of this wetland is described in the wetland hydrology section below.

5.1.1 Wetland Hydrology

The National Wetland Inventory has mapped the mill pond (outside of the study area) as “Freshwater Pond,” the Pacific Ocean as “Estuarine and Marine Deepwater,” and most of the surface waters of the clarifiers and biofilters as “Freshwater Pond” (Figure 6). The chlorine contact basin and the sludge ponds were not included in the mapping. Most wetlands mapped by the National Wetland Inventory are done so by interpreting aerial photographs or by algorithms that detect surface water from imagery. This process explains how the surface waters of the wastewater treatment facility would be included in a dataset that captures wetlands. As mentioned above, these human-made structures are not considered wetlands. Therefore, all surface water structures associated with the wastewater treatment facility are not considered as meeting the criterion of “hydrology” for the purposes of defining wetlands.

Common Monkey Flower Seeps

Water seeping from the bluff face was observed at all areas of the monkey flower seeps (freshwater seeps) except at the location where stormwater flowed from a culvert onto the bluff face (See Figure 14). Because the latter location was directly related to stormwater discharge it did meet the parameters of wetland hydrology. All other seeps met the parameter by directly observing surface water (Indicator A1).

Freshwater Marsh

During the field visits, ponding water (Indicator A1) and shallow surface soil cracks (Indicator B6) were observed at the sample point in the ditch (See Figure 6). Both of these observations are primary indicators of wetland hydrology, and for the purposes of this report, the ditch was considered a wetland. From the sample point, the ditch continued for approximately 215 ft until it was apparently replaced with a 30-foot culvert, catchment basin, and then another culvert approximately 50 ft long and leading to the mill pond. The outfall point of the culvert was not examined due to thick vegetation and that it was beyond the scope of this report. In conclusion,

the ditch appeared to convey water to mill pond that drains to the Pacific Ocean. This ditch is considered a wetland under the Coastal Act and possibly under the federal Clean Water Act.

Pacific Ocean

The Pacific Ocean is considered a “water of the U.S.”

5.2 Natural Communities

Generally, the vegetation in the study area is characterized as ruderal plants growing in disturbed and compacted soils within the wastewater treatment plant and iceplant growing on the bluff edge, mostly outside the fence around the facility. A summary of the vegetation communities and their acreages is given in Table 5.

Table 5. Vegetation Communities in the Study Area. To the greatest extent feasible, vegetation mapping followed the naming convention in *A Manual of California Vegetation, 2 Edition* (MCV2). When discrete stands of vegetation could not be adequately described using MCV2, the Holland (1986) vegetation type (CDFW 2010) was used. Some stands did not fall into either category and where described by the dominant species or land cover type.

Vegetation/Rare Plant Name	MCV2 Vegetation Alliance	Acres	Meter ²	Rank
Ruderal	Not an MCV2 alliance	5.16	23713	-
Developed	Not an MCV2 alliance	2.61	10550	-
Ice Plant Mats	Carpobrotus edulis or Other Ice Plants Herbaceous Semi-Natural Alliance	1.04	4209	None
Gum Plant patches	<i>Grindelia (stricta)</i> Provisional Herbaceous Alliance	0.22	892	G3? S3?
Sludge Pond	Not an MCV2 alliance	0.19	750	-
Monterey Cypress Trees	Not an MCV2 alliance	0.10	390	-
Freshwater Marsh	Holland vegetation type – Not an MCV2 alliance (<i>Cyperus eragrostis</i>)	0.06	236	G3 S2.1
Himalayan Blackberry Brambles	<i>Rubus armeniacus</i> Shrubland Semi-Natural Alliance	0.06	235	None
Common monkey flower seeps	<i>Mimulus (guttatus)</i> Alliance	<0.00	14	G4? S3?
Mendocino Coast Paintbrush	<i>Castilleja mendocinensis</i> (1 individual)	-	-	CRPR 1B.2

Developed (No Rarity Rank)

This land cover class represents those areas that are mainly artificial structures usually with unvegetated impervious surfaces such as paved driveways and sidewalks. It includes buildings, concrete basins, effluent aerators, and other development associated with a wastewater treatment plant (Figure 9). Vegetation, if any, usually occurs in cracks and crevices or in small patches not large enough to be mapped as ruderal vegetation.



Figure 9. Developed Land Cover. Paved and developed areas with structures is common throughout the facility.

Summary of Land Cover, Vegetation, and Rare Plants within the Study Area				
Vegetation/Rare Plant Name	MCV2 Vegetation Alliance	Acres	Meter ²	Rank
Ruderal	Not an MCV2 alliance	5.16	23713	-
Developed	Not an MCV2 alliance	2.61	10550	-
Ice Plant Mats	Carpobrotus edulis or Other Ice Plants Herbaceous Semi-Natural Alliance	1.04	4209	None
Gum Plant patches	Grindelia (stricta) Provisional Herbaceous Alliance	0.22	892	G3? S3?
Sludge Pond	Not an MCV2 alliance	0.19	750	-
Monterey Cypress Trees	Not an MCV2 alliance	0.10	390	-
Freshwater Marsh	Holland vegetation type – Not an MCV2 alliance (Cyperus eragrostis)	0.06	236	G3 S2.1
Himalayan Blackberry Brambles	Rubus armeniacus Shrubland Semi-Natural Alliance	0.06	235	None
Common monkey flower seeps	Mimulus (guttatus) Alliance	<0.00	14	G4? S3?
Mendocino Coast Paintbrush	Castilleja mendocinensis (1 individual)	-	-	CRPR 1B.2

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NOTES: Mapping completed from 2016 field surveys. Where feasible, vegetation descriptions followed the Manual of California Vegetation, 2nd Ed.

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Botanical Resources Map
City of Fort Bragg Wastewater Treatment Facility Upgrade

DATE: 07/25/2016
PCS: UTM Zone 10, NAD 83
DRAWN: Maslach
SCALE:1:12,000;1 in = 1,000 ft

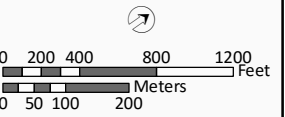
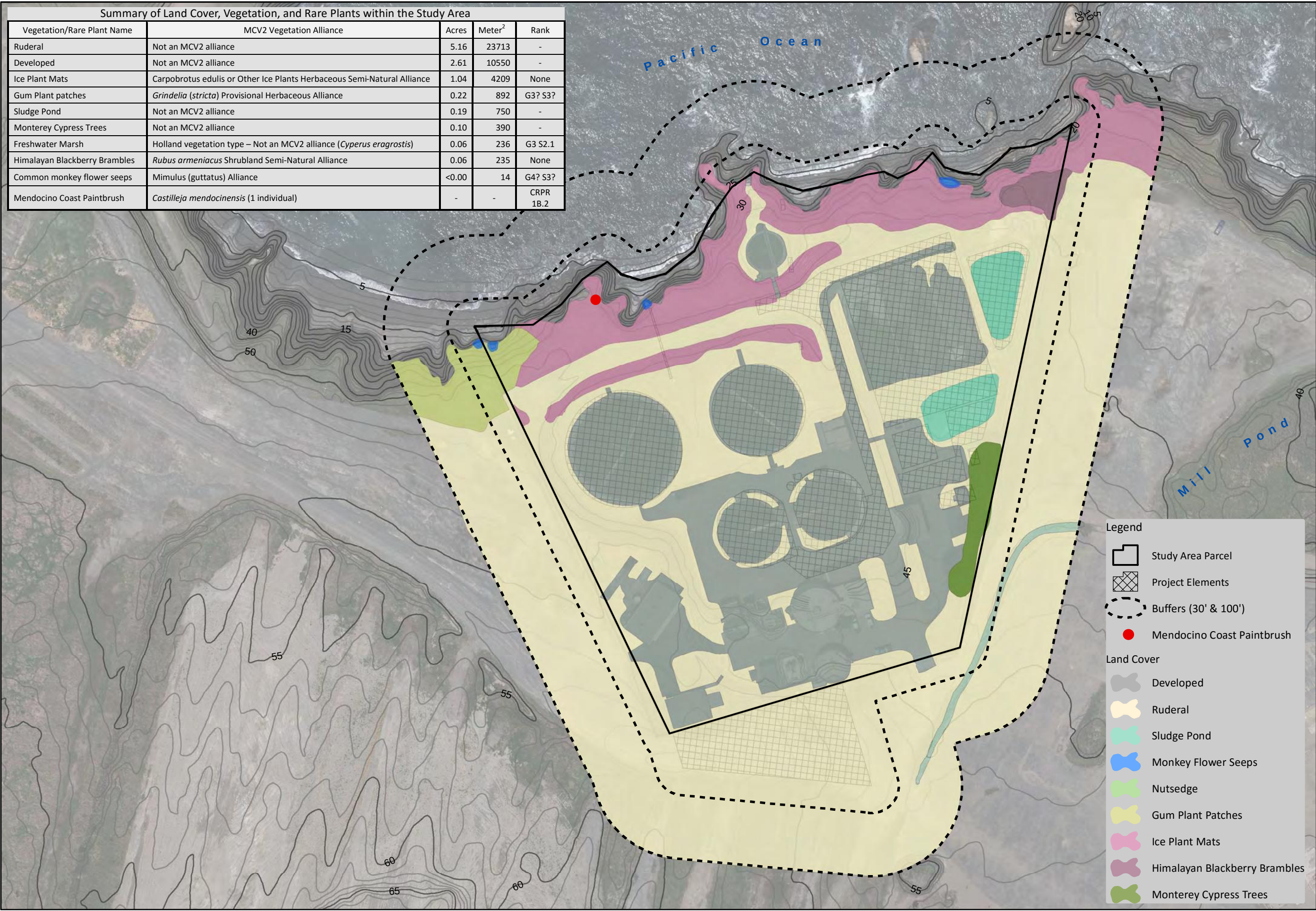


Figure 07



Ruderal (No Rarity Rank)

From the Latin *rudus*, for rubble, this land cover class refers to vegetation occurring on sites disturbed by mowing, scraping, compaction from vehicles, or other activities that cause relatively recent disturbance compared to the surrounding vegetation (Figure 11). On the project site this vegetation was primarily comprised of Bermuda grass (*Cynodon dactylon*), cut leaf plantain, (*Plantago coronopus*), and purple sand spurry (*Spergularia rubra*), with lesser cover of Carolina bristle mallow (*Modiola caroliniana*), whitestem filaree (*Erodium moschatum*), and wild radish (*Raphanus sativus*). Most areas of ruderal vegetation had >50% bare ground.



Figure 11. Ruderal Vegetation. Ruderal vegetation in compacted soils north of the facility perimeter fence.

Sludge Ponds (No Rarity Rank)

Two unlined human-made lagoons provide secondary biological treatment for blackwater or greywater through natural occurring processes and exposure to sunlight (Figures 12 & 13). Vegetation in and around the ponds is maintained to prevent permanent establishment of aquatic plants. Early in the season and before the vegetation was cleared, a few small areas of cattails (*Typha latifolia*) and marsh pennywort (*Hydrocotyle ranunculoides*) comprised the emergent and floating vegetation at the edge of the western pond. Upland of the western pond edge is an interrupted 2-foot wide band of hyssop loosestrife (*Lythrum hyssopifolia*) and gumweed (*Grindelia stricta*).



Figure 12. Eastern Sludge Pond. The eastern sludge pond had more suspended solids and less vegetation.



Figure 13. Western Sludge Pond. The western sludge pond had more wetland vegetation in and around the pond edges, although it is annually cleared.

Common monkey flower seeps (Rarity Rank: G4? S3?)

Four areas were identified as freshwater seeps on the bluff face outside of the facility. One was associated with the stormwater outfall pipe (Figure 13) and the others were natural seeps from water emerging on the bluff face, and all did not flow with enough water to dampen the sand or rocks below the seeps. Dominant plants growing in the seeps were yellow monkey flower (*Mimulus guttatus*), Mexican plantain (*Plantago subnuda*), and low bulrush (*Isolepis cernua*).

Freshwater Marsh (Rarity Rank: G3 S2.1)



A ditch associated with the logging pond and historical stream occurs outside of the plant on Georgia Pacific property. Tall flatsedge (*Cyperus eragrostis*) is the predominant plant growing throughout the ditch with bird's foot trefoil (*Lotus corniculatus*) and purple velvet grass growing in lesser numbers. Tall flatsedge has a facultative wetland (FACW) wetland indicator status, meaning it usually occurs in wetlands, but may occur in non-wetlands, and bird's foot trefoil and velvet grass have a facultative (FAC) wetland indicator status, meaning they occur in wetlands or non-wetlands.

Figure 15. Freshwater Marsh Vegetation. This wetland ditch drained to the mill pond to the northwest and then to the Pacific Ocean. Based on historical topographical maps, a stream used to flow in this general area.

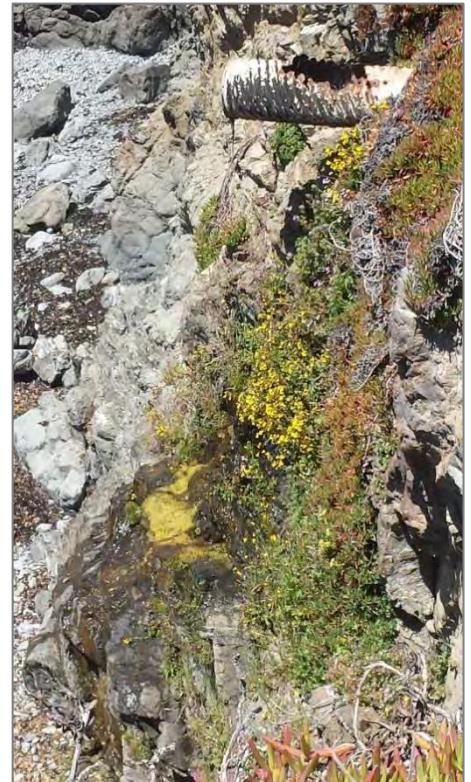


Figure 14. Monkey Flower Seep. This patch of monkey flower resembles the vegetation on the freshwater seeps of the bluff face. However, this patch of monkey flower grew in the water of the stormwater outfall.

Freshwater marsh has a rarity rank of G3 S3.1, which means the natural community is globally vulnerable and at moderate risk of extinction due to a restricted range, relatively few populations, recent and widespread declines, or other factors and imperiled in the state because of rarity. This vegetation community is considered an ESHA.

Himalaya Blackberry Brambles (*Rubus armeniacus* Shrubland Semi-Natural Alliance, No Rarity Rank)

One stand of Himalaya blackberry (*Rubus armeniacus*) was growing on the bluff outside of the facility fence. This non-native woody vine was growing in a thick patch with some wild radish (*Raphanus sativus*).



Figure 16. Himalaya Blackberry Brambles. A patch of Himalaya blackberry grows on the coastal bluff.

Iceplant (*Carpobrotus edulis* or Other Ice Plants Herbaceous Semi-Natural Alliance, No Rarity Rank)

Stands of non-native iceplant were primarily comprised of sea-fig (*Carpobrotus edulis*) and to a lesser extent Chilean iceplant (*Carpobrotus chilensis*). Wild radish, sweet vernal grass (*Anthoxanthum odoratum*) and velvet grass (*Holcus lanatus*) also occurred in and among the iceplant stands (Figure 17). Species that comprise coastal bluff scrub, such as gumweed (*Grindelia stricta*) and seaside daisy (*Erigeron glaucus*) were occasionally growing in areas where the iceplant did not form solid mats. Because iceplant was the dominant species covering the bluffs, the vegetation was not mapped as coastal bluff scrub.



Figure 17. Iceplant Patches. Non-native iceplant drapes the coastal bluffs and prevents most native plants from becoming established.

Gum Plant Patches (*Grindelia stricta*) Provisional Herbaceous Alliance, Rarity Rank: G3? S3?

This vegetation community can also be associated with the Holland vegetation type, northern coastal bluff scrub, but was mapped according to the Manual of California Vegetation, 2nd Edition as “*Grindelia stricta* Provisional Herbaceous Alliance.” The dominant plants were gum weed (*Grindelia stricta*), velvet grass, wild radish, and beach strawberry (*Fragaria chiloensis*) (Figure 18).



Figure 18. Gum Plant Patches. Ruderal vegetation in compacted soils north of the facility perimeter fence.

Gum plant patches have a rarity rank of G3? S3?, which means the natural community is vulnerable and at moderate risk of extinction due to a restricted range, relatively few populations, recent and widespread declines, or other factors. Uncertainty about the rank is expressed by “?”. Although this occurrence of gum plant patches is of considerably low quality due to the co-dominance of non-native plants, this vegetation community is still considered an ESHA.

Monterey Cypress Trees (No Rarity Rank)

Although Monterey cypress (*Hesperocyparis macrocarpa*) is native to the Monterey Peninsula of central California where it is considered rare, it has been planted and has become naturalized through most of coastal California and is considered non-native outside its natural range. The stand of several trees in the study area apparently has been planted as they occur in a row and serve as a windbreak for the facility.

5.3 Botanical Resources

Results from botanical surveys on January 12, March 23, April 15, June 6, and July 15, 2016 identified 87 species, 44% were native and 56% were non-native or introduced. With ruderal vegetation as the predominant vegetation community and the fact that the study area is a wastewater treatment facility, the high number of non-native plants is not surprising. The relatively few number of native coastal bluff scrub species can be attributed to the predominance of iceplant mats growing on the bluffs. A list of all plants document from the study area is included in Appendix D.

One rare plant occurrence of Mendocino coast paintbrush was detected on the bluffs and no other rare plants were found. Because the study area and an area 100 ft beyond the facility fence was relatively small (12.5 acres)

total survey coverage of the site was achievable. Some steep bluff faces were not examined due to lack of beach access and unsafe viewing sites from above. Adequate survey coverage allowed the determination to be made that no further botanical surveys are needed for the detection of rare plants that were possibly missed.

5.3.1 Documented Occurrences

Mendocino Coast Paintbrush (*Castilleja mendocinensis*, CRPR 1B.2, G4T2 S2)
One occurrence with only one individual of Mendocino coast paintbrush was found on the bluff edge outside of the plant (Figure 19). It was growing in a small area free of iceplant with seashore lupine (*Lupinus littoralis*), yellow hairgrass (*Aira praecox*), and gumweed (*Grindelia stricta*).

5.3.2 Potential Occurrence

Because the survey took place during the blooming window for all rare plants potentially occurring on the study area and that sufficient coverage of the study area was achieved, the possibility of missing rare plants was very low. A number of plants with typical coastal bluff habitat had a high potential for occurring in the study area: Blasdale's bent grass (*Agrostis blasdalei*), sea-watch (*Angelica lucida*), Point Reyes blennosperma (*Blennosperma nanum* var. *robustum*), Howell's spineflower (*Chorizanthe howellii*), bluff wallflower (*Erysimum concinnum*), Menzies wallflower (*Erysimum menziesii*), short-leaved evax (*Hesperervax sparsiflora* var. *brevifolia*), Baker's goldfields (*Lasthenia californica* subsp. *bakeri*), perennial goldfields (*Lasthenia californica* subsp. *macrantha*), North Coast phacelia (*Phacelia insularis* var. *continentis*), and coastal triquetrella (*Triquetrella californica*). However, none were detected. Other plants that had a low probability of occurring in the habitat on the study area were not detected.

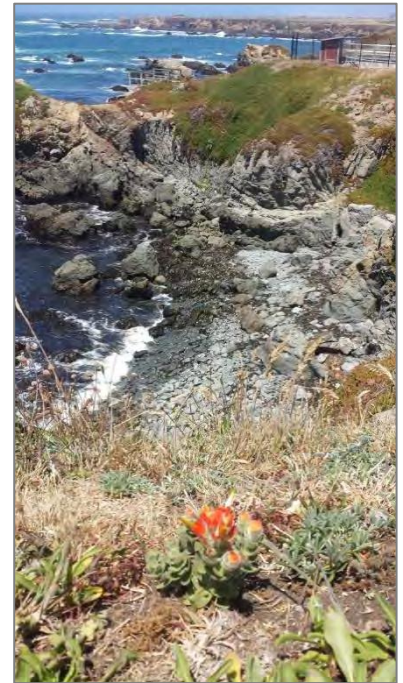


Figure 19. Mendocino Coast Paintbrush.
One individual of Mendocino coast paintbrush grew in a small opening of iceplant on the coastal bluff edge.

5.4 Wildlife Resources

From wildlife surveys on January 12, March 23, April 15, June 6, and July 15, 2016, no special-status species were detected. However, a small breeding colony of pelagic cormorants (*Phalacrocorax pelagicus*) occurred on the rocky bluff face below the study area. A number of special-status wildlife species had the potential of occurring in the study area but were not detected. These species are addressed below.

5.4.1 Documented Occurrences

Pelagic Cormorant – nesting colony (*Phalacrocorax pelagicus*)

While pelagic cormorants do not have any conservation status, nesting birds are protected under the Migratory Bird Treaty Act of 1918. Breeding cormorants can be easily flushed from their nests if approached, causing young chicks to become exposed to predators and the elements.

A small colony of approximately 15 birds was documented from the coastal bluff face in the study area, and at least two nests with chicks were observed (Figure 20). This colony has been monitored by the local chapter of the Audubon Society for the past several years. While most of the project activities are not visible to the nesting colony, there is the potential to cause some disturbance to the birds when removing or capping the stormwater outfall pipe that occurs in the same cove as the colony. To avoid potential disturbance a biological monitor should be present if the project activity will take place during the pelagic cormorant breeding season (February 1 – August 31). Timing and extent of monitoring is described further in Section 7, Mitigation Measures.

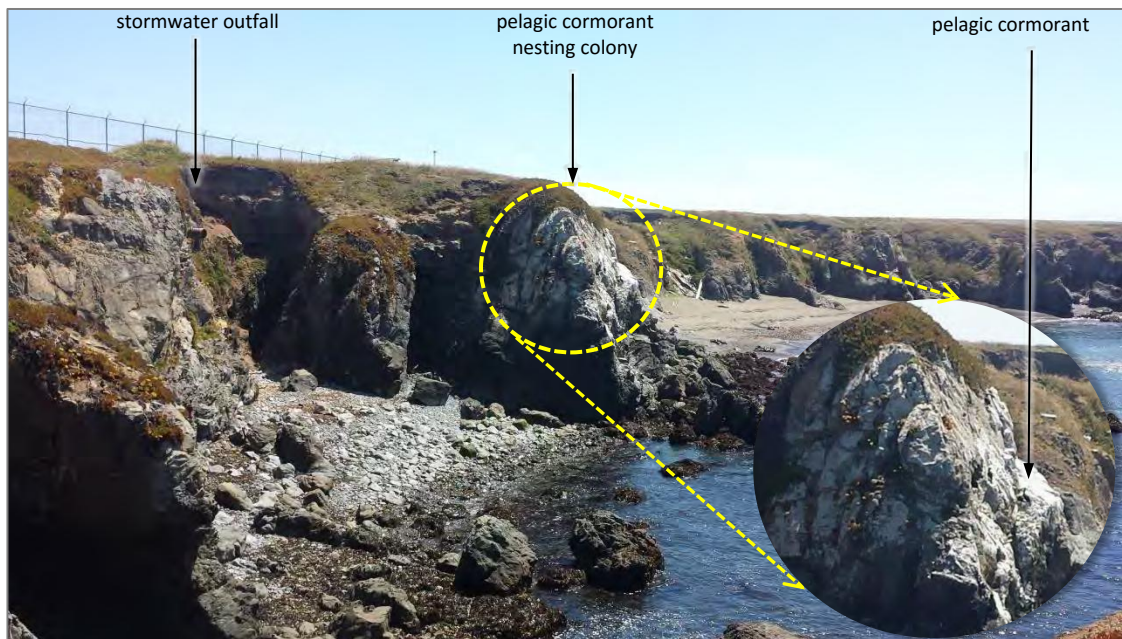


Figure 20. Nesting Colony of Pelagic Cormorants. A colony of pelagic cormorants annually nest on the cliffs below the wastewater facility and near where the stormwater outfall pipe is proposed for abandonment.

