

Biological Resource Assessment

for

***City of Half Moon Bay Vacant Parcel Management
APNs: 048-190-070, 048-190-050, 048-191-040
Half Moon Bay, CA***

Prepared for:

City of Half Moon Bay

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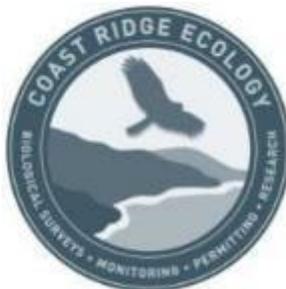


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I. INTRODUCTION

The purpose of this biological resources assessment is to evaluate the potential impacts of a proposed vegetation management plan for three vacant parcels in Half Moon Bay, CA, and to assess the potential for sensitive communities, special status plants, and special status animals and their habitats to occur in the project area or within 200 feet, or to be impacted by the project. This assessment will also assess the impacts of past vegetation management to sensitive communities, and special status plant and animal species and their habitat.

Project Description

A vegetation management plan is being prepared for the three vacant subject parcels in order to comply with the Coastside Fire Protection District's Weed Abatement Standards, which require a firebreak around unimproved properties. The firebreak is required to be a minimum of 30' from the perimeter of the property. The vegetation management plan will also include invasive species removal recommendations to comply with recommendations in the City of Half Moon Bay Local Coastal Land Use Plan (LCLUP). Implementation of the vegetation management plan is not anticipated to cause any permanent impacts to the species and habitats on site, or create any temporary or permanent impacts to wildlife movement through the site. The property owner is also proposing the installation of permanent split rail fencing around the boundary of the parcels.

Project Location and Setting

The project site encompasses three adjacent undeveloped parcels of land (APN 048-190-040, APN 048-190-050, and APN 048-190-070) totaling 13.6 acres in Half Moon Bay, CA. The site is bounded to the north by an undeveloped parcel; to the east by Frontage Road, just west of State Route 1; to the west by Venice Beach, a part of Half Moon Bay State Beach; and to the south by Wave Avenue. The easternmost point of the site is located at the corner of Frontage Road and Wave Avenue (GPS Coordinates: 37°28'46.45"N, 122°26'36.12"W). Topography of the site is relatively flat, and gradually slopes westwards towards the Pacific Ocean and elevation of the property ranges from 31 to 54 feet. The site is 800 feet east of the Pacific Ocean, and the nearest drainages to the site are Frenchman's Creek and Arroyo Leon Creek. Frenchman's Creek is located approximately 1200 feet to the north and is separated from the site by Venice Boulevard, several empty parcels, and a horse ranch. Pilarcitos Creek is located approximately 800 feet southwest of the site. Both streams empty into the Pacific Ocean.

The project site is identified as potentially environmentally sensitive habitat (ESHA) within Figures 6-3 and 6-4 of the City's Certified Local Coastal Land Use Plan (LCLUP). Therefore, preparation of a biological resource assessment is required prior to project review per Section 18.38.035 of the Zoning Code.

Portions of the site have been mowed in the recent past for fire control. Mowing was limited to the approximately 30-foot buffer from existing roads (Wave Road and Frontage Road) in 2015, 2016, and 2021 (Coast Ridge Ecology 2016, Google Earth 2024). Additional mowing was done by the landowner in Spring of 2023 along the southern and eastern boundaries (Pers. Comm. City of Half Moon Bay, Scott Phillips). Aerial photographs from the 1960s show that the site may have been cleared and used for agriculture with houses or other structures along Frontage Road (UCSB 2024). Additional aerial photography from Google Earth shows that the site has been a mosaic of coastal scrub, which has remained dominant, and annual grassland since the early 90's. Over time, the shrub cover has increased both in density and in coverage of the site, and annual grassland has decreased. In addition, patches of invasive jubata grass (*Cortaderia jubata*) have replaced grassland in parts of the site (Google Earth 2024).

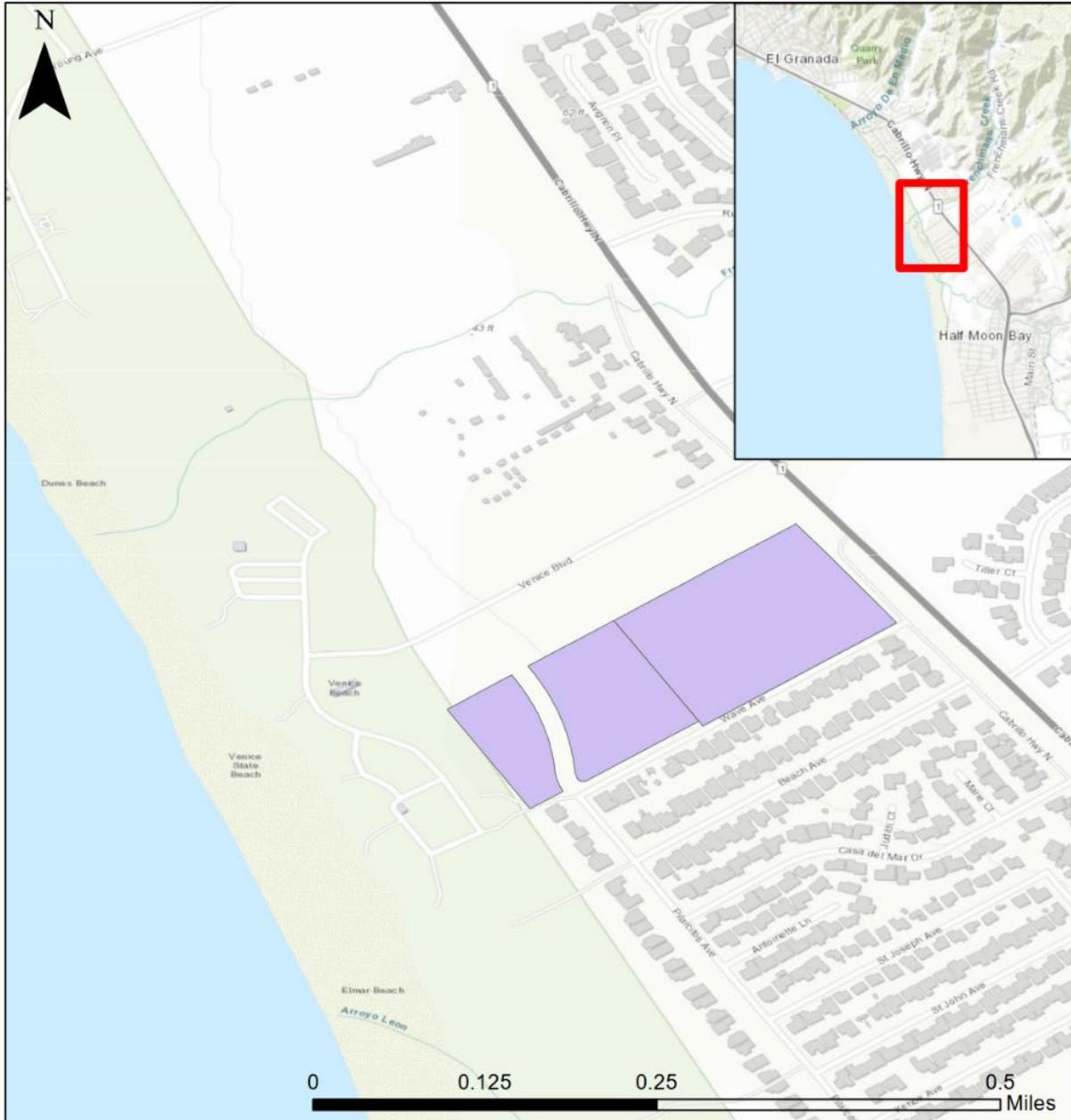


Figure 1: Project Location Map

Legend

 Project Area (APN(s): 048-191-040, 048-190-050, 048-190-070)