American peregrine falcon (*Falco peregrinus anatum*)

One peregrine falcon was seen flying northward over the study area, however no nesting was observed. No further surveys are warranted.

5.4.1 Potential Occurrences

Animals not documented from surveys but that had the potential for occurrence included California red-legged frog, and several species of birds and bats. Because the construction activities could potentially affect special-status amphibians, nesting birds, roosting bats, and marine mammals, mitigation measures for these species were developed where there was the potential for occurrence in the study area.

Invertebrates, Amphibians, & Reptiles

Ten Mile shoulderband (*Noyo intersessa* G2 S2)

The Ten Mile shoulderband snail is known from Glass Beach, which is about 1 mile to the north. Dr. Barry Roth suspects that most snails found in Fort Bragg would be *N. intersessa* and *Helminthoglypta arrosa* subsp. *a.* (Roth 2001). Since the identification of these two snails is very difficult, the possibility of misidentification is high and it should be assumed that any shoulderband snail found in the study area could potentially be the Ten Mile shoulderband.

It is assumed that habitat of the Ten Mile shoulderband is similar to other species of shoulderband snails such as the Morro shoulderband Snail (*Helminthoglypta walkeriana*). Typical habitat in coastal areas is moist area of scrub vegetation and iceplant patches where it can feed on decaying vegetation (USFWS 2003). The coastal bluff in the study area is predominantly covered in iceplant and is suitable habitat for shoulderband snails.

During each survey date, suitable habitat areas, and primarily iceplant patches, were examined for snails by carefully moving vegetation aside and looking for snail shells. Two garden snails (*Cornu asperum*) were found at the base of wild radish plants (*Raphanus sativus*) but no shoulderband snails were encountered. Because not all areas of iceplant were examined it is recommended that further surveys be conducted if project activities result in the removal of vegetation, especially iceplant. Timing and extent of surveys is described further Section 7, Mitigation Measures.

Western bumble Bee (*Bombus occidentalis* G2G3 S1)

Western bumble bees are distinguished from other bumble bees in northern California by having a white patch of hairs at the end of their abdomen segments. No bumblebees were found foraging within the study area. No further studies are recommended.

Northern Red-legged Frog (*Rana aurora aurora* G4[T2] S2?)

Typical habitat of northern red-legged frogs is similar to the California red-legged frog. The frogs can occupy quiet permanent bodies of water such as marshes, stream, and ponds as well as ephemeral pools if the water remains until late spring or early summer (Biosystems Analysis 1989). For breeding, they prefer water bodies with emergent vegetation such as cattails, but this isn't necessary. Adapted to responding to the dynamic nature of fluvial processes, they can use a variety of habitats including upland habitats as well as aquatic and riparian.

It seems doubtful that red-legged frogs would be breeding in the sludge ponds because of the contaminated water quality, however this can't be confirmed. Additionally, there is a low potential for red-legged frogs to use the upland habitat in the study area because the freshwater mill pond is 300 ft to the north. Because there is the potential for red-legged frogs in the study area, surveys are recommended before construction activities occur. Timing and extent of surveys is described further in Section 7, Mitigation Measures.

Birds**Black oystercatcher - nesting (*Haematopus bachmani* G5 S4)**

Several black oystercatchers were observed on the offshore rock at the northern end of the study area but no nesting was documented. This is likely due to the small size of the offshore rock. No further surveys are warranted if construction activities near the bluff take place outside of the breeding season (February 1 – August 31).

Tufted Puffin - nesting colony (*Fratercula cirrhata* G5 S2)

One or more breeding pairs of tufted puffin have been known to burrow in Goat Rock, the large offshore rock, or island, on the Mendocino headlands. The lack of large offshore rocks likely precludes puffins from nesting in or near the study area. They are less likely to excavate burrows in cliff faces. No tufted puffins were documented and no further surveys are warranted if construction activities near the bluff take place outside of the breeding season (February 1 – August 31).

Bryant's savannah sparrow - nesting (*Passerculus sandwichensis alaudinus* G5T2T3 S2 S3)

Low potential habitat occurred in the gum plant patches. No savannah sparrows were documented and no further surveys are warranted if construction activities near the bluff take place outside of the breeding season (February 1 – August 31).

Burrowing owl - burrow sites and some winter sites (*Athene cunicularia*)

A small mound of soil and rubble occurred in the northwestern corner of the facility (Fig 21). Since burrowing owls are known to occupy rodent burrows and they have been documented nearby on the Georgia-Pacific mill site, surveys for burrowing owls and their signs were done during the field survey dates, particularly those in January–February as they are known for wintering, and not breeding, on the Mendocino coast. Ground squirrels were observed using the burrow in the rubble and soil mound, and the burrow entrance and vicinity was examined for burrowing owl signs such as pellets, footprints, and whitewash.

Since only 1 ground squirrel burrow was found, it was not anticipated to be temporarily occupied by burrowing owls. No further surveys are warranted.



Figure 21. Rubble and Fill as Potential Burrowing Owl Habitat. Two ground squirrel burrows were examined during the field surveys for signs of burrowing owl. None were documented.

Other Birds

California gull (*Larus californicus*), double-crested cormorant (*Phalacrocorax auritus*), osprey (*Pandion haliaetus*), and northern harrier (*Circus cyaneus*) had a low potential for nesting in the area but no nests were observed.

Mammals

Bats

Because the project activities include demolishing some structures, these buildings were examined for signs and habitat for bats, such as droppings under eaves and crevices where bats can roost. The two species that had a low potential for using the site were the hoary bat (*Lasiurus cinereus*) and Yuma myotis (*Myotis yumanensis*).

The structures that are to be demolished were currently being used for facility operations and were not abandoned or in a poor condition to allow for roosting sites. The underside of eaves was examined for signs of bats and no signs were detected. No further studies for bats are warranted.

Sea Mammals

Haulout sites used by harbor seals (*Phoca vitulina richardii*) occur 1 mile to the north and 0.3 miles to the south. The offshore rocks in and around the study area are not suitable sites for marine mammals to use as haulout sites due to their small size and steep topography. However, it is possible, although unlikely, that marine mammals could temporarily occur in the beach coves below the facility. These areas should be surveyed when project activities occur above the ocean bluffs. Timing and extent of surveys is described further in Section 7, Mitigation Measures.

6 ESHA Summary and Impact Analysis

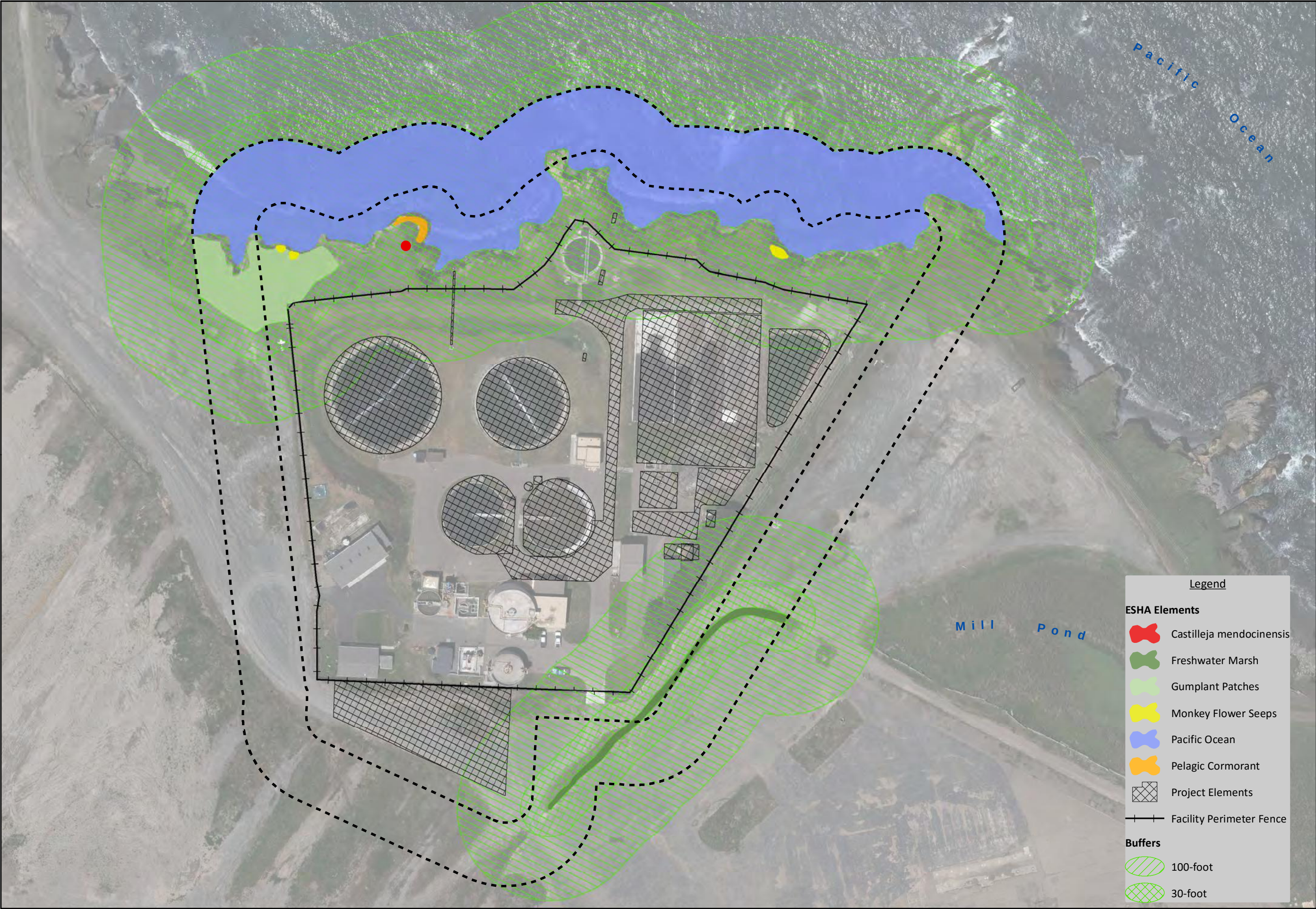
Any species, vegetation community, habitat, or other resource area that constituted ESHA was summarized and their area within the study area calculated (Table 6). A buffer from the outside edge of the ESHA element to 30 ft and another from 50 -100 ft were drawn around each item in Table 3 and merged into two buffer rings: 30 ft and 100 ft (Figure 22). ESHA boundaries were not placed around the sludge ponds and one monkey flower seep that was directly associated with the stormwater outfall pipe. Both of these are features entirely dependent on artificially created conditions.

Table 6 . ESHA Element Summary within the Study Area.

ESHA Element	Scientific Name	Acres/ Individuals	Rank	CESA/ NEPA	30-foot ESHA Buffer Encroachment (ft ²)	100-foot ESHA Buffer Encroachment (ft ²)
Wetlands						
Freshwater Marsh	-	0.05	G3 S2.1	None	0	3475
Common monkey flower seeps	Mimulus (guttatus) Alliance	< 0.00	G4 S3.2	None	0	3880
Pacific Ocean	-	-	-	-	35	7900
Vegetation						
Gum Plant Patches	(Grindelia (stricta) Provisional Herbaceous Alliance	0.22	G3? S3?	None	0	2325
Plants						
Mendocino Coast Paintbrush	Castilleja mendocinensis	1 individual	CRPR 1B.2 G4T2 S2	None	0	190
Wildlife						
Pelagic Cormorant	Phalacrocorax pelagicus	nesting colony	None	None	0	210
Merged Total (total ft ² of 30-foot and 100-foot buffer encroachment)					35	13,700

In summary, there are few areas of this project that could contribute to disturbance of an ESHA since most of the project is within a largely developed wastewater treatment that is entirely fenced. The only portion of the project that could potentially cause disturbance to an ESHA is the work associated with removing and/or capping the stormwater drains that daylight on the bluff face near a colony of nesting pelagic cormorants. Aside from the stormwater drain abandonment work, all buffer encroachments are not above the encroachment that normally occurs during routine operations of the wastewater treatment facility.

When a development of land in the City of Fort Bragg is proposed within an ESHA or within a 30-foot or 100-foot buffer, the impacts are evaluated under Policy OS-1.9, City of Fort Bragg Coastal General Plan (Table 7) (Fort Bragg, 2008). Table 7 summarizes the direct and potential impacts associated with the proposed development.



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NOTES: Buffers are drawn 30 and 100 feet from natural resource elements that are considered ESHA.

101 West Cypress St
(APN 008-020-07)
Fort Bragg, CA

City of Fort Bragg Wastewater Treatment Facility Upgrade

ESHA Map

DATE: 08/10/2016
PCS: UTM Zone 10, NAD 83
DRAWN: Maslach
SCALE: 1:12,000; 1 in = 1,000 ft

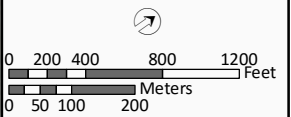


Figure 22

Table 7. ESHA Impact Analysis

Policy OS-1.9, City of Fort Bragg Coastal General Plan -- Development Criteria.
Background (FBMC § 17.50.050) <i>H. Buffer Areas: New development adjacent to ESHA shall provide buffer areas to serve as transitional habitat and provide distance and physical barriers to human intrusion. The purpose of this buffer area is to provide for a sufficient area to protect environmentally sensitive habitats from significant degradation resulting from future development. Buffers shall be of a sufficient size to ensure the biological integrity and preservation of the ESHA they are designed to protect. The width of the buffer area shall be a minimum of 100 feet, unless an applicant can demonstrate, after consultation and agreement with the California Department of Fish and Game, and the City, that 100 feet is not necessary to protect the resources of that particular habitat area and the adjacent upland transitional habitat function of the buffer from possible significant disruption caused by the proposed development. The buffer area shall be measured from the outside edge of the environmentally sensitive habitat areas and in no event shall be less than 30 feet in width. The criteria to be utilized to establish buffer areas shall be those criteria contained in Policy OS-1.9 of the Conservation, Open Space, Energy, & Parks Element of the Coastal General Plan.</i> <i>Required buffer areas shall be measured from the following points as applicable:</i> • <i>The outer edge of the canopy of riparian vegetation for riparian ESHA, or from the top of stream bank where no riparian vegetation exists.</i> • <i>The upland edge of a wetland for a wetland ESHA.</i> • <i>The outer edge of the plants that comprise the rare plant community for rare plant community ESHA.</i>
(a) Biological Significance of Adjacent Lands. <i>Lands adjacent to a wetland, stream, or riparian habitat area vary in the degree to which they are functionally related to these habitat areas. Functional relationships may exist if species associated with such areas spend a significant portion of their life cycle on adjacent lands. The degree of significance depends upon the habitat requirements of the species in the habitat area (e.g., nesting, feeding, breeding, or resting). Where a significant functional relationship exists, the land supporting this relationship shall also be considered to be part of the ESHA, and the buffer zone shall be measured from the edge of these lands and be sufficiently wide to protect these functional relationships. Where no significant functional relationships exist, the buffer shall be measured from the edge of the ESHA that is adjacent to the proposed development.</i> A functional relationship between the ESHA and the adjacent lands did not extend beyond the wetlands as they were mapped. The ditch with freshwater marsh vegetation was clearly delineated because it was created from upland fill. Although an historical stream did occur in the immediate area, the area has been so highly modified from grading that no functional relationship existed between the marsh and the adjacent lands. The buffer for the Pacific Ocean was draw at the high tide line, and functional relationships with adjacent land did not extend further. The edge of the ocean mapping more or less corresponded with the steep bluffs. The monkey flower seeps, or freshwater seeps, were restricted to the wet areas where water seeped through the rocks and not beyond. Buffers were drawn around the locations of the rare plants and special-status vegetation community (gum plant patches) without any extended areas. These areas were primarily restricted by the dense mats of iceplant. The buffer around the nesting cormorants was measured from the edge of the nesting area that was generally defined by whitewash guano. Although the birds could use nearby rocks, they formed a defined colony that was mapped as ESHA. The proposed project makes use of land that is currently used for similar activities of the wastewater treatment facility. Aside from the temporary disturbance of abandoning the stormwater outfall pipes, there is no new encroachment into ESHA or ESHA buffer areas.

Policy OS-1.9, City of Fort Bragg Coastal General Plan -- Development Criteria.

(b) Sensitivity of Species to Disturbance.

The width of the buffer zone shall be based, in part, on the distance necessary to ensure that the most sensitive species of plants and animals will not be disturbed significantly by the permitted development. Such a determination shall be based on the following after consultation with the Department of Fish and [Wildlife] or others with similar expertise:

- (i) Nesting, feeding, breeding, resting, or other habitat requirements of both resident and migratory fish and wildlife species;*
- (ii) An assessment of the short-term and long-term adaptability of various species to human disturbance;*
- (iii) An assessment of the impact and activity levels of the proposed development on the resource.*

Within 25–50 ft of the wetland ditch, the existing type of use is similar to that of the proposed project in that service vehicles, trucks, and heavy equipment frequently pass through the entrance gate, thereby not changing the activity level. Providing further protection, a locked gate and fence separates the ditch from the temporary staging area.

Aside from removing the stormwater outfall pipes on the bluff face, all other project components are mostly 75-100 ft from the freshwater seeps on the bluff edge and the ocean waters. Existing activities in the wastewater plant are often closer than this and there is no effect on the seeps and ocean. Moreover, project activities will occur within the fenced perimeter of the facility, except capping the stormwater drain.

Outside the perimeter fencing, only the stormwater outfall removal/capping aspect of the project is within 100 ft of the rare plant buffer. All other 30- and 100-foot impacts to rare plant buffers are inside facility. No change to the habitat will occur, nor is the rare plant located where project components could potentially affect the rare plant.

The ESHA that could potentially be disturbed by the stormwater outfall work is the pelagic cormorant nesting colony. Mitigation measures are made for this instance if work is to be completed during the breeding season and are described in Section 7, Mitigation Measures.

After examination of the biological significance of the adjacent lands (1a above) and an evaluation of the sensitivity to disturbance of the pelagic cormorant colony and other ESHA, it was determined that the functional capacity of the buffer, the ability of the nesting cormorant and other wildlife to be self-sustaining, and the maintenance of natural species diversity within the buffer would be retained with the proposal of development within the ESHA buffer.

(c) Erosion Susceptibility. *The width of the buffer shall be based, in part, on an assessment of the slope, soils, impervious surface coverage, runoff characteristics, erosion potential, and vegetative cover of the parcel proposed for development and adjacent lands. A sufficient buffer to allow for the interception of any additional material eroded as a result of the proposed development shall be provided.*

The proposed development is on flat, level land and not susceptible to erosion. Only one element of the project could potentially cause some minor erosion. This occurs where the storm drains are to be removed and/or capped along the bluff face. Standard project requirements will ensure that erosion or debris does not remain in any ESHA. The proposed paving in the 100-foot ESHA buffer is on relatively flat ground and sloped so that at least 50 ft of permeable ground intercepts any potential runoff.

(d) Use Natural Topography. *Where feasible, use hills and bluffs adjacent to Environmentally Sensitive Habitat Areas, to buffer these habitat areas. Where otherwise permitted, locate development on the sides of hills away from Environmentally Sensitive Habitat Areas. Include bluff faces in the buffer area.*

The project area is flat, fenced, and largely developed, and had no areas within the parcel to buffer the natural resources outside the fence. Most of the resources are outside the fence and on or below the bluff face, which is included in the buffer area. The steep bluff buffers the cormorant colony from the noise and visual disturbance of facility activities, both ongoing and temporary. Mitigation measures are proposed to prevent those temporary activities associated with the work of capping the stormwater outfall from disturbing the cormorant during the nesting season.

Policy OS-1.9, City of Fort Bragg Coastal General Plan -- Development Criteria.

(e) Use Existing Man-Made Features. *Where feasible, use man-made features such as roads and dikes to buffer environmentally sensitive habitat areas.*

To protect the facility from trespassing, a 6-foot chain link fence topped with barbed wire runs the entire length of the perimeter. This human-made feature ensures that project activities stay within the facility and do not affect the ESHA resource.

(f) Lot Configuration and Location of Existing Development. *Where an existing subdivision or other development is largely built-out and the buildings are a uniform distance from a habitat area, at least that same distance shall be required as a buffer zone for any new development permitted. However, if that distance is less than one hundred (100) feet, additional mitigation measures (e.g., planting of native vegetation) shall be provided to ensure additional protection.*

Some of the existing development has already been constructed within the 100-foot and 30-foot ESHA buffer, and the new development uses the same road alignment for paving and the same footprint for structures. Measures are proposed to mitigate the potential impacts of operating in the ESHA buffer during cormorant nesting season.

(g) Type and Scale of Development Proposed. *The type and scale of the proposed development will, to a large degree, determine the size of the buffer zone necessary to protect the ESHA. Such evaluations shall be made on a case-by-case basis depending upon the resources involved, the degree to which adjacent lands are already developed, and the type of development already existing in the area.*

The type of project proposed is typical for municipalities as population increases and water quality standards increase. The scale of the project is controlled by keeping all development within the fenced facility, while demolishing old structures and creating new ones. The buffer zone for ESHA is sufficient because the proposed development is within the same facility footprint. Since the development within the 100-foot buffer is entirely within the fenced facility and there is no impact to the ESHA, the reduced buffers are sufficient for protecting the resources. Only the temporary staging area and the stormwater outfall work are outside of the fencing and mitigations are proposed for the latter.

7 Mitigation Measures

An analysis of ESHA and ESHA buffer impacts showed that ~ 13,735 ft² (~0.32 acres) of development-related buffer encroachment would occur. However, only ~ 90 ft², or <1 % of the encroachment is outside of the facility fence where stormwater outfall drains are to be abandoned. Another buffer encroachment occurs outside the facility fence near the entrance but the activity is a temporary staging area on ruderal ground where there is no additional impact to ESHA buffer. The areas of buffer encroachment, aside from the stormwater drain capping, do not increase the level of use or degrade habitat.