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance



II. METHODS

Coast Ridge Ecology biologists Liza Kachko and Alyssa Olenberg-Meltzer conducted a site survey of the three vacant subject parcels and surrounding area on June 26, 2024, and July 10, 2024. All plant and animal species observed were documented, and plant communities and habitats were assessed for their potential to support special status species. The California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CNDDDB) was consulted for known occurrences of sensitive plant, animal, and natural plant communities of concern within the Half Moon Bay and five surrounding 7.5' USGS topographic quadrangles including the Montara Mountain, San Mateo, Woodside, San Gregorio, and La Honda 7.5' USGS topographic quadrangles (CNDDDB 2024). Data from CNDDDB, California Native Plant Society (CNPS) On-Line Inventory of Rare and Endangered Plants of California (CNPS 2024a), the United States Fish and Wildlife (USFWS) Information for Planning and Consultation (USFWS 2024c) and other relevant literature and databases; knowledge of regional biota; and observations made during the field survey were used to evaluate on-site habitat suitability for special status plant and wildlife species within the site. Additional documents reviewed include the City of Half Moon Bay LCLUP, a biological resource assessment (BRA) prepared for one of the subject parcels in 2013 prior to proposed development that was not pursued, and a wetland delineation and rare plant surveys that followed the BRA. Additionally, historical aerial photography was reviewed to assess changes in the vegetation communities over time (UCSB 2024).

III. RESULTS

Soils

Two soil units, Denison loam and Farallone loam, are mapped as occurring within the study area by the USDA Natural Resources Conservation Service (Soil Survey Staff, NRCS, 2024). Denison loam is mapped as occurring on the majority of the site, and Farallone loam is mapped on approximately 2 acres on the eastern portion of the site.

Denison loam, nearly level, is a moderately well drained soil developed on coastal terraces from alluvium. The soil profile of Denison loam, nearly level is loam from 0 to 15 inches, clay from 15 to 45 inches, clay loam from 45 to 60 inches, and loam from 60 to 70 inches (NRCS, 2024). Annual precipitation for this soil unit is 20-30 inches, average air temperature is 55 °F, and the number of frost-free days is over 325 per year. This soil is not listed on the National Hydric Soils List (NRCS 2024).

Farallone loam, nearly level, is a well-drained soil found on alluvial fans and flood plains. The parent material of Farallone loam is Alluvium. The typical profile of this soil unit is loam from 0 to 20 inches, sandy loam from 20-48 inches, and stratified coarse sandy loam to sandy loam from 48 to 60 inches. Mean annual precipitation for Farallone loam is 20 to 30 inches, and average air temperature is 55 °F, and the number of frost-free days is typically over 325 per year. This soil is considered a hydric soil, but only when shaped in a depression (NRCS 2024 (a)). The landform of the study area is relatively flat, and no depressions were observed.

Hydrology

The site gradually slopes towards the west, and runoff from the site flows westward towards the ocean. There are no significant hydrological features on the site. Venice Beach and the Pacific Ocean lie approximately 800 feet west of the site. Frenchman's Creek, a perennial stream, lies 1200 feet to the

north and drains into the Pacific Ocean. Another perennial stream, Arroyo Leon, drains into the Pacific Ocean approximately 800 feet southwest of the property.

Jurisdictional Waters and Wetlands

No wetlands or waters of the US have been mapped on the project site, per the National Wetlands Inventory (USFWS 2024). Small patches of Soft and Western Rush – Sedge Marshes (plant community) and patches of calla lily (*Zantedeschia aethiopica*) may comprise seasonal wetlands and a separate wetland delineation should be conducted to determine if any wetlands are present on site.

Plant Communities

Three major plant communities, as described in the CNPS Manual of California Vegetation (MCV)¹ are found on site: Coyote Brush Scrub, Pampas Grass Patches and Wild Oats and Annual Brome Grassland. Additionally, Soft and Western Rush – Sedge Marshes, comprise a few small areas within the site. A patch of California wild strawberry, which does not meet the criteria for a separate MCV alliance, is described below as it has special protections under city codes. Also within the vegetation are scattered Monterey cypress (*Cupressus macrocarpa*), and Monterey pine (*Pinus radiata*) trees that have colonized the site over the last 30 years. See Figure 2 for a map of vegetation communities.

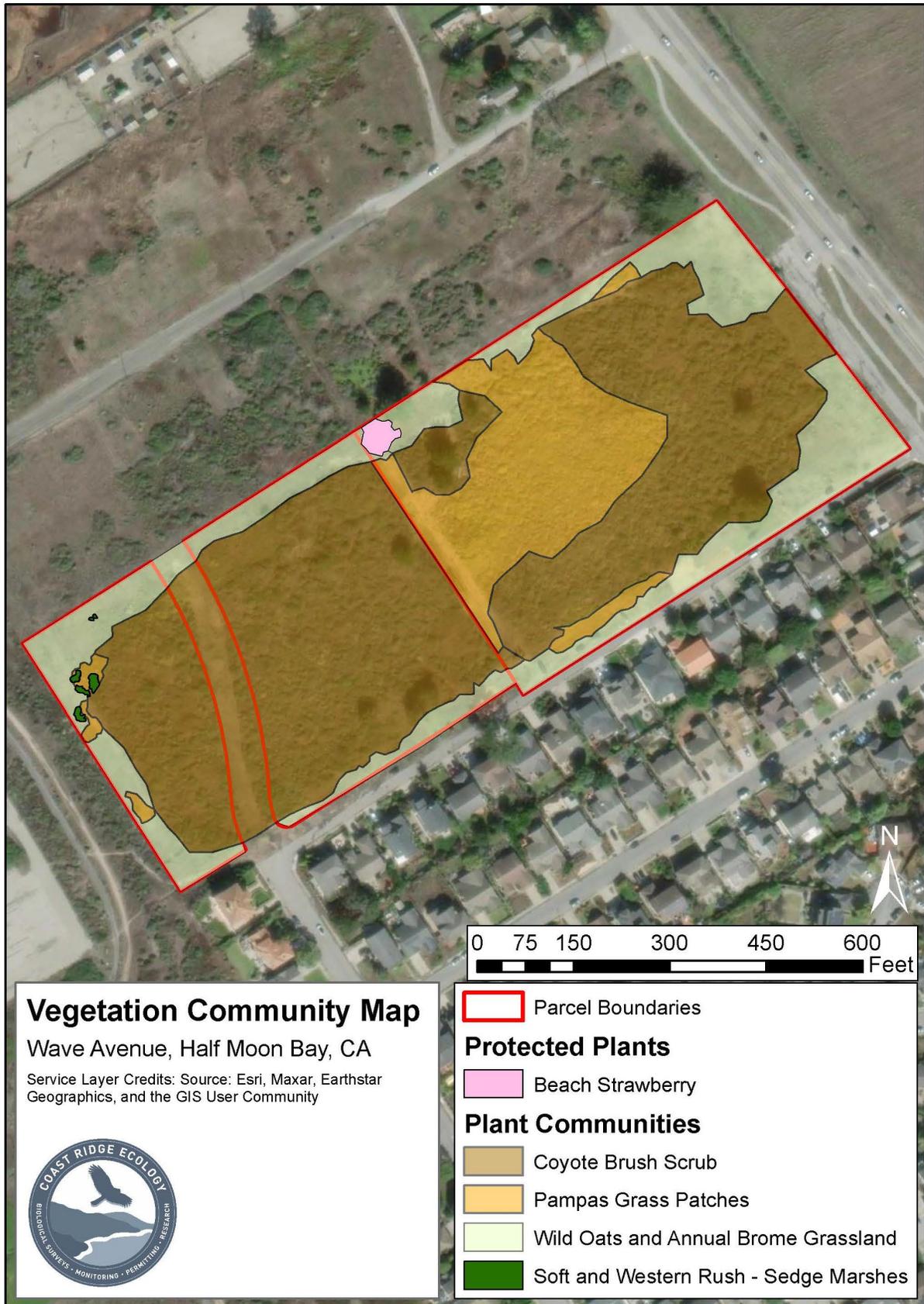
Coyote Brush Scrub (*Baccharis pilularis Shrubland Alliance*) is the dominant plant community on the site. Associates include California aster (*Symphotrichum chilense*), California coffeeberry (*Frangula californica*), poison oak (*Toxicodendron diversilobum*) red elderberry (*Sambucus racemosa*), western red dogwood (*Cornus sericea*) and California blackberry (*Rubus ursinus*), among others. This community is found throughout the site, and two large dense patches dominate most of the site, totaling 8.74 acres.

Wild Oats and Annual Brome Grassland (*Avena spp. - Bromus spp. Herbaceous Semi-Natural Alliance*) vegetation is found on the edges of the site along Frontage Road and Wave Avenue. Dominant species include non-native and invasive species including wild oat (*Avena barbata*), Mediterranean barley (*Hordeum marinum*), poison hemlock (*Conium maculatum*), and short-pod mustard (*Hirschfeldia incana*). The site has 3.16 acres of Wild Oats and Annual Brome Grassland.

Soft and Western Rush - Sedge Marshes (*Juncus (effusus, patens) Herbaceous Alliance*) is found near the northern and western borders of the site. A few small patches of this vegetation community were found which included common rush (*Juncus patens*) growing with nonnative grasses and forbs including hairy cat's ear (*Hypochaeris radicata*), Italian ryegrass (*Festuca perennis*), and bristly ox-tongue (*Helminthotheca echioides*).

Pampas Grass Patches (*Cortaderia (jubata, selloana) Herbaceous Semi-Natural Alliance*) are located throughout the site. One large patch surrounded by the two major Coyote Brush Scrub patches appears to have spread from a mowed right-of way separating the northern two parcels. Total coverage onsite is 2.32 acres.

¹ CNPS 2024b. A Manual of California Vegetation Online. Website accessed December 2024.
<https://vegetation.cnps.org/>



California Wild Strawberry is located on the north side of the site in a large dense patch, composed primarily of beach strawberry (*Fragaria chiloensis*). While the species composition and cover of this patch do not meet requirements for a distinct MCV alliance, this patch is considered a significant plant community under the Half Moon Bay Municipal Code, measure 18.37.045, which protects California wild strawberry. This species has no protected status as a state or federally listed species, nor as a California Native Plant Society (CNPS) ranked species². This patch covers 0.06 acres on site.

Table 1 shows all plant species identified within the surveyed area during the site visit.

Table 1: Plant Species Observed During Site Survey

Scientific Name	Common Name	Native/Non-Native	Cal-IPC ³ rating
<i>Achillea millifolium</i>	yarrow	Native	
<i>Agave mitis</i>	Mitis century plant	Non-Native	
<i>Agapanthus africanus</i>	lily of the Nile	Non-Native	
<i>Anagallis arvensis</i>	scarlet pimpernel	Non-Native	
<i>Arctotheca prostrata</i>	prostrate capeweed	Non-Native	Moderate
<i>Artemesia californica</i>	California sagebrush	Native	
<i>Arum italicum</i>	Italian lords and ladies	Non-Native	Watch
<i>Avena barbata</i>	wild oat	Non-Native	Moderate
<i>Baccharis pilularis</i>	coyote brush	Native	
<i>Borago officinalis</i>	borage	Non-Native	
<i>Brassica rapa</i>	common mustard	Non-Native	Limited
<i>Carduus pycnocephalus</i>	Italian thistle	Non-Native	
<i>Carpobrotus edulis</i>	iceplant	Non-Native	Moderate
<i>Chasmanthe floribunda</i>	chasmanthe	Non-Native	Watch
<i>Cirsium vulgare</i>	bull thistle	Non-Native	Moderate
<i>Clarkia unguiculata</i>	elegant clarkia	Native	
<i>Conium maculatum</i>	poison hemlock	Non-Native	Moderate
<i>Convolvulus arvensis</i>	bindweed	Non-Native	
<i>Cornus sericea</i>	western red dogwood	Native	
<i>Cortaderia jubata</i>	pampas grass	Non-Native	High
<i>Cotyledon orbiculata</i>	pig's ear	Non-Native	
<i>Cupressus macrocarpa</i>	Monterey Cypress		
<i>Delairea odorata</i>	cape ivy	Non-Native	High
<i>Dittrichia graveolens</i>	stinkwort	Non-Native	Moderate - Alert
<i>Echium candicans</i>	pride of Madera	Non-Native	Limited
<i>Epilobium sp.</i>	willowherb	unknown	
<i>Euphorbia peplus</i>	petty spurge	Non-Native	
<i>Festuca perennis</i>	Italian ryegrass	Non-Native	

² California Rare Plant Ranks. <https://www.cnps.org/rare-plants/california-rare-plant-ranks>

³ California Invasive Plant Council (Cal-IPC). 2024. <https://www.cal-ipc.org>. Accessed October 2024.