To ensure that project-related activities do not impact the pelagic cormorant nesting colony, other ESHA, and special-status wildlife potentially occurring, standard project requirements that minimize and avoid biological resources are proposed below.

- If construction activities outside of the facility fence and along the bluff occur during the pelagic cormorant nesting season (February 1–August 31), particularly capping and/or removing the stormwater outfall drains, a qualified biologist will monitor the cormorants during construction to ensure they are not disturbed by the project activities. If the monitor notices behavioral changes in the birds, construction activities will cease. Only when there is no visible sign of disturbance will activities resume. It is anticipated that construction activities will not disturb the colony because only the northern point where the birds congregate is visible from the stormwater outfall location. The biologist will also look for nests of black oystercatcher and tufted puffin and perform the same avoidance measures as the pelagic cormorants.
- Surveys for marine mammals shall be coordinated with the cormorant surveys for work outside the facility fence and shall follow the same avoidance measures as for the pelagic cormorants.
- To protect Ten Mile shoulderband snails potentially occurring in the vegetation, a qualified biologist will survey all areas, if any, where iceplant may be proposed for removal. No earlier than 1 week before iceplant removal, the biologist will look for shoulderband snails by peeling back small iceplant patches approximately every 10 ft. If shoulderband snails are found they will be removed to similar habitat on the coastal bluff. During vegetation removal, if it occurs, the biologist or a person trained in the identification of shoulderband snails will be present to detect any shoulderband snails. If they are present they will be located to similar habitat on the coastal bluff.
- If any construction activities occur outside the fence and require vegetation removal, a biologist shall perform preconstruction breeding bird surveys within 14 days of the onset of construction if activities occur between February 1–August 31. If active breeding bird nests are observed, no ground disturbance activities shall occur within a minimum 100-foot exclusion zone. These exclusion zones may vary depending on species, habitat and level of disturbance. The exclusion zone shall remain in place around the active nest until all young are no longer dependent upon the nest. A biologist should monitor the nest site during the breeding season to ensure the buffer is sufficient to protect the nest site from potential disturbances.
- To avoid any potential impacts to red-legged frogs in the sludge lagoon, prior to construction project contractors will be trained by a qualified biologist in the identification of the California red-legged frog. Construction crews will begin each day with a visual search around all stacked or stored materials near the ponds to detect the presence of frogs. If a special status frog is detected, construction crews will contact CDFW or a qualified biologist to relocate any frogs prior to re-initiating work. If no special status frogs are found, construction activities may resume.

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Appendix A

Study Area Photographs

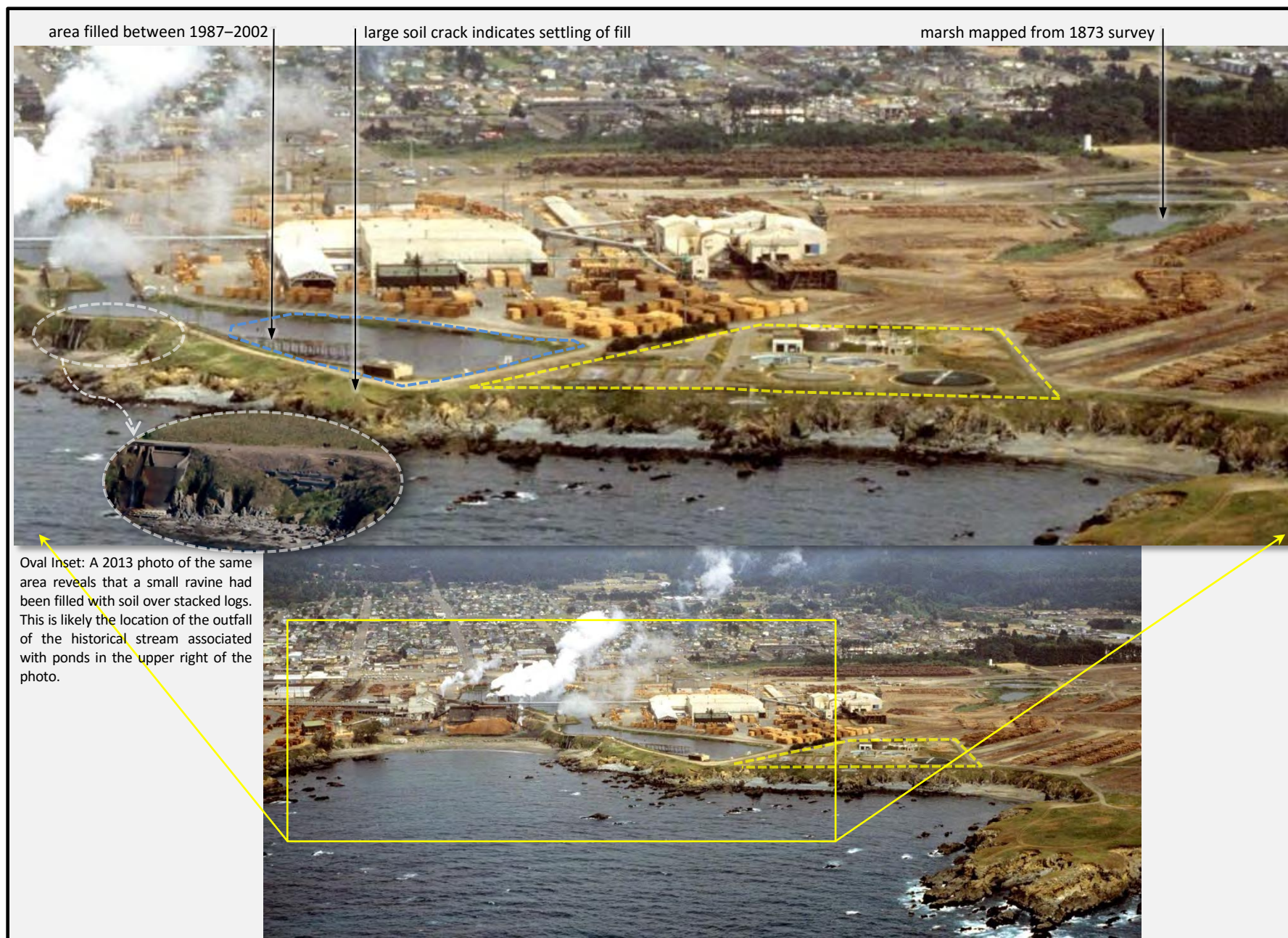


Figure A-1. Oblique Aerial of Study Area, californiacoastline.org, 06/1987. The project site parcel is represented by the dashed yellow polygon. In 1987 the mill pond extended further south; by today, portions of it have been filled. Historically, a stream flowed between the ponds to the east and the filled outfall to the west.



Figure A-2. Northeastern View of the Western Sludge Lagoon.



Figure A-3. Southwestern Panorama of the Western Sludge Lagoon.

Appendix B

Scoping Lists

Special Status Plants with Potential Occurrence in Coastal Mendocino County
Special Status Animals with Potential for Occurrence in Coastal Mendocino County
Special-Status Plant Communities Occurring in Coastal Mendocino County

Special Status Plants with Potential Occurrence in Coastal Mendocino County. This table is derived from federal, state, and CNPS-listed plant species, including plants of regional significance. Explanation of column headings:

FESA: federal status includes federally rare (FR), threatened (FT), or endangered (FE)

STATE: California state status includes rare (CR), threatened (CT), or endangered (CE)

CRPR: California Rare Plant Rank - ranked inventory of native California plants (Element Occurrences, EO's) thought to be at risk,

CNDDDB ELEMENT RANK

Rank 1A - Plants presumed extirpated in California and either rare or extinct elsewhere

Rank 1B - Plants rare, threatened, or endangered in California and elsewhere.

(usually < 50 extant EO's in CA)

Rank 2A - Plants Presumed Extirpated in California, but more common elsewhere.

Rank 2B - Plants rare, threatened or endangered in California but more common elsewhere.

(usually < 50 extant EO's in CA)

Rank 3 - More information needed, a review list.

Rank 4 - Species of limited distribution, a watch list. (usually > 50 extant EO's in CA)

GLOBAL RANK: The *global rank* (G-rank) is a reflection of the overall status of an element throughout its global range. Both Global and State ranks represent a letter+number score that reflects a combination of Rarity, Threat and Trend factors, with weighting being heavier on Rarity than the other two.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Critically Imperiled - At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled - At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable - At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure - Common; widespread and abundant.

SUBSPECIES LEVEL

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety. For example: *Chorizanthe robusta* var. *hartwegii*. This plant is ranked G2T1. The G-rank refers to the whole species range i.e., *Chorizanthe robusta*. The T-rank refers only to the global condition of var. *hartwegii*.

Not Ranked

A Threat Code extension has been added following the CNPS List (e.g. 1B.1, 2.2 etc.)

Threat Code extensions and their meanings:

.1 – Seriously endangered in California (> 80% of occurrences threatened / high degree and immediacy of threat)

.2 – Fairly endangered in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 – Not very endangered in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

STATE-RANK: The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = *Critically Imperiled* - Critically Imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factors such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = *Imperiled* -Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = *Vulnerable* - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = *Apparently Secure* - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

S5 = *Secure* - Common, widespread, and abundant in the state.

SNR = State

Notes:

- Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting element occurrences.
- Uncertainty about the rank of an element is expressed in two major ways: By expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3. By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2.
- Other symbols: GH - All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists (SH = All California sites are historical).
GX - All sites are extirpated; this element is extinct in the wild (SX = All California sites are extirpated).
GXC - Extinct in the wild; exists in cultivation.
G1Q - The element is very rare, but there are taxonomic questions associated with it.
T - Rank applies to a subspecies or variety.

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Lifeform	Elevation	Blooming Period	Notes	Potential for Occurrence within Project Area
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	1B.1	G4G5 T2	S1	None	None	perennial herb	0-10 m.	June - October	Coastal dunes and coastal strand with sparse cover. Often the plant growing closest to the ocean.	Low potential in bluff scrub without dunes.
<i>Agrostis blasdalei</i>	Blasdale's bent grass	1B.2	G2	S2	None	None	perennial rhizomatous herb	5-150 m.	May - July	Coastal dunes, coastal bluff scrub, coastal prairie. Sandy or gravelly soil close to rocks; often in nutrient-poor soil with sparse vegetation.	High potential habitat in coastal bluff habitat.
<i>Alisma gramineum</i>	grass leaf water plantain	2B.2	G5	S3	None	None	perennial rhizomatous herb	390-1800 m.	June - August	Shallow freshwater marshes and swamps. Vouchered from Laytonville and 9 miles west of Willits on Sherwood Road otherwise a plant from Modoc area.	Poor habitat and not expected in maintained sludge lagoons.
<i>Angelica lucida</i>	sea-watch	4.2	G5	S2S3	None	None	perennial herb	0-150 m.	May - September	Coastal bluff scrub, coastal scrub, coastal marshes and swamps, and coastal dunes. Bluff faces and rocky areas near the ocean. Fields and thickets along the coast.	High potential in coastal bluff scrub.
<i>Arctostaphylos nummularia</i> subsp. <i>mendocinoensis</i>	pygmy manzanita	1B.2	G3?T1	S1	None	None	perennial evergreen shrub	90-200 m.	January (vegetation : all year)	Closed-cone coniferous forest. Acidic sandy-clay soils in dwarfed coniferous forest. Only known location 2 miles east of Mendocino.	No marine terrace chaparral.
<i>Astragalus agnicidus</i>	Humboldt County milk-vetch	1B.1	G3	S3	CE	None	perennial herb	180-800 m.	April - September	Broadleafed upland forests, North Coast coniferous forests, redwood forests. Disturbed openings in partially timbered forest lands; also along ridgelines; south aspects. Known from east of Point Arena, Mendocino Co. to north to southern Humboldt Co.	No habitat on coast.
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	1B.2	G2T2	S2	None	None	perennial herb	0-30 m.	April - October	Coastal scrub, coastal salt marshes and swamps, mesic sites in coastal dunes, and along streams. Known from coastal San Mateo and Marin Co., and Humboldt Co., from Petrolia to Eureka.	Poor habitat and not expected in maintained sludge lagoons.
<i>Blennosperma nanum</i> var. <i>robustum</i>	Point Reyes blennosperma	1B.2	G4T2	S2	CR	None	annual herb	10-145 m.	February - April	Coastal prairie, coastal scrub. On open hills in sandy soil. From Pt. Reyes and Glass Beach, Fort Bragg.	Potential habitat as it occurs south in Glass Beach.
<i>Bryoria pseudocapillaris</i>	false gray horsehair lichen	3.2	G3	S2	None	None	fruticose lichen (epiphytic)	0-90 m.		Dark, filamentous, epiphytic, pendent lichen known from Point Arena. Largest known population from Samoa Peninsula in Humboldt Co. Usually on conifers, sometimes huckleberry, in coastal dunes in San Luis Obispo Co.; North Coast coniferous forest on the immediate coast – usually shore pine and Sitka spruce.	No pine scrub habitat.
<i>Calamagrostis bolanderi</i>	Bolander's reed grass	4.2	G4	S4	None	None	perennial rhizomatous herb	0-455 m.	May - August	Often mesic sites. Bogs and fens, broadleafed upland forest, closed-cone coniferous forest, coastal scrub, wet meadows and seeps, marshes and swamps (freshwater), North Coast coniferous forest. Known from Santa Rosa to northern Humboldt Co; usually not far from the coast, but not always.	Low potential habitat in vegetated edges around facility.
<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	Thurber's reed grass	2B.1	G3Q	S2?	None	None	perennial rhizomatous herb	10-60 m.	May - July	Coastal scrub (mesic), freshwater marshes and swamps. Usually in marshy swales surrounded by grassland or coastal scrub. Sporadic in marshes from Crescent City to Marin. Only 1 old record for Mendocino County.	No coastal marshes.
<i>Calamagrostis foliosa</i>	leafy reed grass	4.2	G3	S3	CR	None	perennial herb	0-1220 m.	May - September	Coastal bluff scrub, rocky cliffs and ocean-facing bluffs, clumps in rock crevices of bluff bank of river. North Coast coniferous forests, often on steep wooded cliffs. Many occurrences located in the King Range, HUM Co. Westport is southernmost known location.	Low potential habitat on rocky bluffs based on range.

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Lifeform	Elevation	Blooming Period	Notes	Potential for Occurrence within Project Area
<i>Calystegia purpurata</i> subsp. <i>saxicola</i>	coastal bluff morning-glory	1B.2	G4T2T3	S2S3	None	None	perennial herb	10-105 m.	May - September	Coastal scrub, road edges and ruderal sites, coastal dunes, North Coast coniferous forest (openings and edges in forests near the coast). Intermediate with subsp. <i>purpurata</i> . Occurs in central Mendocino County and southward.	Out of range.
<i>Campanula californica</i>	swamp harebell	1B.2	G3	S3	None	None	perennial rhizomatous herb	1-405 m.	June - October	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, freshwater marshes and swamps, and North Coast coniferous forests. Many occurrences have few plants; uncommon where it occurs. From Pt. Reyes to Ten Mile River north of Fort Bragg and usually within 5 miles of the coast except for Santa Rosa area and one location west of Willits.	Seeps on coastal bluff face not suitable habitat.
<i>Carex arcta</i>	northern clustered sedge	2B.2	G5	S2	None	None	perennial herb	60-1400 m.	June - September	Willow, alder, or redwood swamps; stock ponds; seasonal ponds of several feet deep, moist meadows. Mostly from central Humboldt Co. at various elevations, but one 1866 collection from a sphagnum swamp in Mendocino (city or county unspecified) and one collection from Crescent City.	Poor habitat and not expected in maintained sludge lagoons.
<i>Carex californica</i>	California sedge	2B.3	G5	S2?	None	None	perennial rhizomatous herb	90-335 m.	May - August	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (often on margins or drier areas). Usually within several miles of the coast from Salt Point, Sonoma Co. north to Fort Bragg. One unvouchered specimen from Lassics Botanical Area, Six Rivers National Forest.	Not suitable habitat in coastal bluff scrub.
<i>Carex lenticularis</i> var. <i>limnophila</i>	lagoon sedge	2B.2	G5T5	S1	None	None	perennial herb	0-6 m.	June - August	Lakeshores, beaches (often gravelly), bogs and fens, marshes and swamps, North Coast coniferous forest. Known from north road to Glen Blair.	Poor habitat and not expected in maintained sludge lagoons.
<i>Carex livida</i>	livid sedge	2A	G5	SH	None	None	perennial rhizomatous herb	0-0 m.	June	Sphagnum bogs in California. Possibly extirpated from the state.	Poor habitat and not expected in maintained sludge lagoons.
<i>Carex lyngbyei</i>	Lyngbye's sedge	2B.2	G5	S2	None	None	perennial rhizomatous herb	0-10 m.	May - August	Brackish or freshwater marshes and swamps, in water in mucky soil, soughs. May be growing near <i>Scirpus pungens</i> and <i>Triglochin maritima</i> . From Marin to Del Norte Cos.	Poor habitat and not expected in maintained sludge lagoons.
<i>Carex saliniformis</i>	deceiving sedge	1B.2	G2	S2	None	None	perennial rhizomatous herb	3-230 m.	June - July	Mesic sites of coastal prairie, coastal scrub, and meadows; seeps, marshes and swamps (coastal salt); boggy ground. Often growing with <i>Panicum acuminatum</i> in Mendocino County. Known to grow with <i>Arenaria paludicola</i> . Plant very similar to <i>C. hassei</i> , and FNA considers <i>C. saliniformis</i> a synonym of <i>C. hassei</i> .	No sufficient wet habitat. Seep on bluff face not suitable habitat.
<i>Carex viridula</i> subsp. <i>viridula</i>	green yellow sedge	2B.3	G5T5	S2	None	None	perennial herb	0-1600 m.	June - November	Freshwater marshes and swamps; bogs and fens; mesic sites of North Coast coniferous forest. In Mendocino Co., known only from a 1909 collection in Inglenook Fen.	Poor habitat and not expected in maintained sludge lagoons.
<i>Castilleja ambigua</i> subsp. <i>ambigua</i>	johnny-nip	4.2	G4T3T4	S3	None	None	annual herb (hemiparasitic)	0-435 m.	March - August	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill, grasslands, vernal pools margins, sometimes in alkaline soil. Mostly from northern Monterey Bay to Fort Bragg, Mendocino Co., and a few occurrences north to Del Norte Co.	Potential habitat in bluff scrub.
<i>Castilleja ambigua</i> var. <i>humboldtensis</i>	Humboldt Bay owl's-clover	1B.2	G4T2	S2	None	None	annual herb (hemiparasitic)	0-3 m.	April - August	Coastal salt marsh, sometimes with <i>Spartina</i> , <i>Distichlis</i> , <i>Salicornia</i> , Jaumea. Clay-peat soil with above species.	No coastal marsh habitat.
<i>Castilleja litoralis</i>	Oregon coast paintbrush	2B.2	G4G5T4	S3	None	None	perennial herb (hemiparasitic)	15-100 m.	June	Sandy sites in coastal bluff scrub and coastal scrub; coastal dunes. Grassy coastal bluffs. Cliffs above shore. In understory of mixed conifer forest with <i>Maianthemum</i> sp. Reported from the bank of the Ten Mile River and Jug Handle SNR; vouchered from Navarro Pt. Mostly from Petrolia to Orick, Humboldt Co.	Low potential habitat.
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	1B.2	G2	S2	None	None	perennial herb (hemiparasitic)	0-160 m.	April - August (vegetation : all year)	Coastal bluff scrub, coastal scrub, closed-cone coniferous forest, coastal dunes, coastal prairie. Primarily coastal bluffs. From southern Mendocino Co. around Gualala R. north to Usual, then from one collection at Patrick's Point, Humboldt Co.	High potential habitat in coastal bluff scrub.
<i>Ceanothus gloriosus</i> var. <i>exaltatus</i>	glory brush	4.3	G4T4	S4	None	None	perennial evergreen shrub	30-610 m.	March - June (vegetation : all year)	Chaparral, often in pygmy forest or edges. From Marin to southern Humboldt Co. and extending inland in Mendocino and Sonoma Cos.	No potential habitat because lacking marine terrace soils.