Scientific Name	Common Name	Native/Non-Native	Cal-IPC ³ rating
<i>Foeniculum vulgare</i>	fennel	Non-Native	High
<i>Fragaria chiloensis</i>	beach strawberry	Native	
<i>Frangula californica</i>	coffeeberry	Native	
<i>Fuchsia sp.</i>	fuchsia (ornamental)	Non-Native	
<i>Geranium dissectum</i>	cutleaf geranium	Non-Native	Limited
<i>Geranium molle</i>	crane's bill geranium	Non-Native	
<i>Geranium maderense</i>	giant herb robert	Non-Native	
<i>Glebionis coronaria</i>	garland daisy	Non-Native	
<i>Helminthotheca echioides</i>	bristly ox-tongue	Non-Native	Limited
<i>Hirschfeldia incana</i>	short-pod mustard	Non-Native	Moderate
<i>Hordeum marinum</i>	Mediterranean barley	Non-Native	
<i>Hydrangea sp.</i>	hydrangea (ornamental)	Non-Native	
<i>Hypochaeris radicata</i>	hairy cat's ear	Non-Native	
<i>Iris sp.</i>	bearded iris	Non-Native	
<i>Juncus patens</i>	common rush	Native	
<i>Kniphofia uvaria</i>	redhot poker	Non-Native	Watch
<i>Lavandula sp.</i>	lavender	Non-Native	
<i>Ligustrum ovalifolium</i>	California privet	Non-Native	
<i>Madia sativa</i>	coastal tarweed	Native	
<i>Malva parviflora</i>	cheeseweed	Non-Native	
<i>Marah fabacea</i>	California man-root	Native	
<i>Medicago polymorpha</i>	bur-clover	Non-Native	Limited
<i>Mercurialis annua</i>	annual mercury	Native	
<i>Myosotis sp.</i>	forget me not	Non-Native	Potentially Limited
<i>Phalaris aquatica</i>	Harding grass	Non-Native	
<i>Pinus radiata</i>	Monterey pine		
<i>Plantago coronopus</i>	cut leaf plantain	Non-Native	
<i>Polygonum aviculare</i>	prostrate knotweed	Non-Native	
<i>Polypogon monspeliensis</i>	annual beard grass	Non-native	
<i>Pseudognaphalium ramosissimum</i>	pink everlasting'	Native	
<i>Pseudognaphalium californicum</i>	ladies' tobacco	Native	
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	Native	
<i>Raphanus sativus</i>	wild radish	Non-native	Limited
<i>Ribes sanguineum</i>	red flowering current	Native	
<i>Rubus ursinus</i>	California blackberry	Native	
<i>Rumex crispus</i>	curly dock	Non-native	
<i>Salvia leucantha</i>	Mexican bush sage	Non-native	
<i>Sambucus racemosa</i>	red elderberry	Native	
<i>Scabiosa atropurpurea</i>	pincushion flower	Non-Native	Watch

Scientific Name	Common Name	Native/Non-Native	Cal-IPC ³ rating
<i>Scrophularia californica</i>	California bee plant	Native	
<i>Solanum furcatum</i>	Forked nightshade	Non-Native	
<i>Sonchus asper</i>	sow thistle	Non-Native	
<i>Spergularia rubra</i>	red sand spurrey	Non-Native	
<i>Symphyotrichum chilense</i>	California aster	Native	
<i>Torilis arvensis</i>	hedge parsley	Non-Native	Moderate
<i>Toxicodendron diversilobum</i>	poison oak	Native	
<i>Trifolium fragiferum</i>	strawberry clover	Non-Native	
<i>Vicia tetrasperma</i>	four seeded vetch	Non-Native	
<i>Vinca major</i>	periwinkle	Non-Native	Moderate
<i>Yucca sp.</i>	Yucca	Non-Native	
<i>Zantedeschia aethiopica</i>	calla lily	Non-Native	Limited
<i>Zeltnera muehlenbergii</i>	Muehlenberg's centauray	Native	

Wildlife and Wildlife Corridors

The site provides habitat for a variety of wildlife species. The coastal scrub habitat on site provides good foraging habitat and cover for herbivorous mammals such as California meadow vole (*Microtus californicus*), pocket Botha's pocket gopher (*Thomomys bottae*) and brush rabbit (*Sylvilagus bachmani*), all of which were observed by sign or visual identification on the site. The site provides habitat for larger mammals, as a Columbian black-tailed deer (*Odocoileus hemionus columbianus*) carcass was observed in the coastal scrub (a possible Mountain lion (*Puma concolor*) kill, and abundant coyote (*Canis latrans*) scat was observed throughout the site.

The trees, shrubs and herbaceous habitats on site provide suitable nesting habitat for a wide variety of birds. Bird species detected in the area included common resident and migratory species associated with coastal scrub habitat, such as wrenit (*Chamaea fasciata*) and spotted towhee (*Pipilo maculatus*), and species associated with habitat mosaics and edges between development and open space such as white-crowned sparrow (*Zonotrichia leucophrys*) and northern mockingbird (*Mimus polyglottos*). The site's grassland openings provide foraging habitat for raptors such as red-tailed hawk (*Buteo jamaicensis*) which was observed foraging over the property at the time of the field survey, and other generalist raptors known to forage nearby such as red-shouldered hawk (*Buteo lineatus*), white-tailed kite (*Elanus leucurus*) and Cooper's hawk (*Accipiter cooperii*). The Monterey cypress and Monterey pine trees and snags on site have cavities, bark fissures, and/or exfoliating bark that could provide roosting habitat for a variety of bat species.

Species observed during the site survey included small mammal and bird species common to coastal scrub and open space along coastal San Mateo County. **Table 2** shows all animal species identified within the project area during the site visit.

Table 2: Animal Species Observed During Site Survey

Scientific Name	Common Name
Reptiles	
<i>Thamnophis atratus atratus</i>	Santa Cruz garter snake
<i>Colaptes auratus</i>	Northern flicker
<i>Zenaida macroura</i>	Mourning dove
<i>Calypte anna</i>	Anna’s hummingbird
<i>Buteo jamaicensis</i>	Red-tailed hawk
<i>Hirundo rustica</i>	Barn swallow
<i>Apelocoma californica</i>	California scrub-jay
<i>Agelaius phoeniceus</i>	Red-winged blackbird
<i>Zonotrichia leucophrys</i>	White-crowned sparrow
<i>Pipilo maculatus</i>	Spotted towhee
<i>Melospiza crissalis</i>	California towhee
<i>Chamaea fasciata</i>	Wrentit
<i>Mimus polyglottos</i>	Northern mockingbird
<i>Spinus psaltria</i>	Lesser goldfinch
<i>Haemorhous mexicanus</i>	House finch
Mammals	
<i>Thomomys bottae</i>	Botha’s pocket gopher
<i>Sylvilagus bachmani</i>	Brush rabbit
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat (middens)
<i>Odocoileus hemionus columbianus</i>	Columbian black-tailed deer (carcass)

Special Status Species

Special-status species were assessed based on habitat types present and special status species occurrences within three miles of the project area (CNDDDB, 2024). **Figure 3** shows special status species (plants and animals) detected within a three-mile radius. **Table 3** shows the special status species identified as having a low, moderate, or high potential for occurrence, and **Table 4** shows all special status species within a three-mile radius and their potential for occurrence. The project site is not located within any designated Critical Habitat (CH) for federal or state listed species, but it is located approximately 450 feet east of designated Critical Habitat for the federally Threatened western snowy plover (*Charadrius nivosus nivosus*) and approximately 0.6 miles west of designated Critical Habitat for the federally Threatened California red-legged frog (*Rana draytonii*) (USFWS 2024b). Special-status species not discussed below were excluded based on a) lack of suitable habitat within the project area; and b) lack of observations at the project site and within the surrounding area. Special status species that require serpentine grassland, saltmarsh, dune, marine and other habitats not present on site were excluded from analysis.

One special status species, the San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), was observed on site. Four active woodrat middens were observed on site during the field survey, however there are likely several more active middens hidden in the dense coastal scrub and jubata grass vegetation on site. No other special status species or natural communities of concern were observed on site during the field visit.

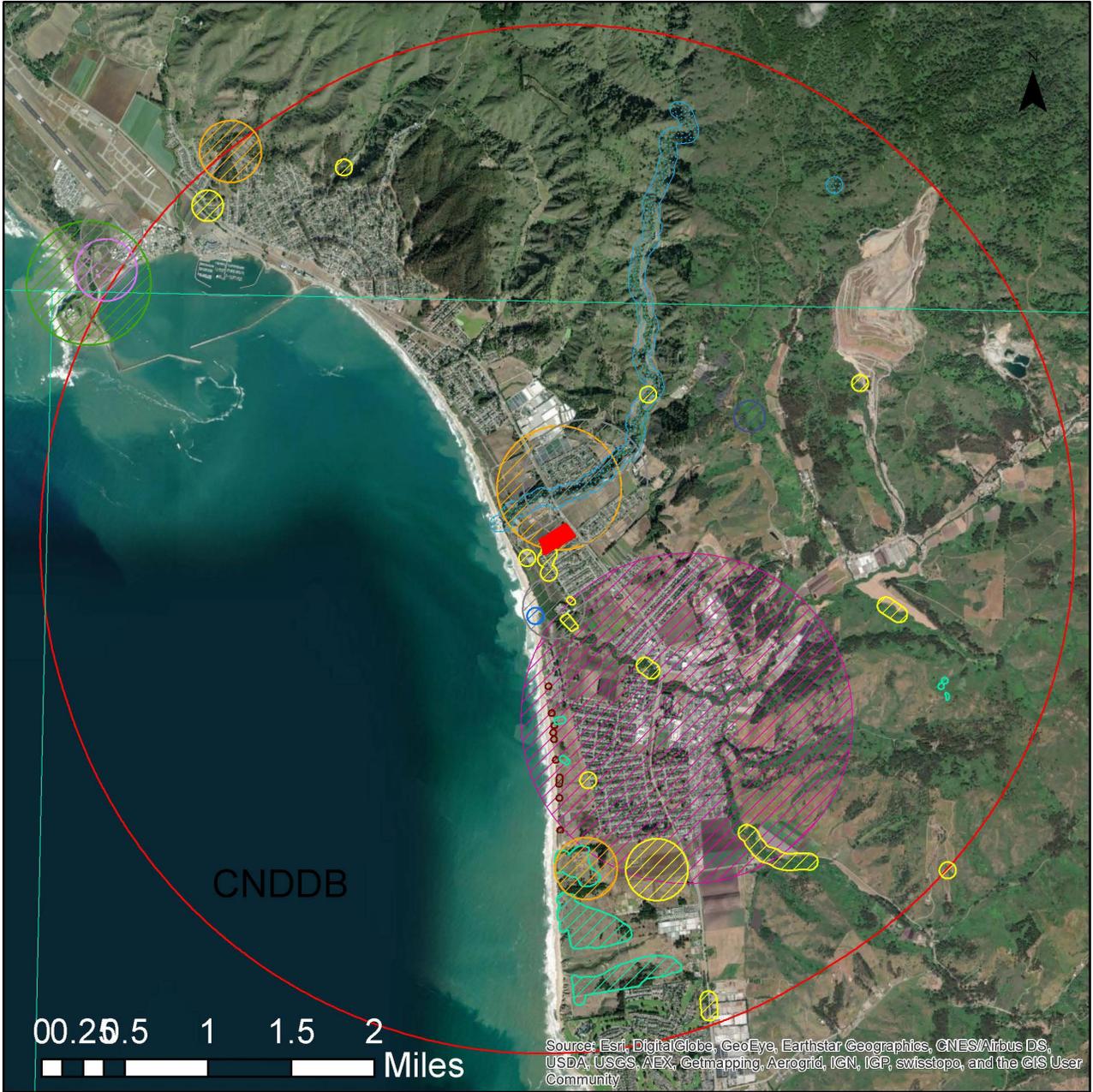


Figure 3: Special Status Species (CNDDDB)

Legend

- 3 mi buffer
- Project Area

Common Name

- | | |
|---|---|
| California red-legged frog | monarch - California overwintering population |
| Choris' popcornflower | perennial goldfields |
| Kellogg's horkelia | saltmarsh common yellowthroat |
| Northern Coastal Salt Marsh | steelhead - central California coast DPS |
| San Francisco gartersnake* | western bumble bee |
| coastal marsh milk-vetch | western snowy plover |
- * Locations not shown



Special status species that have potential for occurrence in the project area are shown in Table 3 below.

Table 3: Special-status species with potential to occur at project site.

Common Name	Scientific Name	Status	Potential of Occurrence
Special Status Animals			
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	Moderate
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	FE	Low
White-tailed kite	<i>Elanus leucurus</i>	CFP, BCC	No potential nesting. May forage on site.
Merlin	<i>Falco columbaris</i>	CDFW-WL	No potential nesting. May forage on site.
Saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	SSC	Low
Short-eared owl	<i>Asio flammeus</i>	SSC	No potential nesting. May forage on site.
Bank swallow	<i>Riparia riparia</i>	ST	No potential nesting. May forage on site.
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	Low
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	Low
Bryant's savannah sparrow	<i>Passerculus sandwichensis aladinus</i>	SSC	Low
San Francisco dusky-footed woodrat	<i>Neotoma fuscipes annectens</i>	SSC	Present
Hoary bat	<i>Lasiurus cinereus</i>	CDFW-SA	Low.
American badger	<i>Taxidea taxus</i>	SSC	Low
Monarch butterfly (California overwintering population)	<i>Danaus plexippus plexippus</i> Pop. 1	CT	Low
Large marble	<i>Euchloe ausonides</i>	FP	Moderate
Western bumble bee	<i>Bombus occidentalis</i>	SC	Low
Obscure bumble bee	<i>Bombus caliginosus</i>	SC	Low

Status: FE (Federally Endangered), FT (Federally Threatened), FP (Federally Proposed for listing) CT (Candidate Federally Threatened) SSC (California Species of Special Concern), ST (State Threatened), SC (California Candidate Endangered) CDFW- SA (CDFW Special Animals list), BCC (USFWS Bird of Conservation Concern), CDFW-WL (CDFW Watch List).

Special Status Animal Species

Special-status species that have a higher probability of occurrence onsite, based on habitat types and/or recorded observations within three miles of the property, are discussed in greater detail below. These include California red-legged frog (*Rana draytonii*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), white-tailed kite (*Elanus leucurus*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), American badger (*Taxidea taxus*), monarch butterfly (California overwintering population; *Danaus plexippus plexippus* Pop. 1), large marble (*Euchloe ausonides*), western bumble bee (*Bombus occidentalis*), and obscure bumble bee (*Bombus caliginosus*).

California Red-legged Frog (Rana draytonii)

The California red-legged frog (CRLF) is a federally threatened species and a California Species of Special Concern. They are known to occur in slow-flowing streams and marshes with heavily vegetated shores for breeding as well as grasslands, riparian woodland, oak woodland, and coniferous forests for overland movements. These frogs typically stay near the shore hidden in vegetation rather than in open water. Seasonal bodies of water are frequently occupied by red-legged frogs, and in some areas, these may be critical for persistence. It is speculated that California red-legged frogs may lie dormant during dry periods of the year or during drought. California red-legged frogs are thought to disperse widely during autumn, winter, and spring rains. Juveniles use the wet periods to expand outward from their pond of origin and adults may move between aquatic areas. Frogs disperse through many types of upland vegetation and use a broader range of habitats outside of breeding season. CRLF have been observed to move extensively and travel up to two miles or more between breeding ponds without apparent regard to topography, vegetation type, or riparian corridors (Bulger in litt.1998).

The California red-legged frog has been extirpated from 70 percent of its former range and now is found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California, Mexico. Potential threats to the species include elimination or degradation of habitat from land development and land use activities and habitat invasion by non-native aquatic species (USFWS, 2002).