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Lifeform	Elevation	Blooming Period	Notes	Potential for Occurrence within Project Area
<i>Ceanothus gloriosus</i> var. <i>gloriosus</i>	Point Reyes ceanothus	4.3	G4T4	S4	None	None	perennial evergreen shrub	5-520 m.	March – May (vegetation : all year)	Sandy, coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal scrub.	High potential habitat.
<i>Chorizanthe howellii</i>	Howell's spineflower	1B.2	G1	S1	CT	FE	annual herb	0-35 m.	May - July	Sandy, often disturbed, areas of coastal prairie and coastal scrub. Coastal dunes, sandy slopes.	High potential habitat, especially based on historical collections from Noyo Bluffs/Mill Site Property.
<i>Clarkia amoena</i> subsp. <i>whitneyi</i>	Whitney's farewell-to-spring	1B.1	G5T1	S1	None	None	annual herb	10-100 m.	June - August	Coastal bluff scrub, coastal scrub. Coastal bluffs; often in rocky clay soil; in sun on slopes of road cuts. Known Westport to Ft. Bragg area with numerous disjunct locations through coastal CA.	Moderate potential habitat.
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	1B.2	G1	S1	None	None	annual herb	0-20 m.	April - June	Coastal dunes, coastal prairie.	Low potential habitat because coastal bluff scrub lacks dune habitat.
<i>Coptis laciniata</i>	Oregon goldthread	4.2	G4	S3	None	None	perennial rhizomatous herb	0-1000 m.	March – April (vegetation : all year)	Meadows and seeps; North Coast coniferous forest moist streambanks and other mesic sites. Banks and floodplains of rivers in North Coast coniferous forests. Cutbanks of old skid roads. From north of Point Arena, Alder Cr., to Del Norte Co.	No forest habitat.
<i>Cordylanthus tenuis</i> subsp. <i>brunneus</i>	serpentine bird's-beak	4.3	G4G5 T3	S3	None	None	annual herb	475-915 m.	July - August	Usually serpentine. Closed-cone coniferous forest, chaparral, cismontane woodland, along edge of a dirt road, non-serpentine, rocky (serpentine) summit. Known from Gualala Ridge area, Timberwood Way; mostly from southern Inner and Outer North Coast Ranges.	No habitat.
<i>Cornus canadensis</i>	bunchberry	2B.2	G5	S2	None	None	perennial rhizomatous herb	60-1920 m.	May – July	Bogs and fens, meadows and seeps, North Coast coniferous forest. Several populations at the southern end of its distribution in CA are extirpated. Many collections old; need field surveys.	No boggy habitat.
<i>Cuscuta pacifica</i> var. <i>papillata</i>	Mendocino dodder	1B.2	G5T1	S1	None	None	annual vine (parasitic)	0-50 m.	July - October	Coastal dunes (interdune depressions). Rediscovered at Point Arena in 2011. Many historical occurrences may be extirpated; need field surveys. Known to occur on <i>Gnaphalium</i> , <i>Silene</i> , and <i>Lupinus</i> spp. in Mendocino Co.; and on <i>Polycarpon tetraphyllum</i> and <i>Calystegia purpurata</i> subsp. <i>saxicola</i> with <i>Sanicula arctopoides</i> nearby in Sonoma Co.	No dune habitat, however low potential on coastal bluff scrub.
<i>Cypripedium californicum</i>	California lady's slipper	4.2	G4	S4	None	None	perennial rhizomatous herb	30-2750 m.	April – September	Seeps and streambanks, usually serpentine. Bogs and fens, lower montane coniferous forest. Prefers shade and often grows with <i>Darlingtonia californica</i> and with incense cedar.	No boggy or wet habitat in forest.
<i>Erigeron supplex</i>	supple daisy	1B.2	G2	S2	None	None	perennial herb	10-50 m.	May - July	Coastal bluff scrub, coastal prairie. Usually in open rocky areas in grassy sites with short grasses. From Point Reyes; Gualala to Point Arena and then from Little River to Point Cabrillo, and from Glen Blair; with a few occurrences from west of Willits. A few occurrences from Humboldt Co., Orick and east of Eureka.	Low potential habitat in coastal bluff scrub.
<i>Erysimum concinnum</i>	bluff wallflower	1B.2	G3	S3	None	None	annual / perennial herb	0-185 m.	March – May	Coastal bluff scrub, coastal dunes, coastal prairie. Largest occurrence known from Pt. Reyes NS; possibly of hybrid origin. Some occurrences from Del Norte and Mendocino Counties are also of possible hybrid origin; further study is ongoing.	High potential habitat.
<i>Erysimum menziesii</i>	Menzies wallflower	1B.1	G1	S1	CE	FE	perennial herb	0-35 m.	March - June	Localized on coastal dunes and coastal strand. In remnant, open, partially stabilized dune habitat. Plants treated as subsp.; not validly published.	High potential habitat. Occurs nearby.
<i>Erythronium revolutum</i>	coast fawn lily	2B.2	G4	S2S3	None	None	perennial bulbiferous herb	0-1600 m.	March - August	Bogs and fens; broadleaved upland forests; North Coast coniferous forest. On timbered and brushy hillside; wet soil under redwoods. Shady and mesic glens. Sometimes associated with <i>Arbutus menziesii</i> , <i>Lithocarpus densiflorus</i> , <i>Quercus chrysolepis</i> , and <i>Pseudotsuga menziesii</i> . On rock outcrops and slopes in forests. Along rivers and in meadows. Known from Greenwood Ridge southeast of Elk north to Del Norte Co, and one disjunct occurrence from 1931 near St. Helena. Usually a couple miles from the coast.	No forest habitat.

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<i>Erythronium oregonum</i>	giant fawn lily	2B.2	G5	S2	None	None	perennial herb	100-1150 m.	March - July	Often moist or damp soils in openings of cismontane woodland, firs, oaks, tanoak. Rocky areas, sometimes serpentine; meadows and seeps. Mostly from Humboldt Co. away from the coast but isolated occurrences in Bell Springs, northern Mendocino Co. and southeast of Hiouchi, Del Norte Co.	No forest habitat.
<i>Fritillaria roderickii</i>	Roderick's fritillary	1B.1	G1Q	S1	CE	None	perennial bulbiferous herb	15-400 m.	March - May	Coastal bluff scrub, coastal prairie, valley and foothill grassland. Grassy slopes, mesas. Usually found on heavy clay soils that stay wet through May and then dry by October. Often coastal, from Gualala to Manchester with several occurrences in the Anderson Valley, Ukiah, and north of Orrs Springs.	No wet clay habitat on coastal bluff.
<i>Gilia capitata</i> subsp. <i>chamissonis</i>	blue coast gilia	1B.1	G5T2	S2	None	None	annual herb	2-200 m.	April - July	Coastal dunes; coastal scrub. On disturbed Franciscan sage scrub on loose sandy soils. Growing with <i>Ericameria ericoides</i> , <i>Lupinus chamissonis</i> , <i>Erysimum franciscanum</i> , <i>Croton californicus</i> , <i>Camissonia cheiranthifolia</i> , <i>Phacelia distans</i> . From San Francisco Bay to Bodega Bay; Mendocino Headlands and Ten Mile Dunes; and Ferndale area in Humboldt Co.	High potential habitat.
<i>Gilia capitata</i> subsp. <i>pacifica</i>	Pacific gilia	1B.2	G5T3T4	S2	None	None	annual herb	5-1330 m.	April - August	Coastal bluff scrub, openings in chaparral, coastal prairie, valley and foothill grassland. Steep cliffs, fields, and dry banks.	High potential habitat.
<i>Gilia capitata</i> subsp. <i>tomentosa</i>	woolly-headed gilia	1B.1	G5T2	S2	None	None	annual herb	- m.	May - July	Coastal bluff scrub, valley and foothill grassland, rocky outcrops on the coast. Locally abundant on serpentine outcrop and serpentine-derived loam on west-facing slopes in grassland/pastureland. Grows with <i>Linum perenne</i> , <i>Lupinus</i> spp. and <i>Avena barbata</i> . From Pt. Reyes to Stewart's Point, Sonoma Co.	Out of range.
<i>Gilia millefoliata</i>	dark-eyed gilia	1B.2	G2	S2	None	None	annual herb	2-30 m.	April - July	Coastal dunes. Sandy, stabilized dune habitat. Sandy grassland between <i>Lupinus arboreus</i> shrubs dominated by nonnative grasses.	No dune habitat, but low potential on coastal bluff scrub.
<i>Glehnia littoralis</i> subsp. <i>leiocarpa</i>	American glehnia	4.2	G5T5	S3.2	None	None	perennial herb	0-20 m.	May - August	Coastal dunes, wet seeps on bluff faces, sandstone bluffs with iceplant, beach sand just above high tide. From northern Monterey Co. north to Del Norte Co. In Mendocino: Glass Beach, Point Arena, and Manchester State Park near environmental campsites in driftwood.	High potential habitat.
<i>Glyceria grandis</i>	American manna grass	2B.3	G5	S2	None	None	perennial rhizomatous herb	15-1980 m.	June - August	Bogs and fens, wet meadows and seeps, marshes and swamps (streambanks and lake margins). Ditches streams and ponds in valleys and lower elevations in the mountains. Sometimes standing in water; margins of rivers. Only coastal collections from Garcia R. slough. Disjunct from high elevations.	Poor habitat and not expected in maintained sludge lagoons.
<i>Hemizonia congesta</i> subsp. <i>congesta</i>	white seaside tarplant	1B.2	G5T2T3	S2S3	None	None	annual herb	20-560 m.	April - November	Sometimes coastal scrub but often valley and foothill grasslands, grassy valleys and hills, sometimes on grassy slopes with thin clayish soils; often in fallow fields. Known from Santa Clara to southern Del Norte Co. with occurrences from Marin and Sonoma Cos. Sometimes on roadsides. Known from Glen Blair, Comptche, and Pudding Creek.	High potential habitat.
<i>Hemizonia congesta</i> subsp. <i>tracyi</i>	Tracy's tarplant	4.3	G5T3	S3.3	None	None	annual herb	120-1200 m.	May - October	Openings, sometimes serpentine. Coastal prairie, lower montane coniferous forest, North Coast coniferous forest. From Booneville to northern Humboldt Co., with most occurrence from Arcata to Leggett.	No forest habitat.
<i>Hesperervax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	1B.2	G4T2T3	S2S3	None	None	annual herb	0-215 m.	March - June	Sandy coastal bluffs; coastal dunes, coastal dune mat, and sandy openings in wet dune meadows. Coastal bluff scrub. Rocky, grassy slopes. In areas of sparse vegetation cover in sandy substrate.	High potential habitat on bluffs.
<i>Hesperocyparis pygmaea</i>	pygmy cypress	1B.2	G2	S2	None	None	perennial evergreen tree	30-600 m.	(vegetation : all year)	Closed-cone coniferous forests, usually podzol-like soils or Blacklock soils in Mendocino cypress pygmy forests.	No marine terrace soils.
<i>Hesperolinon adenophyllum</i>	glandular dwarf flax	1B.2	G3	S3	None	None	annual herb	150-1315 m.	May - August	Usually serpentine, sometimes serpentine barrens in chaparral, serpentine scree on roadside, or burned areas. Chaparral, cismontane woodland, valley & foothill grassland. Not known from >5 km west of Willits.	Out of range.
<i>Horkelia marinensis</i>	Point Reyes horkelia	1B.2	G2	S2	None	None	perennial herb	5-755 m.	May - September	Sandy sites in coastal dunes, coastal prairie, and coastal scrub. From Monterey north Rockport, northern Mendocino Co, with a potentially dubious southern disjunct occurrence in the Irish Hills, coastal San Luis Obispo Co.	Low potential habitat.

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<i>Horkelia tenuiloba</i>	thin-lobed horkelia	1B.2	G2	S2	None	None	perennial herb	50-500 m.	May - July	Mesic openings or sandy sites in broadleaved upland forests, chaparral, and valley and foothill grassland. Wet meadows and marshy areas surrounded by <i>Pseudotsuga menziesii</i> , <i>Rhamnus californica</i> , <i>Baccharis pilularis</i> . Growing on sandy loam in coastal scrub. On sandstone in "pine barrens." Mostly ranging from southern Marin Co. to Anchor Bay, southern Mendocino Co. and inland east to western Napa Co.; also with several disjunct vouchers without supplemental determinations from Colusa Co., southern Monterey Co., and San Luis Obispo.	No habitat.
<i>Hosackia gracilis</i>	harlequin lotus	4.2	G4	S3	None	None	perennial rhizomatous herb	0-700 m.	March - July	Wetlands, roadsides, broadleaved upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, North Coast coniferous forest, valley and foothill grassland. Usually found in wetlands.	Low potential based on no mesic habitat.
<i>Iris longipetala</i>	coast iris	4.2	G3	S3	None	None	perennial rhizomatous herb	0-600 m.	March - May	Mesic. Coastal prairie, lower montane coniferous forest, meadows and seeps. Growing on roadcut on the side of a bluff, 0.25 miles north of Ten Mile River mouth. Wet bluffs in Mendocino City.	Potential habitat.
<i>Juncus supiniformis</i>	hair-leaved rush	2B.2	G5	S1	None	None	perennial rhizomatous herb	20-100 m.	April - June	Bogs and fens; freshwater marshes and swamps near the coast. Around pools, in ruts and ditches in podzol soils. One collection from Pt. Reyes, several collections from Mendocino to Fort Bragg area, two from Humboldt Co., and one from Del Norte Co.	No mesic habitat.
<i>Kopsiopsis hookeri</i>	small groundcone	2B.3	G5	S1S2	None	None	perennial rhizomatous herb (parasitic)	90-885 m.	April - August	North Coast coniferous forest. Open woods, shrubby places. Pygmy forest intergrading with redwood and Douglas-fir forests with sandy soils and flat aspect. Generally on <i>Gaultheria shallon</i> . Plants concentrated around the base and/or drip line of <i>Arctostaphylos columbiana</i> , but also in close proximity with other ericaceous species. May be parasitic on <i>Arctostaphylos</i> . Locally mesic areas, like areas with moss.	No forest habitat.
<i>Lasthenia californica</i> subsp. <i>bakeri</i>	Baker's goldfields	1B.2	G3TH	SH	None	None	perennial herb	60-520 m.	April - October	Openings in closed-cone coniferous forest; coastal scrub; meadows and seeps; marshes and swamps. On windswept grassy hills; grazed areas. Early in the life of a plant the leaves may be wide and the plant prostrate; later the leaves become narrow and the plants' flowering stems turn upright.	Potential habitat in coastal bluff scrub.
<i>Lasthenia californica</i> subsp. <i>macrantha</i>	perennial goldfields	1B.2	G3T2	S2	None	None	perennial herb	5-520 m.	January - November	Coastal bluff scrub, coastal dunes, and coastal scrub. In clay soil on wind-swept ocean bluffs and coastal terraces, and in grassy patches and dried vernal pool beds. On sea bluffs and grassy plateaus back from the ocean. Coastal bluffs in heavy adobe; sandy soil of ocean headlands.	Potential habitat in coastal bluff scrub.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	1B.1	G1	S1	None	FE	annual herb	0-470 m.	March - June	Mesic sites in cismontane woodlands; alkaline playas; valley and foothill grasslands; vernal pools, swales, and low depressions. Extirpated from most of its range. Only one coastal location in Manchester from 1938 otherwise from eastern San Francisco Bay.	No habitat.
<i>Lathyrus palustris</i>	marsh pea	2B.2	G5	S2S3	None	None	perennial herb	1-100 m.	March - August	Bogs and fens; mesic sites (seasonally wet depressions) in clay loam soil of coastal prairies, coastal scrub, lower montane coniferous forests, and North Coast coniferous forests, seasonal seeps surrounded by redwood/Douglas-fir/tanoak forests; marshes and swamps, including swamps adjacent to tidewater. Sometimes at the edge of wet <i>Carex</i> marshes in transition to scrub and spruce forests. Only one Mendocino occurrence. Coastal and then at high elevations.	Poor mesic habitat and not expected in maintained sludge lagoons.
<i>Layia carnosa</i>	beach layia	1B.1	G2	S2	CE	FE	annual herb	0-60 m.	March - July	Coastal dunes and sandy coastal scrub. From Monterey, Point Reyes, Petrolia, and Eureka area.	Very low potential, not known from Sonoma or Mendocino Cos.
<i>Lilium maritimum</i>	coast lily	1B.1	G2	S2	None	None	perennial bulbiferous herb	5-475 m.	May - August	Broadleaved upland forests, closed-cone coniferous forests, coastal prairies, coastal scrub, freshwater marshes and swamps. Historically in sandy soil, often on raised hummocks or bogs; today mostly on roadsides or roadside ditches. Sometimes growing with <i>Veratrum fimbriatum</i> , <i>Lithocarpus</i> , <i>Pinus muricata</i> , <i>Vaccinium</i> , <i>Gaultheria shallon</i> , <i>Pteridium</i> , and <i>Morella</i> .	Poor habitat.

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<i>Lilium rubescens</i>	redwood lily	4.2	G3	S3	None	None	perennial bulbiferous herb	30-1910 m.	April - September	Sometimes serpentine, sometimes roadsides. Broadleaved upland forest, chaparral, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest. Several 100-year old records for Mendocino City area; one recent from Haven's Neck. Usually not on the immediate coast.	No forest habitat.
<i>Limnanthes bakeri</i>	Baker's meadow foam	1B.1	G1	S1	CR	None	annual herb	175-910 m.	April - May	Meadows and seeps, freshwater marshes and swamps, vernally mesic areas in valley and foothill grassland, vernal pools. Known from valley around Willits.	No habitat.
<i>Listera cordata</i>	heart-leaved twayblade	4.2	G5	S4	None	None	perennial herb	5-1370 m.	February - July	Bogs and fens, lower montane coniferous forest, North Coast coniferous forest. Grows in patches from thin runners in moss and moist micro-climates. On thick duff of bishop pine-redwood forest in Point Arena.	No mesic forest habitat.
<i>Lupinus milo-bakeri</i>	Milo Baker's lupine	1B.1	G1Q	S1	CT	None	annual herb	395-430 m.	June - September	Often along roadsides in cismontane woodland. Valley and foothill grasslands. Mostly from Covelo area but also Longvale where it was purposefully introduced on CalTrans property along Hwy 101.	No habitat and out of range.
<i>Lycopodium clavatum</i>	running-pine	4.1	G5	S3	None	None	perennial rhizomatous herb	45-1225 m.	June - August	Marshes & swamps, North Coast coniferous forests (mesic). Sometimes associated with pygmy forest or podzol soils.	No habitat.
<i>Microseris borealis</i>	northern microseris	2B.1	G5	S1	None	None	perennial herb	1000-2000 m.	June - September	Bogs and fens, lower montane coniferous forest, meadows and seeps/mesic. Occurs almost always under natural conditions in wetlands. One record from an unspecified location in Mendocino Co., and then several occurrences ~15 mi. east of Eureka, Humboldt. Co.	Poor habitat and range.
<i>Microseris paludosa</i>	marsh microseris	1B.2	G2	S2	None	None	perennial herb	5-300 m.	April - July	Closed-cone coniferous forests, cismontane woodlands, coastal scrub, valley and foothill grasslands; vernal pools. Known from northern San Luis Obispo Co. to Point Arena. A 1968 collection from Point Arena (3.2 km to N, between Hwy. 1 and beach) is the northernmost occurrence.	Poor habitat.
<i>Mitellastrum caulescens</i>	leafy-stemmed mitrewort	4.2	G5	S4	None	None	perennial rhizomatous herb	5-1700 m.	April - October	Mesic sites in broadleaved upland forests, lower montane coniferous forests, meadows and seeps, North Coast coniferous forests. Moist alluvial soil under alder; mesic streamside and streambank habitat. Sides of roads in floodplains.	No forest habitat.
<i>Montia howellii</i>	Howell's monita	2B.2	G3G4	S3	None	None	annual herb	0-835 m.	February - May	Moist open ground, vernally mesic sites, sometimes roadsides. Meadows and seeps, north coast coniferous forest, vernal pools. From southern Humboldt Co. north to Orick.	Out of range.
<i>Navarretia leucocephala</i> subsp. <i>bakeri</i>	Baker's navarretia	1B1	G4T2	S2	None	None	annual herb	5-1740 m.	April - July	Wet areas in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. Known from Santa Rosa and other locations (Longvale and Willits) primarily along or east of Hwy 101.	No habitat.
<i>Oenothera wolfii</i>	Wolf's evening-primrose	1B.1	G1	S1	None	None	perennial herb	3-800 m.	May - October	Sandy, usually mesic sites in coastal bluff scrub, coastal dunes, coastal prairie, and lower montane coniferous forests. Along roads on vertical cutbanks and in grassy median. On disturbed sterile soil; upper stabilized dunes; rocky slopes protected above strand; vertical cliffs above the ocean. Abundant in Ten Mile dunes and known from one 1964 collection ~3 mi. south of Pt. Arena along Hwy 1 in grassy field.	Very low potential habitat.
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	2B.2	G4T4	S2S3	None	None	perennial rhizomatous herb	30-650 m.	February - July	Coastal scrub, North Coast coniferous forests. In loose, rocky, poorly consolidated siltstone and mudstone. Associated with old growth redwood, Douglas-fir, tanoak, maple, dogwood, wild ginger, salal. Steep slopes in dry, sunny woods. Sandy stream banks, roadsides, rocky banks, old quarries. From Mendocino/Fort Bragg area, central Humboldt Co., and Del Norte Co.	Poor habitat.
<i>Perideridia gairdneri</i> subsp. <i>gairdneri</i>	Gairdner's yampah	4.2	G5T4	S4	None	None	perennial herb	0-610 m.	June - October	Vernally mesic sites in grasslands and swales, broadleaved upland forests, chaparral, coastal prairies, valley and foothill grasslands, vernal pools. Few coastal records, one from Point Arena, another From Glenblair.	No mesic forest meadow openings.
<i>Phacelia argentea</i>	sand dune phacelia	1B.1	G2	S1	None	None	perennial herb	3-25 m.	June - August	In open sand above high tide, partly stabilized sand dunes, coastal bluffs. Two unvouchered records from Jug Handle SNR and Salt Point, one misidentified voucher from mouth of Ten Mile River in 1956. Most occurrences from north of Crescent City.	Out of range.
<i>Phacelia insularis</i> var. <i>continentis</i>	North Coast phacelia	1B.2	G2T1	S1	None	None	annual herb	10-170 m.	March - May	Sandy, sometimes rocky, sites in coastal bluff scrub; open maritime bluffs; coastal dunes. Rocky, thin soil with native and non-native grasses and forbs. Sandy pastureland and grazed coastal prairie.	Potential habitat.

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<i>Pinus contorta</i> subsp. <i>bolanderi</i>	Bolander's beach pine	1B.2	G5T2	S2	None	None	perennial evergreen tree	75-250 m.	(vegetation : all year)	Closed-cone coniferous forests with podzol-like soils. Associated with Mendocino cypress and bishop pine, and Mendocino pygmy cypress forests. Mainly from marine terraces of Navarro R. to the Ten Mile R. but one voucher from Manchester town and a report from Salt Point SP. Also 2 records from Humboldt Co.: Patrick's Point and Samoa Dunes.	No habitat.
<i>Piperia candida</i>	white-flowered rein orchid	1B.2	G3?	S2	None	None	perennial herb	30-1310 m.	March - September	Forest and chaparral openings. Sometimes serpentinite. Broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest. Shady, rocky areas, gravel bars. In the redwood region north of San Francisco, known from Cazadero north to Del Norte Co. at various elevations.	No habitat.
<i>Pityopus californicus</i>	California pinefoot	4.2	G4G5	S4	None	None	perennial herb (achlorophyllous)	15-2225 m.	March - August	Mesic. Broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest. Under redwoods, tanoak/Douglas fir forests, Jug Handle SNR, Big River, Gualala; fairly frequent on the coast. (<i>P. californica</i>). From Navarro north to Del Norte Co.	No forest habitat.
<i>Pleuropogon hooverianus</i>	North Coast semaphore grass	1B.1	G2	S2	CT	None	perennial rhizomatous herb	10-671 m.	April - June	Open and mesic areas of North Coast coniferous and broadleaved upland forests (oak/madrone); grassy flats in the shade of redwoods. Meadows and seeps. Wet grassy, usually shady areas, sometimes in freshwater marshes and often associated with forest environments. In stagnant water of highway ditches.	Poor habitat.
<i>Pleuropogon refractus</i>	nodding semaphore grass	4.2	G4	S4	None	None	perennial rhizomatous herb	0-1600 m.	March - August	Mesic; open wet meadows, in wet areas along roads and streamsides. Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest, riparian forest. Along road cuts in alder riparian forest of Russian Gulch. Mostly from Ferndale to Crescent City along the coast and inland to high elevations, and then two disjunct populations in Russian Gulch, Mendocino Co. and Bolinas, Marin Co.	Poor habitat.
<i>Polemonium carneum</i>	royal sky pilot	2B.2	G3G4	S2	None	None	perennial herb	0-1830 m.	April - September	Coastal prairie, coastal scrub, lower montane coniferous forest. Often collected from moist places in brushy areas or from edges of thickets. From San Francisco Bay area; east of Bodega Bay; Humboldt Co. south of Ferndale and Big Lagoon; then Del Norte Co. and into the Klamath Ranges.	Potential habitat.
<i>Potamogeton epihydrus</i>	ribbon leaf pondweed	2B.2	G5	S2.2?	None	None	perennial rhizomatous herb	369-2172 m.	June - September	Shallow freshwater marshes and swamps. Along the marshy edges of streams. Known from Willits, Laytonville, and Covelo.	Poor mesic habitat and not expected in maintained sludge lagoons.
<i>Puccinellia pumila</i>	dwarf alkali grass	2B.2	G4?	SH	None	None	perennial herb	1-10 m.	July	Coastal salt marshes and swamps; meadows and seeps, mineral spring meadows. Unconfirmed record (no date) from Fort Bragg. Salt marsh at the mouth of the Eel River is the only confirmed coastal location in CA.	No habitat.
<i>Ramalina thrausta</i>	angel's hair lichen	2B.1	G5	S2?	None	None	fruticose lichen (epiphytic)	75-430 m.		In northern CA it is usually found on dead twigs, and has been found on <i>Alnus rubra</i> , <i>Calocedrus decurrens</i> , <i>Pseudotsuga menziesii</i> , <i>Quercus garryana</i> , and <i>Rubus spectabilis</i> . Most collections from Del Norte Co. One collection from Sonoma Co. where it grows on and among dangling mats of <i>Ramalina menziesii</i> and <i>Usnea</i> spp. Similar to <i>Alectoria sarmentosa</i> , <i>A. vancouverensis</i> , and <i>R. menziesii</i> .	Insufficient substrate habitat.
<i>Rhynchospora alba</i>	white beaked-rush	2B.2	G5	S2	None	None	perennial rhizomatous herb	60-2040 m.	July - August	Sphagnum bogs and fens (sometimes in Mendocino pygmy forests); meadows and seeps; marshes and swamps (freshwater). Sometimes in low, wet swales immediately surrounding grasslands. Known from Inglenook Fen and bog east of Fort Bragg.	No boggy habitat.
<i>Romanzoffia tracyi</i>	Tracy's romanzoffia	2B.3	G4	S2	None	None	perennial herb	15-30 m.	March - June	Rocky coastal bluff scrub, coastal scrub, moist grassy nooks on ocean bluffs, offshore rocks. From Cape Mendocino north to Del Norte Co.	Out of range.
<i>Sanguisorba officinalis</i>	great burnet	2B.2	G5?	S2	None	None	perennial rhizomatous herb	60-1400 m.	July - October	Bogs and fens; broadleaved upland forests; meadows and seeps; marshes and swamps (marshy streams); North Coast coniferous forests; riparian forests. Serpentine seepage areas and along stream borders.	No mesic habitat.
<i>Sidalcea calycosa</i> subsp. <i>rhizomata</i>	Point Reyes checkerbloom	1B.2	G5T2	S2	None	None	perennial rhizomatous herb	3-75 m.	April - September	Freshwater marshes and swamps near the coast. Moist slopes from seeps and ephemeral streams, most areas quite marshy.	No mesic habitat.