There is a recorded occurrence of California red-legged frog within 0.1 miles of the site from 2014, and multiple recorded occurrences within 1 mile along Pilarcitos Creek (CNDDDB 2024). Individuals could disperse across the property during rain events and use the property as upland habitat, due to the proximity of Frenchmans Creek and Pilarcitos Creek, both of which are within 0.5 miles of the property. The site does not lie within federally designated Critical Habitat for the California red-legged frog (USFWS 2024b).

San Francisco Garter Snake (Thamnophis sirtalis tetrataenia)

The San Francisco garter snake (SFGS) is a federally Endangered and state Threatened species. The SFGS is a subspecies of the common garter snake endemic to the San Francisco Peninsula (USFWS 1985). It has a greenish-blue or blue belly, red on the top of its head, a wide pale stripe going down its back, and red and black stripes on the sides. Color varies based on individuals and geographic location.

The SFGS is a semi-aquatic species that requires both shallow marshlands with emergent vegetation, as well as open grassy upland habitats with denser shrubby vegetation for cover. SFGS are most often found near standing water including ponds, lakes, marshes, and sloughs. In the absence of freshwater marshes, SFGS will use aquatic habitats surrounded by willows (*Salix* spp.) and blackberry (*Rubus* spp.) for cover (USFWS, 2006b). They are known to bask in grassland habitats with nearby dense vegetation for escape cover. SFGS also utilize rodent burrows for shelter and winter hibernation. The primary prey species of the SFGS include California red-legged frog (*Rana draytonii*), Sierran tree frog (*Pseudacris sierra*; formerly Pacific tree frog), newts, young toads, mice, and small fish species. Individuals exhibit higher levels of movement in later summer months, likely in pursuit of recently metamorphosed prey (California red-legged frog and Sierran tree frog). SFGS mate primarily in the first warm days of March. Young are born live in July and August (USFWS, 1985).

Communication with the CDFW for information regarding suppressed location data for the SFGS reveals that the nearest recorded occurrence of SFGS is within 0.4 miles of the property. This occurrence is from the mid-1980's. Another occurrence was documented within 1.2 miles of the site in 2004 (Acord, pers. comm.). Due to the proximity of two aquatic habitats (Pilarcitos Creek and Frenchmans Creek) within

0.5 miles of the property, SFGS could use the site during periods of upland movement, or as a movement corridor, although in general the coastal scrub vegetation on the property is too dense to provide optimal upland habitat for SFGS. The USFWS has not designated areas of critical habitat for the SFGS.

White-tailed kite (Elanus leucurus)

The white-tailed kite (*Elanus leucurus*) is a California Fully-Protected species under the California Fish and Game Code §3511 and a USFWS Bird Species of Conservation Concern. White-tailed kites nest in a variety of trees and larger shrubs such as oaks, willows, cottonwoods, toyon, and coyote brush. Generally, higher canopy trees or stands are preferred for nest sites. White-tailed kites tend to nest near water sources, and proximity to food sources appears to be the most important predictor of nest sites (Shuford 1993). White-tailed kites prey almost exclusively on small mammals, and California voles (*Microtus californicus*) are a critical food source, accounting for 50-100% of their diets. Successful nests are generally surrounded by open space and riparian vegetation, and are generally not surrounded by urbanization (Erichsen 1995).

The trees on the project site are smaller in size, and provide marginal nesting habitat for white-tailed kite. However, the mosaic of scrub and grassland with active burrowing rodent populations make the site suitable for foraging, and the species has been documented in the area previously (foraging only), (CRE 2013). There is a low potential for white-tailed kites to nest on the project site, and moderate potential for white-tailed kites to utilize the site for foraging.

San Francisco Dusky-Footed Woodrat (Neotoma fuscipes annectens)

The San Francisco dusky-footed woodrat (SFDFW) is a California species of special concern. It is one of eleven subspecies of the dusky-footed woodrat and is found throughout the San Francisco Bay area. The SFDFW is a mid-sized rodent with a body length of 7.5 to 9 inches. It is brown or grey in color, with a white/light grey underside and feet. The tail is hairy and dark brown, with a lighter colored underside.

The SFDFW is found in scrub, woodland, and grassland areas. They are good climbers and can live in both arboreal and ground-based middens built of sticks and branches up to several feet high. Middens are built in areas of dense foliage or under forest canopy. Woodrats consume a variety of nuts, fruits, foliage, and fungi (CSUS ESRP, 2013).

Four active woodrat middens were observed on site during the field survey, however there are likely several more hidden in the dense coastal scrub and jubata grass vegetation on site.

Hoary bat (Lasiurus cinereus)

The hoary bat (*Lasiurus cinereus*) appears on the CDFW special animals list, and is categorized as a moderate-priority species by the Western Bat Working Group. The hoary bat is the most widespread North American bat species, and is found in a variety of habitats throughout California, most often in association with forested habitats near water. They are foliage-roosters, generally roosting in medium to large trees, often in edge habitat with access to open habitat mosaics.

Hoary bats do not breed in the San Francisco Bay Area, but have been recorded on the San Francisco peninsula during the non-breeding season. The nearest recorded observation in CNDDDB was 6 miles from the site (CNDDDB 2024). The trees on site provide potential marginal roosting habitat, and there is a low potential for the species to occur on the project site.

American badger (Taxidea taxus)

The American badger is a California species of special concern that is limited to large open areas with friable soils. They are burrowing carnivores and require large rodent populations for food sources such as California ground squirrel or pocket gopher colonies. Badgers frequently excavate burrows to hunt fossorial rodents, as well as for rest during daylight hours, but rarely remain in a burrow for more than 24 hours. Sites that are occupied by badgers are immediately recognizable by their distinct elliptical-shaped burrow openings that are 6-12 inches in width with a minimum depth of 20 inches. They typically have an obvious mound of newly dug dirt at the entrance.

In California, American badgers prefer grasslands, savannas, mountain meadows, and desert scrub, though typical habitat in the San Francisco Bay Area is grassland. They are particularly sensitive to habitat fragmentation, in part due to sensitivity to human land use and high road crossing mortality rates. Individual badgers have home range sizes of 8 to 27 square miles, and dispersing young move as much as 68 miles from their natal habitat (Messick and Hornocker 1981). American badgers studied along the central coast of California were recorded to move up to 1.2 miles per night (Quinn 2008).

American badgers have been observed regularly in coastal San Mateo County, with recent observations within five miles (CNDDDB 2024). No badger burrows were observed on site, and the grassland area and pocket gopher colony on site are likely too small to support a resident badger. However, given the distance to observations and their large dispersal distances, there is a low probability for American badgers to occur onsite.

Monarch Butterfly (Danaus plexippus plexippus Pop. 1)

The California overwintering population of monarch butterfly is a Federal Candidate Endangered species, and a CDFW ranked S3 (state vulnerable) species. It is a species of milkweed butterfly with bright orange coloration, black striping and white spots. The species is well known for its north-south migrations from Canada to Mexico which span the lives of several generations of the butterfly. Monarch butterfly winter roost sites extend along the west coast from Mendocino in northern California, south to Baja California, Mexico. Roost habitat consists of wind-protected tree groves, typically eucalyptus, Monterey pine and/or Monterey Cypress, with nectar and water sources nearby. Along the California coast, monarch butterflies typically roost between October and February.

There are two recorded occurrences of monarch butterflies within half a mile of the property (CNDDDB, 2024). The monarch butterfly is unlikely to be found roosting on the property as there are no wind protected groves of large eucalyptus, Monterey pine, or Monterey cypress trees present, although small and mid-sized individual cypress and pine trees do exist on the property. Due to the proximity close proximity of recorded roosts, there is a low potential for monarch butterflies to occur on site.

Large Marble Butterfly (Euchloe ausonides)

The large marble butterfly is a medium-sized butterfly measuring 1.5 to 2 inches across both wings. It is currently proposed for listing as a Threatened species by USFWS. It is found in grasslands and open meadows along with streamsides, berms, beaches, canyons, montane slopes, and weedy flats. Adults generally emerge between February and April. Adults nectar on a variety of flowers including yarrow (*Achillea millefolium*), thistles (*Carduus sp.*), mustards, red-stemmed filaree, blue dicks (*Dichelostemma capitatum ssp. capitatum*), blue-eyed grass, and California poppy (*Eschscholzia californica*). They may

prefer yellow or white flowers. Females lay their eggs singly on leaf buds, flowers, stems, and leaves of host plants in the mustard family, many of which are common weedy plants which are much more widespread than the species. Potential caterpillar host plants and adult nectar plants are present on site. The nearest occurrence is from 5 miles to the southeast (iNaturalist, 2024). There is a low potential for this species to be found within the project area.

Bumble bee species

Two special-status bumble bee species have the potential to occur within the study area:

- Western bumble bee (*Bombus occidentalis*) – State candidate for listing as Endangered
- Obscure bumble bee (*Bombus caliginosus*) – Included on CDFW’s Special Animals List

These two species are known to nest underground, in structures, or in decaying wood. They may occur in grassland, scrub or open woodland. Widespread use of pesticides and habitat fragmentation has led to severe declines in the populations of all three species and due to the difficulty of identifying these species, verified sightings are infrequent. In addition to CNDDDB, citizen scientist data repository iNaturalist was searched for any sightings near the project site, as well as Bumble Bee Watch, a collaborative project between several universities and non-profit entities that vets bumble bee sightings submitted by the public.

While the western bumble bee was historically found in California throughout the Coast Ranges and the Sierra Nevada, the extant range appears to be restricted to high elevations in the Sierra Nevada and scattered coastal sites. The western bumble bee is a generalist that can be found on a variety of flowering plants and crops and does not depend on any one particular flower type. All CNDDDB observations within three miles of the site are from 1953, and all observations within San Mateo County are from 1968 or earlier (CNDDDB 2024). No observations were recorded close to the site on iNaturalist or Bumble Bee Watch. The nearest observation from iNaturalist is in San Francisco, over 19 miles north, from 1994 (iNaturalist 2024).

The obscure bumble bee occurs along the Pacific Coast from southern California to southern British Columbia. Pollen and nectar plants include plants from the Fabaceae family (lupines, clovers, and sweet peas), as well as plants from the Asteraceae (thistles and asters) and Ericaceae (rhododendrons). Other nectar and pollen plants include ceanothus, willows, and blackberry. The nearest records on iNaturalist are from 10 miles to the east, and southeast (iNaturalist 2024).

Both species have a low potential to be present at the project site due to the broad range of potential habitat, the presence of flowering species, and friable soils with rodent burrows that may be suitable for nesting.

Special Status Plant Species and Sensitive Natural Communities

No Sensitive Natural Communities listed by the California Department of Fish and Wildlife were identified on site⁴.

⁴ California Sensitive Natural Communities. Updated June 1, 2023.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609>

All special status species recorded a 3-mile radius of the site, and their likelihood to occur in the project site, are listed in Table 4. Two rare plant species, perennial goldfields (*Lasthenia californica* ssp. *macrantha*), and Choris's popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*), were identified as having moderate potential for occurrence, based on habitat requirements and proximity of known occurrences. Seven rare plant species were identified as having a low potential for occurrence: Kellogg's horkelia (*Horkelia cuneata* ssp. *sericea*), Point Reyes horkelia (*Horkelia marinensis*), marsh microseris (*Microseris paludosa*), rose leptosiphon (*Leptosiphon rosaceus*), Hickman's cinquefoil (*Potentilla hickmanii*) coastal yellow leptosiphon (*Leptosiphon croseus*), and coastal triquetrella moss (*Triquetrella californica*).

No special status plants have been observed on the site. Many special status plant species that occur in the region are found in native grassland habitats, on serpentine soils, or on dunes that are not present on the property. Rare plant surveys were conducted by CRE staff during suitable bloom periods in 2015 (CRE 2015) and 2016 (CRE 2016) and no special status plant species were identified during those surveys. No change in conditions has occurred on site since the completion of previous surveys, and no special status plant species are expected to occur on site.

Environmentally Sensitive Habitat Areas

The property is mapped as a Potential Environmentally Sensitive Habitat Area (ESHA) in the Half Moon Bay Local Coastal Land Use Plan (HMB LCLUP), as it contains potential upland, dispersal and foraging habitat for the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and the California red-legged frog (*Rana draytonii*) (Figure 6-3 of the HMB LCLUP). Although the site's vegetation is generally too dense for ideal upland habitat for both species, both species have been recorded nearby: CRLF have been observed within 0.1 miles of the site, and the closest SFGS observation was 0.4 miles from the site (CNDDDB 2024).

VIII. REGULATORY CONSIDERATIONS

Federal and state-listed species (endangered, threatened, and CA fully-protected) receive various levels of legal protection under the federal and state endangered species acts and the California Fish and Wildlife Code. The federal Migratory Bird Treaty Act of 1918 and Section 3500 of the California Fish and Wildlife Code protect active nests of migratory and other birds, and provide criminal penalties for take of hawks, owls, and take or disturbance of all bird nests or eggs. Potential impacts to other special status or otherwise sensitive species must be disclosed and evaluated pursuant to the California Environmental Quality Act (CEQA). Additional protections for species and habitats that are applicable to the project site are designated in the Half Moon Bay Local Coastal Program and Half Moon Bay Municipal Code.

Federal and State Endangered Species Acts

The United States Endangered Species Act (ESA) is administered by the United States Fish and Wildlife Service (USFWS). The California Endangered Species Act (CESA), the Native Plant Protection Act (NPPA), and CEQA afford protection to species of concern included on State-maintained lists. The California Department of Fish and Wildlife (CDFW) has statutory responsibility for the protection of State listed species and is a trustee agency under CEQA.

Both the Federal and State endangered species acts provide protection for listed species. In particular, the Federal act prohibits "take." "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a federally listed, endangered species of wildlife, or to attempt to engage in any such conduct." Take not specifically allowed by Federal permit under Section 10(a)(1)(B) of the ESA is subject to enforcement through civil or criminal proceedings under Section 9 of the ESA.

While "take" is easily understood in the sense of deliberately capturing or killing individual animals, Federal regulations also define take to include the incidental destruction of animals in the course of an otherwise lawful activity, such as habitat loss due to development. Under those rules the definition of take includes significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR Section 17.3).

Section 10(a) of the ESA permits the incidental take of an endangered or threatened species. Similarly, Section 2081 of the CDFW Code or use of the CESA allows the Department to enter into management agreements that make lawful activities which may otherwise result in habitat loss or take of individuals of a state listed species.