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Lifeform	Elevation	Blooming Period	Notes	Potential for Occurrence within Project Area
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	4.2	G3	S3	None	None	perennial herb	0-730 m.	March - August	Broadleaved upland forests; coastal prairie, coastal scrub, North Coast coniferous forest, riparian woodland. Woodlands and clearings near the coast, often in disturbed areas. Sometimes along floodplains.	Low potential.
<i>Sidalcea malviflora</i> subsp. <i>patula</i>	Siskiyou checkerbloom	1B.2	G5T2	S2	None	None	perennial rhizomatous herb	15-880 m.	May - August	Coastal bluff scrub; coastal prairie; broadleaved upland forests, open areas of North Coast coniferous forest. Pastures, grassy landings, and roadsides. Only 1 Mendocino occurrence 2 mi. south of Albion in roadside ditch and then mostly from southern Humboldt Co. north to the Oregon border, coastal and inland.	Low potential for occurrence.
<i>Sidalcea malviflora</i> subsp. <i>purpurea</i>	purple-stemmed checkerbloom	1B.2	G5T1	S1	None	None	perennial rhizomatous herb	15-85 m.	May - June	Broadleaved upland forests; coastal prairie; grassy hills. From coastal San Mateo Co. north to Fort Bragg, Mendocino Co.	No forest habitat.
<i>Sisyrinchium hitchcockii</i>	Hitchcock's blue-eyed grass	1B.1	G2	S1	None	None	perennial rhizomatous herb	not given	June	Openings in cismontane woodlands; valley and foothill grassland. Known in CA from only one occurrence 3 mi east of Cape Mendocino, otherwise mainly from OR around Eugene.	Out of range.
<i>Stellaria littoralis</i>	beach starwort	4.2	G3	S3	None	None	perennial rhizomatous herb	5-40 m.	March - July	Bogs and fens, coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps. At Bodega Pt. in dense vegetation of <i>Juncus lescurei</i> , <i>Mimulus guttatus</i> . In coyote brush in dunes at Manchester State Park. Reported from Ten Mile dunes. Coastal bluffs near Trinidad, Humboldt Co.	Low potential habitat.
<i>Toxicoscordion fontanum</i>	marsh zigadenus	4.2	G3	S3	None	None	perennial bulbiferous herb	15-1000 m.	April - July	Vernally mesic, often serpentine. Chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, marshes and swamps. One coastal record from Ross Cr., south of Moat Cr.	No mesic habitat.
<i>Trifolium buckwestiorum</i>	Santa Cruz clover	1B.1	G2	S2	None	None	annual herb	105-610 m.	April - October	Broad-leaved upland forests, cismontane woodlands, coastal prairie. Moist grasslands. Disturbed sites on roadbed in redwood forest; Sparsely vegetated, gravelly, hardpacked, somewhat barren flats or gentle inclines, roadbeds or former roadbeds. Flat open areas with sun exposure, seasonal moisture, and gravelly, poor soils. Shallow depressions that collect water in rain. Common associates include <i>Juncus bufonius</i> , <i>Silene sessilis</i> , <i>Danthonia californica</i> , and <i>Bromus hordeaceus</i> . From Monterey; Santa Cruz; collected from Bodega Bay and reported from The Cedars in Sonoma Co; northern occurrence in Mendocino Co., most collections from ~5 miles up Garcia River.	No habitat.
<i>Trifolium trichocalyx</i>	Monterey clover	1B.1	G1	S1	CE	FE	annual herb	30-240 m.	April - June	Closed-cone coniferous forest (sandy, openings, burned areas). Discovered in Big River Forest in 2011. Previously known from only two occurrences from the central portion of the Monterey Peninsula. "Plants growing in shaded, moist soil of seasonal logging road graded 5 years prior. North-facing slope within redwood/Douglas fir/tanoak forest" in grass around road in pine wood." from label (JEPS111487).	No habitat.
<i>Triquetrella californica</i>	coastal triquetrella	1B.2	G1	S1	None	None	moss	10-100 m.		On soil in coastal bluffs scrub and coastal scrub.	Potential habitat.
<i>Usnea longissima</i>	Methuselah's beard lichen	4.2	G4	S4	None	None	fruticose lichen (epiphytic)	50-1460 m.		On tree branches; usually on old growth hardwoods and conifers in broadleaved upland forest and North Coast coniferous forest.	No habitat.
<i>Veratrum fimbriatum</i>	fringed false-hellebore	4.3	G3	S3.3	None	None	perennial herb	3-300 m.	July - September	Wet areas in coastal scrub and North Coast coniferous forests, meadows and seeps, bogs and fens. Restricted to coastal Sonoma and Mendocino Counties.	No mesic habitat.
<i>Viola adunca</i>	Western dog violet	Not ranked	None	None	None	None	perennial herb		April - August	Yellow pine forest, red fir forest, lodgepole forest, redwood forest, mixed evergreen forest, subalpine forest, alpine fell-fields, wetland-riparian. Common and widespread on open sea bluffs to red fir forest.	No habitat in non-mesic coastal bluff scrub.
<i>Viola palustris</i>	alpine marsh violet	2B.2	G5	S1S2	None	None	perennial rhizomatous herb	0-150 m.	March - August	Coastal bogs and fens; mesic coastal scrub. Swampy, shrubby places in coastal scrub or coastal bogs. Carpeting the ground in shady wet places but flowering rarely. Sometimes growing among Carex, or among brush at edges of swamps. Freshwater marsh on deep peat substrate (4-5'). Very few locations on the Mendocino Coast. Known from northern Sonoma Co. north to the Oregon border. Usually coastal but can occur inland at higher elevations.	No habitat.

Special Status Animals with Potential for Occurrence in Coastal Mendocino County. Species gleaned from the California Department of Fish and Wildlife's list, "Special Animals," (CDFW 2016). See Table 1 for an explanation of global and state rankings. An explanation of the field "Organization: Code" is at the end of the table.

Scientific name Common name	ESA (Federal)	CESA (State)	Global Rank	State Rank	Organization: Code	Habitat	Potential for Occurrence within Project Area
INVERTEBRATES							
Snails, Slugs, and Abalone (<i>GASTROPODA</i>)							
<i>Helminthoglypta arrosa pmoensis</i> Pomo bronze shoulderband	None	None	G2G3T1	S1	IUCN:DD	Found near the coast in heavily-timbered redwood canyons of Mendocino County, from Big River and Russian Gulch watersheds. Found under redwoods. Generally, in somewhat moist duff. Found in scrub in forest opening under a power line in Russian Gulch adjacent to second growth redwood forest.	Not good forest habitat.
<i>Noyo interseassa</i> Ten Mile shoulderband	None	None	G2	S2	None	Known from a few locations in Mendocino County with limited habitat information. Known from Ten Mile Dunes. Barry Roth suspects most snails found in Fort Bragg would be <i>N. interseassa</i> and <i>Helminthoglypta arrosa</i> . subsp. <i>a</i> .	Potential occurrence – known from Glass Beach.
Beetles (<i>INSECTA, Coleoptera</i>)							
<i>Coelus globosus</i> Globose dune beetle	None	None	G1G2	S1S2	IUCN:VU	Subterranean beetle that tunnels through sand under dune vegetation. Since coastal dune habitat in California is diminishing, the beetle is a special-status species.	None. No coastal dunes.
Butterflies & Moths (<i>INSECTA, Hymenoptera</i>)							
<i>Lycaeides argyrognomon lotis</i> [<i>Plebejus idas lotis</i>] lotis blue butterfly	Endangered	None	G5TH	SH	XERCES:CI	Not seen since 1983, it is primarily from Mendocino County but historically from northern Sonoma and possibly Marin Counties. Inhabits wet meadows, damp coastal prairie, and potentially bogs or poorly-drained sphagnum-willow bogs where soils are waterlogged and acidic. Presumed host plant is <i>Hosackia gracilis</i> [<i>Hosackia gracilis</i>].	No habitat. No host plants found.
<i>Speyeria zerene behrensii</i> Behren's silverspot butterfly	Endangered	None	G5T1	S1	XERCES:CI	Historically from near the City of Mendocino, Mendocino County, south to the area of Salt Point State Park, Sonoma County. Now presumed to be from Manchester south to Salt Point area. Inhabits coastal terrace prairie with caterpillar host plants: violet (<i>Viola adunca</i>) and adult nectar sources: thistles, asters, etc.	No. No coastal terrace prairie habitat. No host plants found.
Ants, Bees, & Wasps (<i>INSECTA, Hymenoptera</i>)							
<i>Bombus occidentalis</i> Western bumble bee	None	None	G2G3	S1	USFS:S XERCES:IM	Populations in central California have declined since the 1990's. It visits flowers in a variety of habitats. Identified by a white patch on its abdomen hind tip. None recorded from coastal Mendocino County at http://www.xerces.org/bumblebees/ . Nests in abandoned rodent burrows or undisturbed grass 6-18" below ground and occasionally on the surface in clumps of grass. (http://www.xerces.org/wp-content/uploads/2009/03/xerces_2008_bombus_status_review.pdf)	Potential habitat based on limited information.
FISH							
Lampreys (<i>PETROMYZONTIDAE</i>)							
<i>Entosphenus tridentatus</i> Pacific lamprey	None	None	G4	S4	AFS:VU BLM:S USFS:S	Anadromous lamprey found in freshwater rivers around the Pacific Rim, from Japan to Baja California. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No suitable watercourses.
<i>Lampetra ayresii</i> river lamprey	None	None	G4	S4	AFS:VU CDFW:SSC	Anadromous lamprey that uses riffle and side channel habitats for spawning and for ammocoete rearing where good water quality is essential. Adult Pacific Lamprey spawn in habitat similar to salmon: low gradient stream reaches, in gravel, often at the tailouts of pools and riffles.	No suitable watercourses.
Trout & Salmon (<i>SALMONIDAE</i>)							
<i>Oncorhynchus gorbuscha</i> pink salmon	None	None	G5	S1	CDFW:SSC	Most spawn in intertidal or lower reaches of streams and rivers in Sept and Oct. and move further upstream in Sacramento River. Optimal temp = 5.6 to 14.4° C. Embryos and alevins require fast-flowing well oxygenated water for development and survival.	No streams present.
<i>Oncorhynchus kisutch</i> Coho salmon - central California coast ESU	Endangered	Endangered	G4	S2?	AFS:EN	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	No sufficient aquatic habitat.
<i>Oncorhynchus kisutch</i> Coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	G4T2Q	S2?	AFS:TH CDFW:SSC	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	No sufficient aquatic habitat.
<i>Oncorhynchus mykiss irideus</i> summer-run steelhead trout	None	None	G5T4Q	S2	CDFW:SSC	Cool, swift, shallow water and clean loose gravel for spawning, and suitably large pools in which to spend the summer.	No sufficient aquatic habitat.

Scientific name Common name	ESA (Federal)	CESA (State)	Global Rank	State Rank	Organization: Code	Habitat	Potential for Occurrence within Project Area
<i>Oncorhynchus mykiss irideus</i> steelhead - central California coast DPS	Threatened	None	G5T2Q	S2	AFS:TH CDFW:SSC	Adult steelhead require high flows with water at least 18 cm deep for passage. They may leap up to ~3 m. For spawning, sufficient streamflow over clean gravel, cool water temperature, depth, and cover for escape (usually a deep pool with cover).	No sufficient aquatic habitat.
<i>Oncorhynchus mykiss irideus</i> steelhead-northern California DPS	Threatened	None	G5T2Q	S2	AFS:TH CDFW:SSC	Cool, swift, shallow water and clean loose gravel for spawning.	No sufficient aquatic habitat.
<i>Oncorhynchus tshawytscha</i> chinook salmon – California coastal ESU	Threatened	None	G5	S1	AFS:TH	Adults depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27° C lethal to adults.	No sufficient aquatic habitat.
Minnows & Carp (CYPRINIDAE)							
<i>Lavinia symmetricus</i> <i>navarroensis</i> Navarro roach	None	None	G4T1T2	S1S2	CDFW:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams. Found in the lower, warmer reaches of streams in the Russian and Navarro River drainages.	No streams present.
<i>Lavinia symmetricus parvipinnis</i> Gualala roach	None	None	G4T1T2	S1S2	CDFW:SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams.	No streams present.
Gobies (GOBIIDAE)							
<i>Eucyclogobius newberryi</i> tidewater goby	Endangered	None	G3	S2S3	AFS:EN CDFW:SSC IUCN:VU	Brackish water habitats along the California coast from Agua Hedionda lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	No aquatic features.
AMPHIBIANS & REPTILES							
Olympic salamanders (RHYACOTRITONIDAE)							
<i>Rhyacotriton variegatus</i> southern torrent (=seep) salamander	None	None	G3G4	S2S3	CDFW:SSC IUCN:LC USFS:S	Found in Coastal redwood, Douglas fir, mixed conifer, montane riparian, and montane hardwood-conifer forests from northern California south to Point Arena. Aquatic habitat includes permanent cold creeks, streams and seepages with low water flow; associated with moss-covered rocks within trickling water and the splash zone of waterfalls; old-growth coniferous forests with closed canopy; <50% cobble in creeks, remainder mixture of pebble, gravel and sand.	No aquatic habitat.
Tailed frogs (ASCAPHIDAE)							
<i>Ascaphus truei</i> Pacific tailed frog	None	None	G4	S2S3	CDFW:SSC IUCN:LC	Occurs in montane hardwood-conifer, redwood, Douglas-fir and ponderosa pine habitats. Coastal from Anchor Bay, Mendocino Co. to Oregon border. Cold, clear, rocky streams in wet forests. They do not inhabit ponds or lakes. A rocky streambed is necessary for cover for adults, eggs, and larvae. After heavy rains, adults may be found in the woods away from the stream.	No aquatic habitat.
Frogs (RANIDAE)							
<i>Rana aurora aurora</i> northern red-legged frog	None	None	G4 [T2]	S2?	CDFW:SSC USFS:S	Found in humid forests, woodlands, grasslands, and streambanks in northwestern California. Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season. Integration zone between northern and California species is between Manchester and Elk.	No. Out of range.
<i>Rana aurora draytonii</i> California red-legged frog	Threatened	None	G2G3	S2S3	CDFW:SSC IUCN:VU	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Potential upland habitat but not likely since no breeding habitat nearby.
<i>Rana boylei</i> foothill yellow-legged frog	None	None	G3	S2S3	BLM:S CDFW:SSC IUCN:NT USFS:S	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying.	No sufficient aquatic habitat.
Box & Water Turtles (EMYDIDAE)							
<i>Emys marmorata marmorata</i> western pond turtle	None	None	G3G4	S3	BLM:S CDFW:SSC IUCN:VU USFS:S	Former scientific name: <i>Clemmys marmorata marmorata</i> . Associated with permanent or nearly permanent water in a wide variety of habitats. Requires basking sites. Nests sites may be found up to 0.5 km from water.	No sufficient aquatic habitat.

BIRDS							
Pelicans (PELECANIDAE)							
<i>Pelecanus occidentalis californicus</i> California brown pelican (nesting colony & communal roosts)	Delisted	Delisted	G4T3	S1S2	BLM:S CDFW:FP USFS:S	Nest colonies are on offshore islands free of mammalian predators and human disturbance, are of sufficient elevation to prevent flooding of nests, and are associated with an adequate and consistent food supply. Brown pelicans roost communally, generally in areas that are near adequate food supplies, have some type of physical barrier to predation and disturbance, and provide some protection from environmental stresses such as wind and high surf.	No marine habitat.
Cormorants (PHALACROCORACIDAE)							
<i>Phalacrocorax auritus</i> double-crested cormorant (nesting colony)	None	None	G5	S3	CDFW:WL IUCN:LC	Rookery site: colonial nester on coastal cliffs, offshore islands, and 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.	No marine habitat.
Hérons, Egrets, and Bitterns (ARDEIDAE)							
<i>Ardea alba</i> great egret (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes. Breeding territory is limited to the immediate vicinity of nest, and is used for courtship and copulation as well as nesting. A monogamous, colonial nester.	No occurrence of wetland or aquatic habitat for nesting sites.
<i>Ardea herodias</i> great blue heron (nesting colony)	None	None	G5	S4	CDF:S IUCN:LC	Rookery: 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.	No occurrence of wetland or aquatic habitat for nesting sites.
<i>Egretta thula</i> snowy egret (nesting colony)	None	None	G5	S4	IUCN:LC	Rookery: 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.	No occurrence of aquatic habitat for nesting sites.
Hawks, Kites, Harriers, & Eagles (ACCIPITRIDAE)							
<i>Accipiter cooperii</i> Cooper's hawk (nesting)	None	None	G5	S3	CDFW:WL IUCN:LC	Nesting: woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No nesting habitat.
<i>Accipiter gentilis</i> northern goshawk (nesting)	None	None	G5	S3	BLM:S CDF:S CDFW:SSC IUCN:LC USFS:S	Nesting: within and in vicinity of coniferous forest. Uses old nests, and maintains alternate sites. Usually nests on north slopes, near water. Red fir, lodge pole pine, Jeffrey pine, and aspens are typical nest trees. Northern goshawks typically nest in conifer forests containing large trees and an open understory on the west slope of the Sierra. There is historic nesting in Big River and Pudding Creek. Winter migrant on the coast.	Not good habitat and out of range.
<i>Accipiter striatus</i> sharp-shinned hawk (nesting)	None	None	G5	S3	CDFW:WL	Nesting: ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 ft. of water. Nests in dense, even-aged, single-layered forest canopy, usually nests in dense, pole and small-tree stands of conifers, which are cool, moist, well shaded, with little ground-cover, near water. Foraging: Uses dense stands in close proximity to open areas.	Poor nesting habitat in small stand of trees surrounding by commercial area.
<i>Aquila chrysaetos</i> golden eagle (nesting & wintering)	None	None	G5	S3	BLM:S CDF:S CDFW:FP CDFW:WL IUCN:LC USFWS:BCC	Nesting and wintering: rolling foothills mountain areas, sage-juniper flats, desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas. Nests on cliffs of all heights and in large trees in open areas. Alternative nest sites are maintained, and old nests are reused. Builds large platform nest, often 10 ft. across and 3 ft. high, of sticks, twigs, and greenery. Rugged, open habitats with canyons and escarpments used most frequently for nesting.	No nesting habitat.
<i>Buteo regalis</i> ferruginous hawk (wintering)	None	None	G4	S3S4	CDFW:WL IUCN:LC USFWS:BCC	Usually east of the coastal belt, uncommon migrant in coastal Mendocino County seen in open areas such as Bald Hill and Manchester. Feeding habitat in open, treeless areas. Does not breed in California.	No wintering habitat.
<i>Circus cyaneus</i> Northern harrier (nesting)	None	None	G5	S3	CDFW:SSC IUCN:LC	Northern harriers prefer sloughs, wet meadows, marshlands, swamps, prairies, plains, grasslands, and shrublands and perch on structures such as fence posts. Nesting habitat: nest on the ground, usually near water, or in tall grass, open fields, clearings, or on the water on a stick foundation, willow clump, or sedge tussock. Most nests built within patches of dense, often tall, vegetation (e.g., cattails) in undisturbed areas. They usually nest near hunting grounds. Foraging: They need open, low woody or herbaceous vegetation for nesting and hunting.	No nesting habitat.

<i>Elanus leucurus</i> white-tailed kite (nesting)	None	None	G5	S3	CDFW:FP IUCN:LC	Nesting: rolling foothills/valley margins with scattered oaks and 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. Winter congregation of at least 20 birds seen at Manchester State Park in early 2000's. One nest known from a THP in Albion ~2006; nest was at the edge of conifer forest with no pasture immediately adjacent.	No open habitat, poor habitat.
<i>Haliaeetus leucocephalus</i> bald eagle (nesting & wintering)	Delisted	Endangered	G5	S2	BLM:S CDF:S CDFW:FP IUCN:LC USFS:S USFWS:BCC	Nesting and wintering: ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter. Known from winter in Lake Cleone, MacKerricher State Park and Little River.	Poor nesting habitat in small stand of trees.
<i>Pandion haliaetus</i> osprey (nesting)	None	None	G5	S3	CDF:S CDFW:WL IUCN:LC	Nesting: ocean shore, bays, fresh-water lakes, and larger streams. Large nests built in tree-tops within 6-7 to 15 miles of good fish-producing body of water. Flattened portions of partially broken off snags, trees, rocks, dirt pinnacles, cacti, and numerous man-made structures such as utility poles and duck blinds are used for nests. Furthest nest inland may be McGuire's Pond.	Poor nesting habitat in small stand of trees surrounding by commercial area.
Falcons (FALCONIDAE)							
<i>Falco columbarius</i> merlin (wintering)	None	None	G5	S3	CDFW:WL IUCN:LC	General wintering habitat: Uncommon winter migrants on the coast. Habitat apparently similar to breeding habitat, (open forest and grasslands). Regularly hunts prey (e.g., shorebirds) concentrated on tidal flats. Often winters in cities throughout its range, where frequently perches on buildings, power poles, and tall trees. Also winters in open woodland, grasslands, open cultivated fields, marshes, estuaries, and seacoasts. Frequents open habitats at low elevation near water and tree stands.	No nesting habitat in small stand of trees.
<i>Falco peregrinus anatum</i> American peregrine falcon (nesting)	Delisted	Delisted	G4T4	S3S4	CDF:S CDFW:FP USFWS:BCC	Nesting: near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	No open sites for nesting.
Plovers & Relatives (CHARADRIIDAE)							
<i>Charadrius alexandrinus nivosus</i> western snowy plover (nesting)	Threatened	None	G3T3	S2	ABC:WLBC CDFW:SSC USFWS:BCC	Nesting: federal listing applies only to the pacific coastal population. Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting. Sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths are the preferred coastal habitats for nesting. Less common nesting habitat includes salt pans, coastal dredged spoil disposal sites, dry salt ponds, and salt pond levees and islands.	No coastal strand, open dune, or open river gravel bar habitat.
Oystercatchers (HAEMATOPODIDAE)							
<i>Haematopus bachmani</i> Black oystercatcher (nesting)	None	None	G5	S4	IUCN:LC USFWS:BCC	From the Aleutian Islands to Baja California, the forage on intertidal macroinvertebrates along gravel or rocky shores and in the southern part of their range nest primarily on rocky headlands and offshore rocks.	No coastal habitat.
Gulls & Terns (LARIDAE)							
<i>Larus californicus</i> California gull (nesting)	None	None	G5	S2	CDFW:WL IUCN:LC	Colony nesters and usually occurring on an island or vegetated offshore rock.	No coastal habitat.
Auklets, Puffins, & Relatives (ALCIDAE)							
<i>Brachyramphus marmoratus</i> marbled murrelet (nesting)	Threatened	Endangered	G3G4	S1	ABC:WLBC CDF:S IUCN:EN	Nesting: feeds near-shore; nests inland along coast, from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir. Presence of platforms (flat surface at least four inches in diameter) appears to be the most important stand characteristic for predicting murrelet presence. Stands can be: 1) mature (with or without an old-growth component); 2) old-growth; 3) young coniferous forests with platforms; and 4) include large residual trees in low densities sometimes less than one tree per acre.	No large trees for nesting.
<i>Fratercula cirrhata</i> tufted puffin (nesting colony)	None	None	G5	S2	CDFW:SSC IUCN:LC	Nesting colony: open-ocean bird; nests along the coast on islands, islets, or (rarely) mainland cliffs free of human disturbance and mammalian predators. Nests in burrows or rock crevices when sod or earth is unavailable for burrowing. Occurs year-round offshore near breeding colonies in northern California, but more common in winter. Breeding records from Goat Rock, Mendocino Headlands State Park.	No coastal habitat.

Owls (STRIGIDAE)							
<i>Athene cunicularia</i> burrowing owl (burrow sites and some winter sites)	None	None	G4	S3	BLM:S CDFW:SSC IUCN:LC USFWS:BCC	Burrow sites: open, dry annual or perennial grasslands, deserts and scrublands, and dunes characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	No open habitat or ground squirrel burrows.
<i>Strix occidentalis caurina</i> northern spotted owl	Threatened	None	G3T3	S2S3	ABC:WLBC CDF:S CDFW:SSC IUCN:NT	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests w/patches of big trees. High, multistory canopy dominated by big trees, many trees w/cavities or broken tops, woody debris, and space under canopy.	Poor habitat adjacent to commercial center.
Swifts (APODIDAE)							
<i>Chaetura vauxi</i> Vaux's swift (nesting)	None	None	G5	S2S3	CDFW:SSC IUCN:LC	Nesting: redwood, Douglas fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes. The most important habitat requirement appears to be an appropriate nest-site in a large, hollow tree. Forages over most terrains and habitats, often high in the air. Shows an apparent preference for foraging over rivers and lakes.	No basal hollows or snags.
Hummingbirds (TROCHILIDAE)							
<i>Selasphorus rufus</i> rufous hummingbird (nesting)	None	None	G5	S1S2	IUCN:LC USFWS:BCC	Breeds in open or shrubby areas, forest openings, yards and parks, and sometimes in forests, thickets, and meadows. Late winter and spring migrant on the California coast. Breeding range from southeast Alaska and as far south as northwestern California.	Out of range for breeding site.
<i>Selasphorus sasin</i> Allen's hummingbird (nesting)	None	None	G5	SNR	ABC:WLBC IUCN:LC USFWS:BCC	Breeds only along a narrow strip of coastal California and southern Oregon. Nests in densely vegetated areas and forests. An early migrant compared with most North American birds, arriving in summer breeding grounds as early as January. Breeds in moist coastal areas, scrub, chaparral, and forests. Winters in forest edge and scrub clearings with flowers.	Potential nesting site.
Woodpeckers (PICIDAE)							
<i>Picoides nuttallii</i> Nuttall's woodpecker (nesting)	None	None	G5	SNR	ABC:WLBC IUCN:LC	Ranging from west of the Cascade mountains and in the Sierra Nevada from southern Oregon to Northern Baja California. Nests are excavated in dead branches or snags of various trees, usually in close association with oak woodlands and riparian zone, habitat vulnerable to development. At least one Mendocino Coast record from 2011 Audubon Christmas Bird Count.	Nesting habitat associated with oak woodlands inland from coast.
<i>Sphyrapicus ruber</i> red-breasted sapsucker (nesting)	None	None	G5	SNR	None	Breeds primarily in coniferous forests, but also uses deciduous and riparian habitat, as well as orchards and power line corridors. The nest is a hole usually dug in a live deciduous tree (e.g. alder, willow, madrone) with possible preference for larger trees showing decay-softened wood.	Poor nesting site in conifers.
Tyrant Flycatchers (TYRANNIDAE)							
<i>Contopus cooperi</i> olive-sided flycatcher (nesting)	None	None	G4	S4	ABC:WLBC CDFW:SSC IUCN:NT USFWS:BCC	Breeds in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. Tall standing dead trees are used as perch trees for catching flying insects. Accordingly, an open canopy is a key components of suitable habitat. Nest is an open cup of twigs, rootlets, and lichens, placed out near tip of horizontal branch of a tree.	Potential nesting site.
Swallows (HIRUNDINIDAE)							
<i>Progne subis</i> purple martin	None	None	G5	S3	CDFW:SSC IUCN:LC	Nesting: inhabits woodlands, low elevation coniferous forest of Douglas fir, Ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly, also in human-made structures such as weep holes in bridges. Nest often located in tall, isolated trees and snags. Nesting on the Mendocino Coast known, in part, from Juan Creek, Ten Mile, Noyo, and Big River, and snags from Ten Mile River to Pudding Creek. Need open foraging habitats.	Low potential for nesting site.

Wood-warblers (<i>PARULIDAE</i>)							
<i>Dendroica occidentalis</i> hermit warbler (nesting)	None	None	G4G5	S4	ABC:WLBC IUCN:LC	Breeding range is relatively limited to the Pacific Coast and the Cascade and Sierra Nevada mountain ranges of Washington, Oregon, and California. Some winter along the coastal central and southern California, but most winter primarily in the mountains of western Mexico and Central America. Nesting habitats in Pacific northwestern are coniferous forests with a high canopy volume, generally preferring mature stands of pine and Douglas fir. Avoids areas with a high deciduous volume; absent from riparian areas and clearcuts. Birds of coniferous forests; they prefer cool, wet fir forests at elevation, and moist forests of Douglas-fir, hemlock, and western red cedar closer to sea level. Major threat to this species appears to be the degradation of breeding habitat. Not know as frequently nesting on the coast, perhaps more common inland.	Low potential for nesting on the coast.
Sparrows, Buntings, Warblers, & Relatives (<i>EMBERIZIDAE</i>)							
<i>Ammodramus savannarum</i> grasshopper sparrow (nesting)	None	None	G5	S2	CDFW:SSC IUCN:LC	Nesting: dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting. Summer (breeding) resident in Mendocino County known from north of Ten Mile River.	No nesting habitat.
<i>Passerculus sandwichensis alaudinus</i> Bryant's savannah sparrow (nesting)	None	None	G5T2T3	S2S3	CDFW:SSC	California endemic from near Humboldt Bay, Humboldt Co. to Morro Bay, San Luis Obispo Co. Breeds in low tidally influenced habitats in higher parts of pickleweed/saltgrass marshes, adjacent ruderal areas, moist grasslands within and just above the fog belt, bottomlands and dairy pastures in the taller grasses and rushes along roads and fences, and infrequently, drier grasslands. In moist upland grasslands, it occurs where herbaceous vegetation is relatively short, with no or little woody plant cover. Open areas, whether provided by tidal mudflats or upland interstitial areas between clumps of vegetation, appears to be an important component of occupied habitat.	No nesting habitat.
Blackbirds (<i>ICTERIDAE</i>)							
<i>Agelaius tricolor</i> tricolored blackbird (nesting colony)	None	None	G2G3	S1S2	ABC:WLBC BLM:S CDFW:SSC IUCN:EN USFWS:BCC	Nesting colony: highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, such as cattails and foraging area with insect prey within a few km of the colony. Known inland from McGuire's Pond.	No occurrence of open freshwater habitat.
MAMMALS							
Evening Bats (<i>VESPERTILIONIDAE</i>)							
<i>Antrozous pallidus</i> pallid bat	None	None	G5	S3	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	A wide variety of habitats deserts, grasslands, shrublands, woodlands and forests from sea level up through mixed conifer forests. Most common in open, dry habitats with rocky areas for roosting. A yearlong resident in most of the range. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings where there is protection from high temperatures.	No basal hollows or snags.
<i>Corynorhinus townsendi</i> Townsend's big-eared bat	None	Candidate Threatened	G3G4	S2S3	BLM:S CDFW:SSC IUCN:LC USFS:S WBWG:H	Generally found in the dry uplands throughout the West, but also occur in mesic coniferous and deciduous forest habitats along the Pacific coast. Unequivocally associated with areas containing caves and cave-analogs for roosting habitat. Requires spacious cavern-like structures for roosting during all stages of its life cycle. Typically, they use caves and mines, but have been noted roosting in large hollows of redwood trees, attics and abandoned buildings, lava tubes, and under bridges. Extremely sensitive to disturbance.	No basal hollows or snags.
<i>Lasionycteris noctivagans</i> silver-haired bat	None	None	G5	S3S4	IUCN:LC WBWG:M	Ranges throughout California in coastal and montane forests. May be found anywhere in California during spring and fall migrations. Primarily a forest (tree-roosting) bat associated with north temperate zone conifer and mixed conifer/hardwood forests. Prefers forested (frequently coniferous) areas adjacent to lakes, ponds, and streams. During migration, sometimes occurs in xeric areas. Roosts in dead or dying trees with exfoliating bark, extensive vertical cracks, or cavities, rock crevices, and occasionally under wood piles, in leaf litter, under foundations, and in buildings, mines and caves. The primary threat is likely loss of roosting habitat due to logging practices that fail to accommodate the roosting needs of this species (e.g., clusters of large snags).	No basal hollows or snags.

<i>Lasiurus blossevillii</i> western red bat	None	None	G5	S3?	CDFW:SSC IUCN:LC	Locally common in some areas of California from Shasta County south to the Mexican border. California Central Valley is the species' primary breeding region. Species appears to be strongly associated with riparian habitats for roosting and foraging, particularly mature stands/large diameter of cottonwood/sycamore. Roosts in woodland borders, rivers, agricultural areas, and urban areas with mature trees in the foliage of large shrubs and trees, usually sheltering on the underside of overhanging leaves. It often hangs from one foot on the leaf petiole and may resemble a fruit or dead leaf. Rarely observed roosting in mines.	Not good potential habitat.
<i>Lasiurus cinereus</i> hoary bat	None	None	G5	S4?	IUCN:LC WBWG:M	Most widespread North American bat. Solitary species that winters along the coast and in southern California, breeding inland. Roosts in foliage of trees near ends of branches 3-5 m. above ground. Blends with the bark of trees. Highly associated with forested habitats but can be found in suburbs with old, large trees.	Potential winter roosting habitat.
<i>Myotis evotis</i> long-eared myotis	None	None	G5	S4?	BLM:S IUCN:LC WBWG:M	Widespread in California, but generally is believed to be uncommon in most of its range. It avoids the arid Central Valley and hot deserts, occurring along the entire coast and interior mountains. Found in nearly all brush, woodland, and forest habitats, from sea level to at least 9,000 ft., but coniferous woodlands and forests seem to be preferred. Roosts in loose bark in tall, open-canopied snags; stumps in south-facing clear-cuts with minimal vegetation overgrowth in younger forests, and conifer snags in older forests, rocks, caves, bridges and abandoned mines.	Low potential for roosting. No snags.
<i>Myotis yumanensis</i> Yuma myotis	None	None	G5	S4?	BLM:S IUCN:LC WBWG:LM	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.	Low potential for roosting.
Mountain Beavers (PLODONTIDAE)							
<i>Aplodontia rufa nigra</i> Point Arena mountain beaver	Endangered	None	G5T1	S1	CDFW:SSC IUCN:LC	Generally known from 2 miles north of Bridgeport Landing to 5 miles south of the town of Point Arena. Coastal areas often near springs or seepages; mesic coastal scrub, northern dune scrub, edges of conifer forests, and riparian plant communities. North facing slopes of ridges and gullies with friable soils and thickets of undergrowth.	Out of range; no habitat.
Mice, Rats, & Voles (MURIDAE)							
<i>Arborimus pomo</i> Sonoma tree vole	None	None	G3	S3	CDFW:SSC IUCN:NT	Species split into red tree vole and Sonoma tree vole; approximate boundary between two species is Klamath River. Inhabits north coast fog belt from Oregon border to Sonoma Co. in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats. Feeds almost exclusively on Douglas-fir needles. Will occasionally take needles of grand fir, hemlock or spruce.	Potential habitat.
Weasels & Relatives (MUSTELIDAE)							
<i>Martes americana humboldtensis</i> Humboldt marten	None	None	G5T1	S1	CDFW:SSC USFS:S	Endemic to the coastal forests of northwestern California with a historical range described as "the narrow northwest humid coast strip, chiefly within the redwood belt" from the Oregon border to northern Sonoma county. However, the one known remnant Humboldt marten population occurs in the north-central portion of the described range in an area dominated by Douglas-fir and tanoak. Typically associated with closed-canopy, late-successional, mesic coniferous forests with complex physical structure near the ground. Very rare on the Mendocino coast.	Not potential habitat at the edge of the commercial center. Not good forest habitat.
<i>Pekania pennant</i> (West Coast DPS) Pacific fisher	Candidate	Candidate Threatened	G5T2T3Q	S2S3	BLM:S CDFW:SSC USFS:S	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Use cavities, snags, logs and rocky areas for cover and denning. Need large areas of mature, dense forest. Very rare on the Mendocino coast.	Not potential habitat at the edge of the commercial center. Not good forest habitat.
Sea Lions & Fur Seals (OTARIIDAE)							
<i>Arctocephalus townsendi</i> Guadalupe fur-seal	Threatened	Threatened	G1	S1	CDFW:FP IUCN:NT	Solitary, non-social "eared" seals breed in the tropical waters off southern California/Mexico region but have been seen on rare occasion off Mendocino.	Extremely low.
<i>Callorhinus ursinus</i> northern fur-seal	None	None	G3	S1	IUCN:VU	Mostly pelagic seal ranging throughout the Pacific Rim, from Japan to the Channel Islands. Pacific rookeries in the Channel and Farallon Islands. Infrequent visitor to the Mendocino Coast. One was stranded on Albion flat in 2013 and rescued by the Marine Mammal Center.	Extremely low.
<i>Eumetopias jubatus</i> Steller (=northern) sea-lion	Delisted	None	G3	S2	IUCN:EN MMC:SSC	Range throughout the North Pacific Rim from Japan to central California. Unlike California sea lions, Stellers tend to remain off shore or haul out in unpopulated areas. Breeding rookery on Año Nuevo Island.	Extremely low.

Explanation of “Organization: Code” taken from CDFW 2016.

ABC: American Bird Conservancy – The United States WatchList is a joint project between the American Bird Conservancy and the National Audubon Society. It reflects a comprehensive analysis of all the bird species in the United States. It reveals those in greatest need of immediate conservation attention to survive a convergence of environmental challenges, including habitat loss, invasive species, and global warming. The list builds on the species assessments conducted for many years by Partners in Flight (PIF) for land birds. It uses those same PIF standards but it is expanded to cover all bird species, not just land birds. The list is based on the latest available research and assessments from the bird conservation community, along with data from the Christmas Bird Count and Breeding Bird Survey. More information is available at: <http://www.abcbirds.org/abcprograms/science/watchlist/index.html>

WLBCC - United States WatchList of Birds of Conservation Concern

AFS: American Fisheries Society – Designations for freshwater and diadromous species were taken from the paper: Jelks, H.L., S.J. Walsh, N.M. Burkhead, S. Contreras-Balderas, E. Díaz-Pardo, D.A. Hendrickson, J. Lyons, N.E. Mandrak, F. McCormick, J.S. Nelson, S.P. Platania, B.A. Porter, C.B. Renaud, J. J. Schmitter-Soto, E.B. Taylor, and M.L. Warren, Jr. 2008. Conservation status of imperiled North American freshwater and diadromous fishes. *Fisheries* 33(8):372-407. Available at: http://www.fisheries.org/afs/docs/fisheries/fisheries_3308.pdf

Designations for marine and estuarine species were taken from the paper: Musick, J.T. et al. 2000. “Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America (Exclusive of Pacific Salmonids). *Fisheries* 25(11):6-30. Available at: <http://www.flmnh.ufl.edu/fish/sharks/sawfish/Reprint1390.pdf>

EN - Endangered
T - Threatened
VU - Vulnerable

BLM: Bureau of Land Management – BLM Manual §6840 defines sensitive species as “...those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats.” Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species’ condition through BLM management. The “Sensitive Species” designation is not meant to include federally listed species, proposed species, candidate species or State-listed species. It is BLM policy to provide sensitive species with the same level of protection that is given federal candidate species. The list is available at: http://www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/SensitiveAnimals.pdf

S - Sensitive

CDFW: California Department of Fish and Wildlife – The name California Department of Fish and Game (CDFG, or DFG) was changed to the California Department of Fish and Wildlife in 2013 and the changes are reflected here. It is the goal and responsibility of the Department of Fish and Game to maintain viable populations of all native species. To this end, the Department has designated certain vertebrate species as “Species of Special Concern” because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as “Species of Special Concern” is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability. Not all “Species of Special Concern” have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a “Threatened” or “Endangered” species under the State and/or Federal Endangered Species Acts. More information is available at: <http://www.nrm.dfg.ca.gov/fileHandler.ashx?DocumentID=3778>

The 1995 report for fish, the 1994 report for amphibians and reptiles and the 1986 & 1998 reports for mammals are available on-line.

Fish: http://www.dfg.ca.gov/wildlife/nongame/publications/docs/fish_ssc.pdf
 Amphibians & Reptiles: http://www.dfg.ca.gov/wildlife/nongame/publications/docs/herp_ssc.pdf
 Mammals: http://www.dfg.ca.gov/wildlife/nongame/publications/bm_research/docs/86_27.pdf
<http://www.dfg.ca.gov/wildlife/nongame/ssc/1998mssc.html>

Updates of all three reports are in preparation. Information on the Amphibian and Reptile Species of Special Concern report is available at: <http://arssc.ucdavis.edu>

Information on the mammal report is available at: <http://www.dfg.ca.gov/wildlife/nongame/ssc/mammals.html> and <http://www.dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/MSSCProjectTimeline.pdf>

A new California Bird Species of Special Concern report was completed in 2008. More information is available at: <http://www.dfg.ca.gov/wildlife/species/ssc/birds.html>

A new category of “Taxa to Watch” was created in the new California Bird Species of Special Concern report. The birds on this Watch List are 1) not on the current Special Concern list but were on previous lists and they have not been state listed under CESA; 2) were previously state or federally listed and now are on neither list; or 3) are on the list of “Fully Protected” species. More information and brief accounts for each species is available in the report.

DFG (CDFW): Fully Protected: The classification of Fully Protected was the State’s initial effort to identify and provide additional protection to those animals that were rare or faced 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 the state and/or federal endangered species acts; white-tailed kite, golden eagle, trumpeter swan, northern elephant seal and ring-tailed cat are the exceptions. The white-tailed kite and the golden eagle are tracked in the CNDDB; the trumpeter swan, northern elephant seal and ring-tailed cat are not.

The Fish and Game Code sections dealing with Fully Protected species state 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, although take may be authorized for necessary scientific research. This language arguably 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 Department to authorize take resulting from recovery activities for state-listed species. More information on Fully Protected species and the take provisions can be found in the Fish and Game Code, (birds at §3511, mammals at §4700, reptiles and amphibians at §5050, and fish at §5515). Additional information on Fully Protected fish can be found in the California Code of Regulations, Title 14, Division 1, Subdivision 1, Chapter 2, Article 4, §5.93. The category of Protected Amphibians and Reptiles in Title 14 has been repealed. The Fish and Game Code is available online at: <http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=fgc&codebody=&hits=20>. Title 14 of the California Code of Regulations is available at: <http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome>

FP - Fully Protected
SSC - Species of Special Concern
WL - Watch List

CDF: California Department of Forestry & Fire Protection – The Board of Forestry classifies as “sensitive species” those species that warrant special protection during timber operations. The list of “sensitive species” is given in §895.1 (Definitions) of the California Forest Practice Rules. The 2010 Forest Practice Rules are available at: http://www.fire.ca.gov/resource_mgmt/downloads/2010_FP_Rulebook_w-Diagrams_wo-TechRule_No1.pdf

S - Sensitive

IUCN: International Union for Conservation of Nature – provides objective, scientifically-based information on the current status of globally threatened biodiversity. More information at <http://www.iucnredlist.org/technical-documents/categories-and-criteria>; detailed information on the IUCN and the Red List is available at: <http://www.redlist.org/>

CD - Conservation Dependent
CR - Critically Endangered
DD - Data Deficient
EN - Endangered
LC - Least Concern
NT - Near Threatened
VU - Vulnerable

MMC: Marine Mammal Commission – Section 202 of the Marine Mammal Protection Act directs the Marine Mammal Commission, in consultation with its Committee of Scientific Advisors, to make recommendations to the Department of Commerce, the Department of the Interior, and other federal agencies on research and management actions needed to conserve species of marine mammals. To meet this charge, the Commission devotes special attention to particular species and populations that are vulnerable to various types of human-related activities, impacts, and contaminants. Such species may include marine mammals listed as endangered or threatened under the Endangered Species Act or as depleted under the Marine Mammal Protection Act. In addition, the Commission often directs special attention to other species or populations of marine mammals not so listed whenever special conservation challenges arise that may affect them. More information on the Marine Mammal Protection Act and the Species of Special Concern list is available at: <http://www.mmc.gov/species>

SSC: Species of Special Concern

NMFS: National Marine Fisheries Service – National Oceanic and Atmospheric Administration (NOAA): The Office of Protected Resources (OPR) is a headquarters program office of NOAA’s National Marine Fisheries Service (NOAA Fisheries Service, or NMFS), under the U.S. Department of Commerce, with responsibility for protecting marine mammals and endangered marine life. NOAA’s Office of Protected Resources works to conserve, protect, and recover species under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA) in conjunction with our Regional offices, Science Centers, and various partners. The category Species of Concern was established by the (NMFS) effective 15 April 2004. Species of Concern are those species about which NOAA’s National Marine Fisheries Service (NMFS) has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). Proactive attention and conservation action is drawn to these species. “Species of concern” status does not carry any procedural or substantive protections under the ESA. More information is available at: <http://www.nmfs.noaa.gov/pr/species/concern>

SC: Species of Concern

USFS: United States Forest Service - USDA Forest Service defines sensitive species as those plant and animal species identified by a regional forester that are not listed or proposed for listing under the federal Endangered Species Act for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Regional Foresters shall identify sensitive species occurring within the region. California is the Pacific Southwest Region (Region 5). The list of sensitive animals for Region 5 is undergoing revision. The anticipated completion date was spring 2009, however it still has not been updated in spring 2010. The sensitive designation on this list is based on the previous list. More information is available at: <http://www.fs.fed.us/r5/projects/sensitive-species/>

USFWS: United States Fish and Wildlife Service – The goal of the Birds of Conservation Concern 2008 report is to accurately identify the migratory and nonmigratory bird species (beyond those already designated as Federally threatened or endangered) that represent our highest conservation priorities and draw attention to species in need of conservation action. We hope that by focusing attention on these highest priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby ensuring the future of healthy avian populations and communities. This report is available at: http://library.fws.gov/Bird_Publications/BCC2008.pdf

BCC - Birds of Conservation Concern

WBWG: Western Bat Working Group - comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and provinces. Species designated as "High Priority" are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats. More information is available at: <http://www.wbwg.org>

H - High Priority

LM - Low-Medium

M - Medium Priority

MH - Medium-High Priority

XERCES: The Xerces Society is an international non-profit organization dedicated to protecting biological diversity through invertebrate conservation. Their core programs focus on endangered species, native pollinators, and watershed health. More information on the Red list is available at: <http://www.xerces.org/>

CI - Critically Imperiled

DD - Data Deficient

IM - Imperiled

VU - Vulnerable

Special-Status Plant Communities Occurring in Coastal Mendocino County. A partial list of vegetation alliances occurring in coastal Mendocino County is derived from the California Department of Fish and Wildlife's "List of Vegetation Alliances and Associations," (2010) (<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=107303&inline>). See previous tables for an explanation of the Global and State Ranking.

Scientific Name	Common Name	Global & State Rank
Woodland and Forest Alliances and Stands		
<i>Abies grandis</i> Alliance	Grand fir forest	G4 S2
<i>Acer macrophyllum</i> Alliance	Bigleaf maple forest	G4 S3
<i>Alnus rubra</i> Alliance	Red alder forest	G5 S4
<i>Arbutus menziesii</i> Alliance	Madrone forest	G4 S3
<i>Callitropsis pigmaea</i> Alliance	Mendocino pygmy cypress woodland	G2 S2
<i>Chrysolepis chrysophylla</i> Alliance	Golden chinquapin thickets	G2 S2
<i>Lithocarpus densiflorus</i> Alliance	Tanoak forest	G4 S3
<i>Picea sitchensis</i> Alliance	Sitka spruce forest	G5 S2
<i>Pinus contorta</i> subsp. <i>contorta</i> Alliance	Beach pine forest	G5 S3
<i>Pinus muricata</i> Alliance	Bishop pine forest	G3 S3
<i>Pseudotsuga menziesii</i> Alliance	Douglas fir forest	G5 S4
<i>Pseudotsuga menziesii</i> - <i>Lithocarpus densiflorus</i> Alliance	Douglas fir - tanoak forest	G4 S4
<i>Sequoia sempervirens</i> Alliance	Redwood forest	G3 S3
<i>Tsuga heterophylla</i> Alliance	Western hemlock forest	G5 S2
<i>Umbellularia californica</i> Alliance	California bay forest	G4 S3
Shrubland Alliances and Stands		
<i>Arctostaphylos glandulosa</i> Alliance	Eastwood manzanita chaparral	G4 S4
<i>Arctostaphylos (nummularia, sensitiva)</i> Alliance	Glossy leaf manzanita chaparral	G2 S2
<i>Baccharis pilularis</i> Alliance	Coyote brush scrub	G5 S5
<i>Ceanothus thyrsiflorus</i> Alliance	Blue blossom chaparral	G4 S4
<i>Corylus cornuta</i> var. <i>californica</i> Alliance	Hazelnut scrub	G3 S2?
<i>Frangula californica</i> Alliance	California coffee berry scrub	G4 S4
<i>Garrya elliptica</i> Provisional Alliance	Coastal silk tassel scrub	G3? S3?
<i>Diplacus aurantiacus</i> Alliance	Bush monkeyflower scrub	G3 S3?
<i>Holodiscus discolor</i> Alliance	Ocean spray brush	G4 S3
<i>Morella californica</i> Alliance	Wax myrtle scrub	G3 S3
<i>Rhododendron neoglandulosum</i> Alliance	Western Labrador-tea thickets	G4 S2?
<i>Rhododendron occidentale</i> Provisional Alliance	Western azalea patches	G3 S2?
<i>Rosa californica</i> Alliance	California rose briar patches	G3 S3
<i>Rubus (parviflorus, spectabilis, ursinus)</i> Alliance	Coastal brambles	G4 S3
<i>Salix hookeriana</i> Alliance	Coastal dune willow thickets	G4 S3
<i>Sphagnum</i> Bog	Sphagnum bog	G3 S1.2
<i>Salix sitchensis</i> Provisional Alliance	Sitka willow thickets	G4 S3?
<i>Salix lasiolepis</i> Alliance	Arroyo willow thickets	G4 S4
<i>Toxicodendron diversilobum</i> Alliance	Poison oak scrub	G4 S4
Herbaceous Alliances and Stands		
<i>Abronia latifolia</i> – <i>Ambrosia chamissonis</i> Alliance	Dune mat	G3 S3
<i>Argentina egedii</i> Alliance	Pacific silverweed marshes	G4 S2
<i>Bolboschoenus maritimus</i> Alliance	Salt marsh bulrush marshes	G4 S3
<i>Calamagrostis nutkaensis</i> Alliance	Pacific reed grass meadows	G4 S2
<i>Camassia quamash</i> Alliance	Small camas meadows	G4? S3?
<i>Carex obnupta</i> Alliance	Slough sedge swards	G4 S3
<i>Carex pansa</i> Alliance	Sand dune sedge swaths	G4? S3?
<i>Danthonia californica</i> Alliance	California oat grass prairie	G4 S3
<i>Deschampsia caespitosa</i> Alliance	Tufted hair grass meadows	G5 S4?
<i>Distichlis spicata</i> Alliance	Salt grass flats	G5 S4
<i>Eleocharis macrostachya</i> Alliance	Pale spike rush marshes	G4 S4
<i>Elymus glaucus</i> Alliance	Blue wild rye meadows	G3? S3?
<i>Festuca rubra</i> Alliance	Red fescue grassland	G4 S3?

Scientific Name	Common Name	Global & State Rank
<i>Festuca idahoensis</i> Alliance	Idaho fescue grassland	G4 S3?
<i>Glyceria occidentalis</i>	Northwest manna grass marshes	G3? S3?
<i>Grindelia (stricta)</i> Provisional Alliance	Gum plant patches	G3? S3?
<i>Hordeum brachyantherum</i> Alliance	Meadow barley patches	G4 S3?
<i>Juncus articus</i> (var. <i>balticus</i> , <i>mexicanus</i>)	Baltic and Mexican rush marshes	G5 S4
<i>Juncus effusus</i> Alliance	Soft rush marshes	G4 S4?
<i>Juncus (oxymeris, xiphioides)</i> Provisional Alliance	Iris-leaf rush seeps	G2? S2?
<i>Juncus lescurii</i> Alliance	Salt rush swales	G3 S2?
<i>Juncus patens</i> Provisional Alliance	Western rush marshes	G4? S4?
<i>Leymus mollis</i> Alliance	Sea lyme grass patches	G4 S2
<i>Leymus triticoides</i> Alliance	Creeping rye grass turfs	G4 S3
<i>Mimulus (guttatus)</i> Alliance	Common monkey flower seeps	G4? S3?
<i>Poa secunda</i> Alliance	Curley bluegrass grassland	G4 S3?
<i>Schoenoplectus acutus</i> Alliance	Hardstem bulrush marsh	G5 S4
<i>Schoenoplectus californicus</i> Alliance	California bulrush marsh	G5 S4?
<i>Scirpus microcarpus</i> Alliance	Small-fruited bulrush marsh	G4 S2
<i>Sedum spathulifolium</i> Provisional Alliance	Coast Range stonecrop draperies	G4? S4?
<i>Solidago canadensis</i> Provisional Alliance	Canada goldenrod patches	G4? S4?
<i>Woodwardia fimbriata</i>	Woodwardia thicket	G3 S3.2
Aquatic Vegetation		
<i>Azolla (filiculoides, mexicana)</i> Provisional Alliance	Mosquito fern mats	G4 S4
<i>Hydrocotyle (ranunculoides, umbellata)</i> Alliance	Mats of floating pennywort	G4 S3?
<i>Lemna (minor)</i> and Relatives Provisional Alliance	Duckweed blooms	G5 S4?
<i>Nuphar lutea</i> Provisional Alliance	Yellow pond-lily mats	G5 S3?
<i>Oenanthe sarmentosa</i> Alliance	Water-parsley marsh	G4 S2?
<i>Sarcocornia pacifica</i> (<i>Salicornia depressa</i>) Alliance	Pickleweed mats	G4 S3
<i>Sparganium (angustifolium)</i> Alliance	Mats of bur-reed leaves	G4 S3?
<i>Typha (angustifolia, domingensis, latifolia)</i> Alliance	Cattail marshes	G5 S5

Appendix C

Soil Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **Mendocino County, Western Part, California**

**City of Fort Bragg, Wastewater
Treatment Facility Upgrade**



August 9, 2016

Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

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

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

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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Mendocino County, Western Part, California
Survey Area Data: Version 10, Sep 30, 2014

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

Date(s) aerial images were photographed: Jun 16, 2010—Jun 27, 2010

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

Map Unit Legend

Mendocino County, Western Part, California (CA694)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
219	Urban land	24.9	86.4%
Subtotals for Soil Survey Area		24.9	86.4%
Totals for Area of Interest		28.8	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Mendocino County, Western Part, California

219—Urban land

Map Unit Composition

Urban land: 75 percent

Minor components: 24 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Marine terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Fluvio-marine deposits derived from sedimentary rock

Minor Components

Shinglemill

Percent of map unit: 3 percent

Landform: Marine terraces

Heeser

Percent of map unit: 3 percent

Tregoning

Percent of map unit: 3 percent

Landform: Marine terraces

Tropaquepts

Percent of map unit: 3 percent

Landform: Depressions

Cabrillo

Percent of map unit: 3 percent

Gibney

Percent of map unit: 3 percent

Harecreek

Percent of map unit: 3 percent

Biaggi

Percent of map unit: 3 percent

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Appendix D

Plant List

CATEGORY	FAMILY	TAXON	COMMON NAME	WETLAND INDICATOR	NATIVE (Y/N)
Ferns & Allies					
	Dennstaedtiaceae				
		<i>Pteridium aquilinum</i>	Western brackenfern	FACU	Y
	Dryopteridaceae				
		<i>Polystichum munitum</i>	Western sword fern	FACU	Y
	Equisetaceae				
		<i>Equisetum telmateia</i> subsp. <i>braunii</i>	Giant horsetail	OBL	Y
Conifers					
	Cupressaceae				
		<i>Hesperocyparis macrocarpa</i>	Monterey cypress		Y
Dicots					
	Aizoaceae				
		<i>Carpobrotus chilensis</i>	Sea fig	FAC	N
		<i>Carpobrotus edulis</i>	Iceplant		N
		<i>Drosanthemum floribundum</i>	Ice plant		N
	Apiaceae				
		<i>Angelica hendersonii</i>	Henderson's angelica		Y
		<i>Conium maculatum</i>	Poison hemlock	FAC	N
		<i>Daucus pusillus</i>	Wild carrot		Y
		<i>Oenanthe sarmentosa</i>	Water parsley	OBL	Y
	Araliaceae				
		<i>Hedera helix</i>	English ivy	FACU	N
		<i>Hydrocotyle ranunculoides</i>	Marsh pennywort	OBL	Y
	Asteraceae				
		<i>Cirsium vulgare</i>	Bullthistle	FACU	N
		<i>Conyza canadensis</i> var. <i>canadensis</i>	Canadian horseweed		Y
		<i>Erigeron glaucus</i>	Seaside daisy	FACU	Y
		<i>Euchiton japonicus</i>	Father and child plant		N
		<i>Grindelia stricta</i>	Gumweed	FACW	Y
		<i>Hypochaeris radicata</i>	Hairy cats ear	FACU	N
		<i>Leontodon saxatilis</i>	Hawkbit	FACU	N
		<i>Madia sativa</i>	Coastal tarweed		Y
		<i>Matricaria discoidea</i>	Pineapple weed	FACU	Y
		<i>Senecio vulgaris</i>	Common groundsel	FACU	N
		<i>Silybum marianum</i>	Milk thistle		N
		<i>Sonchus asper</i>	Spiny sowthistle	FACU	N
	Brassicaceae				
		<i>Cakile maritima</i>	Sea rocket	FACU	N
		<i>Cardamine hirsuta</i>	Hairy bitter cress	FACU	N
		<i>Lepidium didymum</i>	Lesser swine cress		N
		<i>Nasturtium officinale</i>	Watercress	OBL	Y
		<i>Raphanus sativus</i>	Wild radish		N

CATEGORY	FAMILY	TAXON	COMMON NAME	WETLAND INDICATOR	NATIVE (Y/N)
	Caryophyllaceae				
		Cerastium arvense	Meadow chickweed	FACU	Y
		Polycarpon tetraphyllum	Four leaved allseed		N
		Silene gallica	Common catchfly		N
		Spergularia rubra	Purple sand spurry	FAC	N
		Dudleya farinosa	Sea lettuce		Y
	Euphorbiaceae				
		Euphorbia peplus	Petty spurge		N
	Fabaceae				
		Lotus corniculatus	Bird's foot trefoil	FAC	N
		Lupinus littoralis	Seashore lupine		Y
		Lupinus rivularis	Riverbank lupine	FAC	Y
		Medicago polymorpha	California burclover	FACU	N
		Melilotus indicus	Annual yellow sweetclover	FACU	N
		Trifolium repens	White clover	FAC	N
	Geraniaceae				
		Erodium moschatum	Whitestem filaree		N
		Geranium dissectum	Wild geranium		N
		Geranium molle	Crane's bill geranium		N
	Lythraceae				
		Lythrum hyssopifolia	Hyssop loosestrife		N
	Malvaceae				
		Malva parviflora	Cheeseweed		N
		Modiola caroliniana	Carolina bristle mallow	FACU	N
	Myricaceae				
		Morella californica	California wax myrtle	FACW	Y
	Myrsinaceae				
		Lysimachia arvensis	Scarlet pimpernel	FAC	N
	Onagraceae				
		Epilobium ciliatum subsp. watsonii	Willow herb	FACW	Y
	Orobanchaceae				
		Castilleja mendocinensis	Mendocino coast indian paintbrush		Y
	Oxalidaceae				
		Oxalis pes-caprae	Bermuda buttercup		N
	Papaveraceae				
		Eschscholzia californica	California poppy		Y
	Phrymaceae				
		Mimulus guttatus	Yellow monkey flower	OBL	Y
	Plantaginaceae				
		Plantago coronopus	Cut leaf plantain	FAC	N
		Plantago erecta	California plantain		Y
		Plantago maritima	Maritime plantain	FACW	Y

CATEGORY	FAMILY	TAXON	COMMON NAME	WETLAND INDICATOR	NATIVE (Y/N)
		<i>Plantago subnuda</i>	Mexican plantain	FACW	Y
	Plumbaginaceae				
		<i>Armeria maritima</i>	Thrift seapink	FAC	Y
	Polygonaceae				
		<i>Polygonum aviculare</i> subsp. depressum	prostrate knotweed		N
		<i>Rumex acetosella</i>	Sheep sorrel	FACU	N
		<i>Rumex crispus</i>	curly dock	FAC	N
	Rosaceae				
		<i>Fragaria chiloensis</i>	Beach strawberry	FACU	Y
		<i>Rubus armeniacus</i>	Himalayan blackberry	FAC	N
		<i>Rubus ursinus</i>	California blackberry	FACU	Y
	Solanaceae				
		<i>Solanum douglasii</i>	Douglas' nightshade	FAC	Y
Monocots					
	Cyperaceae				
		<i>Carex obnupta</i>	Slough sedge	OBL	Y
		<i>Cyperus eragrostis</i>	Tall flatsedge	FACW	Y
		<i>Isolepis cernua</i>	Low bulrush	OBL	Y
		<i>Scirpus microcarpus</i>	Mountain bog bulrush	OBL	Y
	Juncaceae				
		<i>Juncus effusus</i>	Common bog rush	FACW	Y
		<i>Juncus patens</i>	Rush	FACW	Y
	Poaceae				
		<i>Aira praecox</i>	Yellow hairgrass		N
		<i>Anthoxanthum odoratum</i>	Sweet vernal grass		
		<i>Avena barbata</i>	Slim oat		N
		<i>Briza maxima</i>	Rattlesnake grass		N
		<i>Bromus diandrus</i>	Ripgut brome		N
		<i>Bromus hordeaceus</i>	Soft chess	FACU	N
		<i>Cortaderia jubata</i>	Andean pampas grass	FACU	N
		<i>Cynodon dactylon</i>	Bermuda grass	FACU	N
		<i>Elymus glaucus</i>	Blue wildrye	FACU	Y
		<i>Festuca bromoides</i>	Brome fescue		N
		<i>Festuca perennis</i>	Italian rye grass		N
		<i>Holcus lanatus</i>	Common velvetgrass	FAC	N
		<i>Poa annua</i>	Annual blue grass	FAC	N
		<i>Polypogon monspeliensis</i>	Annual beard grass	FACW	N
	Typhaceae				
		<i>Typha latifolia</i>	Boradleaf Cattail	OBL	Y



CITY OF FORT BRAGG

416 N. FRANKLIN, FORT BRAGG, CA 95437
PHONE 707/961-2823 FAX 707/961-2802

DATE: December 15, 2016
TO: SWRCB – Environmental Review Unit
FROM: Scott Perkins, Associate Planner
TITLE: Wastewater Treatment Plant Upgrade – Alternative Analysis Supplement

Alternative Analysis Supplement

The Technical Package of this application includes Section IV and Section V, which analyze alternative strategies for updating the Wastewater Treatment Facility (WWTF) and discuss the selected project. These sections consider the following:

1. A range of feasible alternatives, including a "no project/no action" alternative that meets the project needs and objectives.
2. Comparative analysis among the alternatives, including discussion of direct, indirect and cumulative impacts relating to greenhouse gases and energy efficiency.
3. Potential reasonable foreseeable future environmental impacts.
4. Thorough discussion of reasoning for selection of the chosen project alternative.

This analysis supplements the Technical Package, and addresses impacts to water, biological resources, and other environmental areas the various alternatives may cause, where applicable. The alternatives discussed are:

1. "No project/no action" alternative
2. Two-stage trickling filter process (update to existing system)
3. Activated Sludge System (chosen alternative)

Other alternatives were considered and are discussed in the Technical Package. This supplement does not address alternatives that would require expansion or relocation of the WWTF. Any alternative that would require industrial development of vacant property is not considered, as the environmental impacts greatly exceed any alternative that utilizes the existing WWTF footprint. Project costs similarly increase for alternatives outside the existing WWTF footprint.

No Project/No Action

The WWTF has been in operation for over forty years since it was first constructed in 1970. The WWTF has been through a series of improvements and upgrades over the years; nevertheless, to date, most equipment of the WWTF has reached or exceeded a 25-30 year service life. In addition, wastewater flows and loads to the WWTF are expected to increase with elevated BOD5 load from the North Coast Brewing

Company (NCBC) and future growth from a large master-planned community (the Mill project, formerly the Georgia-Pacific development). The flows and loads increase demands for an update or renovation of the WWTF. Therefore, the no action alternative does not meet the needs and objectives of the project and was dismissed from further consideration.

Two-Stage Trickling Filter Process

The current operation of the WWTF utilizes a two-stage trickling filter process. The primary trickling filter is the key component not meeting performance goals, and upgrades could be achieved by replacing the existing rock media with cross-flow PVC sheet media.

The WWTF discharge requires an NPDES permit from the California North Coast Regional Water Quality Control Board. The permit includes numeric limitations, monitoring and reporting requirements for final effluent. Updating the two-stage trickling filter process would not provide redundancy for maintenance, and would not allow for taking process units off line without dramatically decreasing the quality of effluent. Without process redundancy, the WWTF would operate beyond the terms of its permit during times of maintenance or failure. Due to the lack of process redundancy, impacts to water quality and biological resources during times of maintenance or failure would exceed an alternative system that would allow for continued operation due to redundancy. No feasible mitigation would compensate for lack of redundancy.

Additionally, this alternative would struggle with the expected increase in BOD5 loads from North Coast Brewing Company. Under average flow conditions, the WWTF influent BOD concentration is approximately 25 percent higher than the typical domestic wastewater BOD with the NCBC discharge. If the NCBC discharge continues in the next five years, the treatment process must be able to handle the extra BOD loading which is expected to gradually increase to the permitted amount. Utilizing an updated trickling filter process, the WWTF would eventually exceed the permitted amount of BOD loads and decrease the quality of outflows. Decreased quality outflow has the potential to impact water quality and biological resources.

An update to the two-stage trickling filter process would also impact aesthetic resources along the coastline. While this alternative can fit within the existing WWTF footprint, an update would require a substantial increase in facility height. The WWTF is located on a coastal bluff and is surrounded by Noyo Headlands Park and the Fort Bragg Coastal Trail. It would be difficult to mitigate the visual impact of a taller structure within the WWTF. The City could consider taller privacy fencing, but it would have little effect. Views of the coastline from the surrounding park would be adversely affected by the height, and no mitigation would fully compensate for the visual impact.

The existing process also creates strong odors perceptible to users of the Coastal Trail. Updating the existing process would not address this existing issue, and would allow the existing potential for conflict with adjacent recreational uses to continue.

Finally, an update to the existing system would continue to rely on the use of the existing clarifiers. Competing alternatives abandon the existing clarifiers and convert them to storm surge storage. An update to the existing system would not increase the WWTF ability to handle storm surge.

Activated Sludge System

The Aero-Mod system is an extended aeration, activated sludge treatment for biological nutrient removal. The key advantages of Aero-Mod systems include reduced piping and valves, compact layout with minimal land space requirements, in-basin surge storage and the ability for future expansion. Among

these, the compact layout is one of the key advantages, which would allow uninterrupted operation with the current treatment plant during construction and installation of the system.

The essential benefit of an activated sludge system is that it provides process redundancy. If a portion of the system requires maintenance or experiences failure, the WWTF can continue to operate and process effluent within the boundaries of the NPDES permit. In instances of maintenance or failure, the activated sludge system would not have the negative impact on water quality or biological resources that alternatives without redundancy would create.

This WWTF is unique in that it is surrounded by a park and recreation trail, and visual impacts are heavily considered. The activated sludge system can be developed almost completely at (or below) the existing WWTF privacy fence line. Aesthetic impacts would not increase as a result of this alternative. The activated sludge system will also reduce odors around the WWTF, reducing impacts to trail and park users.

The activated sludge system can also handle projected increases in BOD5 loads, allowing the WWTF to operate within the terms of its NPDES permit.

**ASSESSMENT FOR FEDERALLY THREATENED,
ENDANGERED, PROPOSED & CANDIDATE SPECIES
AND PROPOSED & FINAL DESIGNATED CRITICAL
HABITAT
AND
ASSESSMENT FOR SPECIES, CRITICAL HABITAT,
ESSENTIAL FISH HABITAT (EFH), AND ESA &
MMPA CETACEANS/PINNIPEDS LISTED BY NMFS
FOR THE
CITY OF FORT
FORT BRAGG WASTEWATER TREATMENT PLANT
UPGRADE**

**101 WEST CYPRESS STREET (APN 008-020-07)
FORT BRAGG
MENDOCINO COUNTY, CALIFORNIA**

PREPARED FOR:

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December 25, 2016

This addendum to the Biological Resources Report prepared by William Maslach in August 2016 and submitted to the City of Fort Bragg addresses those species that are federally threatened and endangered, as well as species that are proposed and candidate species, and any critical habitats that may be proposed or designated as final. Specifically, this addendum addresses those species that were identified by the USFWS from the letter dated November 28, 2016 (Consultation Code 08EACT00-2017-SLI-0022; Event Code 08EACT00-2017-E-00023; & Project Name: City of Fort Bragg - Wastewater Treatment Facility Upgrade).

None of the 17 species listed in the consultation letter were identified from the project site surveys. An explanation of the species, their habitats, and their potential for occurrence follows.

Additionally, this addendum addresses those species, critical habitat, essential fish habitat (EFH), and ESA and MMPA Cetaceans/Pinnipeds that are listed by NMFS for the project area.

None of the species or habitats listed by NMFS was identified from the project site surveys. An explanation of the species, their habitats, and their potential for occurrence follows.

Animals

[illegible]

<i>Brachyramphus marmoratus</i> marbled murrelet (nesting)	Threatened	Endangered	G3G4	S1	ABC:WLBCC CDF:S IUCN:EN	Nesting: feeds near-shore; nests inland along coast, from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir. Presence of platforms (flat surface at least four inches in diameter) appears to be the most important stand characteristic for predicting murrelet presence. Stands can be: 1) mature (with or without an old-growth component); 2) old-growth; 3) young coniferous forests with platforms; and 4) include large residual trees in low densities sometimes less than one tree per acre.	The project site is a coastal bluff that is largely developed. No forested areas occur in the project site or nearby. No critical habitat for the species occurs within the project area.
Scientific name Common name	ESA (Federal)	CESA (State)	Global Rank	State Rank	Organization: Code	Habitat	Potential for Occurrence within Project Area
<i>Owls (STRIGIDAE)</i>							
<i>Strix occidentalis caurina</i> northern spotted owl	Threatened	None	G3T3	S2S3	ABC:WLBCC CDF:S CDFW:SSC IUCN:NT	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests w/patches of big trees. High, multistory canopy dominated by big trees, many trees w/cavities or broken tops, woody debris, and space under canopy.	No forest habitat. No critical habitat occurs in the project area for this species.
Cuckoos & Relatives (<i>CUCULIDAE</i>)							
<i>Coccyzus americanus occidentalis</i> Yellow-billed cuckoo	Threatened	Endangered	G5T2T3	S1	BLM:S NABCI:RWL USFS:S USFWS:BCC	Habitat is in the canopy of deciduous trees, woodland patches with gaps and clearings. Often in cottonwood thickets in the West. Extremely rare for the area. The first record of the bird in Mendocino Co. was from thickets at the mouth of the Navarro River on 8/5/1997 by Tina Fabula (https://beta.groups.yahoo.com/neo/groups/Mendobirds/conversations/messages/4246). Some sightings have been recorded from the Eureka Bay area, Bodega Bay, and the San Francisco Bay area.	No habitat on the project site. No critical habitat occurs in the project area for this species.
MAMMALS							
Mountain Beavers (<i>PLODONTIDAE</i>)							
<i>Aplodontia rufa nigra</i> Point Arena mountain beaver	Endangered	None	G5T1	S1	CDFW:SSC IUCN:LC	Generally known from 2 miles north of Bridgeport Landing to 5 miles south of the town of Point Arena. Coastal areas often near springs or seepages; mesic coastal scrub, northern dune scrub, edges of conifer forests, and riparian plant communities. North facing slopes of ridges and gullies with friable soils and thickets of undergrowth.	Out of range; no habitat. No critical habitat occurs in the project area for this species.

Plants

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Lifeform	Elevation	Blooming Period	Notes	Potential for Occurrence within Project Area
<i>Chorizanthe howellii</i>	Howell's spineflower	1B.2	G1	S1	CT	FE	annual herb	0-35 m.	May - July	Sandy, often disturbed, areas of coastal prairie and coastal scrub. Coastal dunes, sandy slopes.	High potential habitat, especially based on historical collections from Noyo Bluffs/Mill Site Property. Species not detected during botanical survey.
<i>Erysimum menziesii</i>	Menzies wallflower	1B.1	G1	S1	CE	FE	perennial herb	0-35 m.	March - June	Localized on coastal dunes and coastal strand. In remnant, open, partially stabilized dune habitat. Plants treated as subsp.; not validly published.	High potential habitat. Occurs nearby. Species not detected during botanical survey.
<i>Lasthenia burkei</i>	Burke's goldfields	1B.1	G1	S1	CE	FE	annual herb	15-600 m.	April - June	Springs, moist meadows, and vernal pools from the Santa Rosa Plain and Clear Lake area.	Project site is outside of the range for this species. Species not detected during botanical survey.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	1B.1	G1	S1	None	FE	annual herb	0-470 m.	March - June	Mesic sites in cismontane woodlands; alkaline playays; valley and foothill grasslands; vernal pools, swales, and low depressions. Extirpated from most of its range. Only one coastal location in Manchester from 1938 otherwise from eastern San Francisco Bay.	No habitat in project site. Species not detected during botanical survey.
<i>Trifolium amoenum</i>	Showy Indian clover, two-fork clover	1B.1	G1	S1	FE	None	annual herb	5-415 m.	April - June	Occurs from Dillon Beach, Marin Co. and northeastward to Occidental, Sonoma Co. and the Santa Rosa Plain as well as the greater San Francisco Bay area (http://www.amjbot.org/content/86/1/124.full). Rich swales, road banks adjacent to fields, clay soils, sandy coastal prairie.	Project site is out of range of the species. Species not detected during botanical survey.

Scientific Name	Common Name	CRPR	Global Rank	State Rank	CESA	FESA	Lifeform	Elevation	Blooming Period	Notes	Potential for Occurrence within Project Area
<i>Trifolium trichocalyx</i>	Monterey clover	1B.1	G1	S1	CE	FE	annual herb	30-240 m.	April - June	Closed-cone coniferous forest (sandy, openings, burned areas). Discovered in Big River Forest in 2011. Previously known from only two occurrences from the central portion of the Monterey Peninsula. "Plants growing in shaded, moist soil of seasonal logging road graded 5 years prior. North-facing slope within redwood/Douglas fir/tanoak forest" in grass around road in pine wood." from label (JEPS111487).	No habitat on coastal bluff. Species not detected during botanical survey.

NMFS

Official list of species from Intersection of USGS 7.5' Topographic Quadrangles with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data within California:

Quad Name **Fort Bragg**

Quad Number **39123-D7**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) - **X**

CC Chinook Salmon ESU (T) - **X**

CVSR Chinook Salmon ESU (T) -

SRWR Chinook Salmon ESU (E) -

NC Steelhead DPS (T) - **X**

CCC Steelhead DPS (T) -

SCCC Steelhead DPS (T) -

SC Steelhead DPS (E) -

CCV Steelhead DPS (T) -

Eulachon (T) -

sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat - **X**

CC Chinook Salmon Critical Habitat - **X**

CVSR Chinook Salmon Critical Habitat -

SRWR Chinook Salmon Critical Habitat -

NC Steelhead Critical Habitat - **X**

CCC Steelhead Critical Habitat -

SCCC Steelhead Critical Habitat -

SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat -

Eulachon Critical Habitat -

sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) - **X**

Olive Ridley Sea Turtle (T/E) - **X**

Leatherback Sea Turtle (E) - **X**

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) - **X**

Fin Whale (E) - **X**

Humpback Whale (E) - **X**

Southern Resident Killer Whale (E) - **X**

North Pacific Right Whale (E) - **X**

Sei Whale (E) - **X**

Sperm Whale (E) - **X**

ESA Pinnipeds

Guadalupe Fur Seal (T) - **X**

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH - **X**

Chinook Salmon EFH - **X**

Groundfish EFH - **X**

Coastal Pelagics EFH - **X**

Highly Migratory Species EFH - **X**

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - **X**

MMPA Pinnipeds - **X**

[illegible]

Scientific name Common name	ESA (Federal)	CESA (State)	Global Rank	State Rank	Organization: Code	Habitat	Potential for Occurrence within Project Area
<i>Orcinus orca</i> orca, or killer whale	Endangered	None	-	-	-	The southern residents have reportedly been seen off the coast of Oregon, Washington, and Vancouver Island, British Columbia. Recently, they have been spotted as far south as the coast of central California and as far north as the coast of Haida Gwaii. During the Spring, Summer, and Fall, the southern residents tend to travel around the inland waterways of Puget Sound, the Strait of Juan de Fuca, and southern Georgia Strait.[8] Little is known about their range and movements during the winter months. (https://en.wikipedia.org/wiki/Southern_resident_killer_whales)	Project is not in streams, estuaries, or marine waters.
Sperm Whales (PHYSETERIDAE)							
<i>Physeter macrocephalus</i> sperm whale	Endangered	None	-	-	-	Occurs throughout the world's oceans, including the Mediterranean Sea.	Project is not in streams, estuaries, or marine waters.

Essential Fish Habitat

Coho EFH
Chinook Salmon EFH
Groundfish EFH
Coastal Pelagics EFH
Highly Migratory Species EFH

ESA and MMPA Cetaceans/Pinnipeds

MMPA Cetaceans
MMPA Pinnipeds

ANALYSIS

ACTIVITY: The Fort Bragg Municipal Improvement District No. 1 is proposing the Fort Bragg Wastewater Treatment Plant Upgrade Project. Fort Bragg's Wastewater Treatment Plant (WTP) is an aging facility which is to be renovated and upgraded to current technological standards utilizing an activated sludge treatment process. Major elements include replacing the wastewater pump station to allow for peak flow pumping capacity, repainting, paving, abandoning storm drain outfalls, demolishing sludge piping, installing a biological treatment facility, and demolishing clarifiers and open-air biofilters (Figure 3). For detailed plans and descriptions beyond the scope of this project see the City of Fort Bragg's Wastewater Treatment Plant Upgrades Project 100% design submittal.

EFH DESIGNATIONS: The area of the proposed action (Fort Bragg Wastewater Facility – upland bluff habitat and ocean bluff) has been identified as Essential Fish Habitat (EFH) for several species of fish. The designations are as follows: salmon (coho, chinook salmon), coastal pelagics (finfish, market squid, krill – (*Thysanoessa spinifera* and *Euphausia pacifica*) and other krill species, groundfish, and other highly migratory species. MMPA species include marine cetaceans (blue, fin, humpback, northern Pacific right, sei, sperm, and orca) and pinnipeds (Guadalupe fur seal). In addition to these EFH designations, a Habitat Area of Particular Concern (HAPC) identified as canopy kelp and rocky reefs under the Pacific Coast Groundfish Fishery Management Plan.

ASSESSMENT: The specie listed above and the HAPC identified, except for the pinnipeds, all exclusively occur in aquatic habitats. As this project occurs on a bluff above the ocean the project will not result in any direct or indirect impacts to the species or the designated habitat. All material (several steel pipes) will be removed from the project area and will not be deposited in marine waters. Although highly unlikely, there is the potential for Guadalupe fur seal to use some of the beach or rocks as a haulout during the project activities.

To avoid potential impacts to marine mammals, surveys for marine mammals shall be coordinated with the cormorant surveys (February 1–August 31) for work outside the facility fence and in the vicinity of the stormwater outfall drains. A qualified biologist will monitor the site during construction for any marine mammals to ensure they are not disturbed by the project activities. If the monitor notices behavioral changes in the animal, construction activities will cease. Only when there is no visible sign of disturbance will activities resume.

CONCLUSION: Based upon the project design, implementation of mitigation measures, and that the project occurs in upland habitat where there is no potential for direct or indirect impacts to marine environment; no impacts to ESA species or their critical habitats, EFH, HAPC, or MMPA species will occur.

**DETERMINATION OF EFFECT ON SPECIES AND
CRITICAL HABITAT PROTECTED UNDER
SECTION 7 OF THE FEDERAL ENDANGERED
SPECIES ACT
FOR THE
CITY OF FORT BRAGG WASTEWATER
TREATMENT PLANT UPGRADE**

**101 WEST CYPRESS STREET (APN 008-020-07)
FORT BRAGG
MENDOCINO COUNTY, CALIFORNIA**

PREPARED FOR:

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February 27, 2017

This addendum to the Biological Resources Report prepared by William Maslach in August 2016 and submitted to the City of Fort Bragg (as amended December 25, 2016) supplements the earlier conclusions and findings to make a determination of effect under Section 7 of the Endangered Species Act.

The summary conclusion of the August 2016 report is as follows:

In summary, there are few areas of this project that could contribute to disturbance of an ESHA since most of the project is within a largely developed wastewater treatment that is entirely fenced. The only portion of the project that could potentially cause disturbance to an ESHA is the work associated with removing and/or capping the stormwater drains that daylight on the bluff face near a colony of nesting pelagic cormorants. Aside from the stormwater drain abandonment work, all buffer encroachments are not above the encroachment that normally occurs during routine operations of the wastewater treatment facility. (38)

The August 2016 report proposes the following standard project requirements that minimize and avoid biological resources:

An analysis of ESHA and ESHA buffer impacts showed that ~ 13,735 ft² (~0.32 acres) of development-related buffer encroachment would occur. However, only ~ 90 ft², or <1 % of the encroachment is outside of the facility fence where stormwater outfall drains are to be abandoned. Another buffer encroachment occurs outside the facility fence near the entrance but the activity is a temporary staging area on ruderal ground where there is no additional impact to ESHA buffer. The areas of buffer encroachment, aside from the stormwater drain capping, do not increase the level of use or degrade habitat.

To ensure that project-related activities do not impact the pelagic cormorant nesting colony, other ESHA, and special-status wildlife potentially occurring, standard project requirements that minimize and avoid biological resources are proposed below.

- If construction activities outside of the facility fence and along the bluff occur during the pelagic cormorant nesting season (February 1–August 31), particularly capping and/or removing the stormwater outfall drains, a qualified biologist will monitor the cormorants during construction to ensure they are not disturbed by the project activities. If the monitor notices behavioral changes in the birds, construction activities will cease. Only when there is no visible sign of disturbance will activities resume. It is anticipated that construction activities will not disturb the colony because only the northern point where the birds congregate is visible from the stormwater*

outfall location. The biologist will also look for nests of black oystercatcher and tufted puffin and perform the same avoidance measures as the pelagic cormorants.

- Surveys for marine mammals shall be coordinated with the cormorant surveys for work outside the facility fence and shall follow the same avoidance measures as for the pelagic cormorants.*
- To protect Ten Mile shoulderband snails potentially occurring in the vegetation, a qualified biologist will survey all areas, if any, where iceplant may be proposed for removal. No earlier than 1 week before iceplant removal, the biologist will look for shoulderband snails by peeling back small iceplant patches approximately every 10 ft. If shoulderband snails are found they will be removed to similar habitat on the coastal bluff. During vegetation removal, if it occurs, the biologist or a person trained in the identification of shoulderband snails will be present to detect any shoulderband snails. If they are present they will be located to similar habitat on the coastal bluff.*
- If any construction activities occur outside the fence and require vegetation removal, a biologist shall perform preconstruction breeding bird surveys within 14 days of the onset of construction if activities occur between February 1–August 31. If active breeding bird nests are observed, no ground disturbance activities shall occur within a minimum 100-foot exclusion zone. These exclusion zones may vary depending on species, habitat and level of disturbance. The exclusion zone shall remain in place around the active nest until all young are no longer dependent upon the nest. A biologist should monitor the nest site during the breeding season to ensure the buffer is sufficient to protect the nest site from potential disturbances.*
- To avoid any potential impacts to red-legged frogs in the sludge lagoon, prior to construction project contractors will be trained by a qualified biologist in the identification of the California red-legged frog. Construction crews will begin each day with a visual search around all stacked or stored materials near the ponds to detect the presence of frogs. If a special status frog is detected, construction crews will contact CDFW or a qualified biologist to relocate any frogs prior to re-initiating work. If no special status frogs are found, construction activities may resume. (43)*

The addendum prepared by William Maslach on December 25, 2016 addresses those species that are federally threatened and endangered, as well as species that are proposed and candidate species, and any critical habitats that may be proposed or designated as final. Specifically, the addendum addresses those species that were identified by the USFWS from the letter dated November 28, 2016 (Consultation Code 08EACT00-2017-SLI-0022; Event Code

08EACT00-2017-E-00023; & Project Name: City of Fort Bragg - Wastewater Treatment Facility Upgrade). The addendum makes the following conclusion:

Based upon the project design, implementation of mitigation measures, and that the project occurs in upland habitat where there is no potential for direct or indirect impacts to marine environment; no impacts to ESA species or their critical habitats, EFH, HAPC, or MMPA species will occur. (9)

This writing supplements the findings of the August 2016 Biological Resources Report and the addendum prepared December 25, 2016 by William Maslach to make a determination of effect under Section 7 of the Endangered Species Act. In addition to the conclusions and findings provided above, **the proposed project will have no effect on species and critical habitat protected under Section 7 of the Federal Endangered Species Act.**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Arcata Fish and Wildlife Office

1655 HEINDON ROAD

ARCATA, CA 95521

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Consultation Code: 08EACT00-2017-SLI-0022

November 28, 2016

Event Code: 08EACT00-2017-E-00023

Project Name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

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

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

Official Species List

Provided by:

Arcata Fish and Wildlife Office
1655 HEINDON ROAD
ARCATA, CA 95521
(707) 822-7201

Consultation Code: 08EACT00-2017-SLI-0022

Event Code: 08EACT00-2017-E-00023

Project Type: WASTEWATER FACILITY

Project Name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

Project Description: Upgrade of existing Wastewater Treatment Facility

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-123.8155746459961 39.438479960821965, -123.81402969360352 39.4379165135078, -123.81308555603026 39.43940798175714, -123.81501674652098 39.43957369848022, -123.8155746459961 39.438479960821965)))

Project Counties: Mendocino, CA



United States Department of Interior
Fish and Wildlife Service

Project name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

Endangered Species Act Species List

There are a total of 17 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
California red-legged frog (<i>Rana draytonii</i>) Population: Wherever found	Threatened	Final designated	
Birds			
Marbled murrelet (<i>Brachyramphus marmoratus</i>) Population: U.S.A. (CA, OR, WA)	Threatened	Final designated	
Northern Spotted owl (<i>Strix occidentalis caurina</i>) Population: Wherever found	Threatened	Final designated	
Short-Tailed albatross (<i>Phoebastria (=diomedea) albatrus</i>) Population: Wherever found	Endangered		
western snowy plover (<i>Charadrius nivosus ssp. nivosus</i>) Population: Pacific Coast population DPS&U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast)	Threatened	Final designated	
Yellow-Billed Cuckoo (<i>Coccyzus</i>	Threatened	Proposed	



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Project name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

<i>americanus</i> Population: Western U.S. DPS			
Fishes			
Tidewater goby (<i>Eucyclogobius newberryi</i>) Population: Wherever found	Endangered	Final designated	
Flowering Plants			
Burke's goldfields (<i>Lasthenia burkei</i>) Population: Wherever found	Endangered		
Contra Costa goldfields (<i>Lasthenia conjugens</i>) Population: Wherever found	Endangered	Final designated	
Howell's spineflower (<i>Chorizanthe howellii</i>) Population: Wherever found	Endangered		
Menzies' wallflower (<i>Erysimum menziesii</i>) Population: Wherever found	Endangered		
Monterey clover (<i>Trifolium trichocalyx</i>) Population: Wherever found	Endangered		
Showy Indian clover (<i>Trifolium amoenum</i>) Population: Wherever found	Endangered		
Insects			
Behren's Silverspot butterfly (<i>Speyeria zerene behrensii</i>) Population: Wherever found	Endangered		



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Lotis Blue butterfly (<i>Lycaeides argyrognomon lotis</i>) Population: Wherever found	Endangered		
Mammals			
Point Arena mountain beaver (<i>Aplodontia rufa nigra</i>) Population: Wherever found	Endangered		
Reptiles			
Leatherback sea turtle (<i>Dermochelys coriacea</i>) Population: Wherever found	Endangered	Final designated	



United States Department of Interior
Fish and Wildlife Service

Project name: City of Fort Bragg - Wastewater Treatment Facility Upgrade

Critical habitats that lie within your project area

There are no critical habitats within your project area.