California Fully Protected Species

Under California Fish and Game Code Sections 3511, 4700, 5050 and 5515, 37 wildlife species are designated as fully protected in California. This provides additional protections for species that are rare

or at risk of extinction. Most of the species are also listed as threatened or endangered under CESA. Fully protected species may not be taken at any time and no permits any be issued for their take.

Species of Special Concern

The California Department of Fish and Wildlife has designated certain animal species as “Species of Special Concern” due to concerns about declining population levels, limited ranges, and continuing threats that have made these species vulnerable to extinction. The goal of this designation is to bring attention to these species in the hope that their population decline will be halted through mitigation or project redesign to avoid impact. Species of special concern are protected only through environmental review of projects under CEQA. The California Department of Fish and Wildlife is a trustee agency and is solicited for its comments during the CEQA process.

Nesting Birds

Nesting birds, including raptors, are protected by the California Department of Fish and Wildlife Code 3503, which reads, “It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.” Passerines and non-passerine landbirds are further protected under the Federal Migratory Bird Treaty Act. Any disturbance that causes direct injury, death, nest abandonment, or forced fledging of migratory birds, is restricted under the MBTA. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a ‘take’ of the species under federal law. As such, the CDFW typically recommends pre-construction surveys for potentially suitable nesting habitat that will be directly (actual removal of trees/vegetation) or indirectly (noise disturbance) impacted by construction-related activities.

Almost all nesting birds are protected by the Migratory Bird Treaty Act, and the vegetation present within the property provides a variety of potential nesting habitat for common bird species that utilize coastal scrub and grassland habitat.

California Native Plant Society and CEQA

The California Native Plant Society (CNPS) has developed a rating system for the state’s rare, threatened, and endangered plants. Plants rated by CNPS are subject to protection under CEQA and may also be protected by state and federal endangered species laws if they are listed by the state or federal government.

Jurisdictional Waters and Wetlands

To meet the US Army Corps of Engineers (USACE) definition of wetland, an area must demonstrate three critical characteristics: wetland vegetation, wetland hydrology, and wetland soils (Federal Interagency Committee for Wetland Delineation, 1989). Additionally, to fall under jurisdiction of the USACE, a wetland must be adjacent to waters of the United States and have a continuous surface water connection with that water (Sackett v. EPA 2023). The U.S. Fish and Wildlife Service definition of wetland is less restrictive: at least periodically, the land must support predominantly hydrophytes; the substrate must be predominantly undrained hydric soil; or the substrate is non-soil that is saturated with water or covered by shallow water at some time during the growing season of the year (Cowardin, et al., 1979).

The California Coastal Commission defines wetlands more broadly than the federal wetlands program by recognizing that wetlands may have evidence of only one of the three federal parameters: (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).

U.S. jurisdictional waters are essentially defined as "all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters."⁵ The (State) Water Code defines "waters of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." "Waters of the state" includes all "waters of the U.S."⁶

Half Moon Bay Local Coastal Land Use Plan

The Half Moon Bay Local Coastal Program Land Use Plan (LCLUP) guides development and conservation along the city's coastline, as required by the California's Coastal Act. The plan specifies the allowable kinds, locations, and intensities of development in the jurisdictions coastal zone, and specifies the resource protection and development policies necessary to meet the requirement of the Coastal Act.

The LCLUP provides policies for the protection for Environmentally Sensitive Habitat Areas (ESHAs). The LCLUP defines an ESHA as: "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Policy 6-1)." Policy 6-7 requires a preliminary biological inventory for areas with potential to support or contain sensitive plant or animal species, including in mapped Potential ESHAs and in unmapped areas as determined necessary. A more detailed biological study is required for developments in and adjacent to ESHAs, and for projects in which the preliminary biological inventory indicates the presence or potential for sensitive species or habitats (Policy 6-8).

The policies in Chapter 6: Natural Resources of the LCLUP also provide guidance to avoid and mitigate impacts in ESHAs as feasible. Avoidance measures include best management practices such as pre-construction surveys, construction and tree removal timing, and exclusionary fencing (Policy 6-63), as well as active nest monitoring (Policy 6-64). Mitigation measures include habitat creation or restoration when impacts to ESHAs cannot be avoided (Section 6.69). The LCLUP provides the following mitigation rations that should be applied at minimum if ESHAs are impacted (Section 6.70). These include:

- a. 10:1 for native tree replacement;
- b. 4:1 for wetlands;
- c. 3:1 for riparian habitats;
- d. 3:1 for other habitats that support state or federal rare, threatened, or endangered species, species of special concern (designated by the CDFW), or CNPS 1b or 2 listed plants;
- e. 2:1 for Central Dune Scrub not occupied by listed species;
- f. 1:1 for heritage tree replacement (e.g., Monterey cypress, Monterey pine); and
- g. 1:1 for temporary impacts to any of the above habitat types.

*The ratios represent the acreage of the area to be restored/created to the acreage impacted.

⁵ <https://www.epa.gov/nwpr/about-waters-united-states>

⁶ (Procedures for Discharges of Dredged or Fill Material to Waters of the State, 2019)
https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/procedures_conformed.pdf

Half Moon Bay Municipal Code

Chapter 18.38 of the City of Half Moon Bay Municipal Code specifies that when required, a biological report shall be submitted prior to development review for any projects located within 100 feet of any sensitive habitat area including riparian corridors, bluffs, sea-cliff areas and any wetland. The code specifies that biological reports will contain the mapping of any coastal resources including wild strawberry habitat, existing sensitive riparian areas and wetlands located on or within two hundred feet of the property.

Chapter 18.38 of the Half Moon Bay Municipal Code also specifies that any Biological Report submitted to the city will contain an analysis of the habitat requirements of Rare and Endangered Species, as well as Unique Species, which are defined as organisms that “have scientific or historic value, few indigenous habitats, or some characteristics that draw attention or are locally uncommon.” Unique species, as defined by the HMB Municipal Code, include raptors, California red-legged frog, marine mammals, California wild strawberry, and Monterey pine.

Chapter 7.40 of the City of Half Moon Bay Municipal Code specifies protections for heritage trees. A heritage tree includes any tree “exclusive of eucalyptus, with a trunk diameter of 12 inches or more, or a circumference of at least 38 inches measured at 48 inches above ground level.” Heritage trees may also be “designated by resolution of the city council based on its finding of special historical, environmental, or aesthetic value (HMB 2024).” Any person desiring to remove a heritage tree, or perform major pruning (more than one third of the branches or roots within a twelve-month period) must obtain a permit from the city in order to do so.

One raptor species, the red-tailed hawk, was observed during the site visit, and it is likely that other raptors utilize the site for foraging and potential nesting. A small patch of California wild strawberry (0.06 acres) was mapped on the northern edge of the site. Several trees on site would qualify as heritage trees.

VI. RECOMMENDATIONS

The following recommendations are provided to minimize potential impacts to special status species and native habitats within the project area. These recommended measures apply to all methods of vegetation removal.

- 1) Vegetation removal should be restricted to the dry season (May 15 – October 15), and only conducted during suitable weather conditions (i.e., not during high temperature/low humidity days).
- 2) Prior to the start of vegetation removal, a Qualified Biologist should flag potentially sensitive areas including Soft and Western Rush - Sedge Marshes and beach strawberry patches for avoidance. If grazing is to occur, these areas should be protected with an exclusion fence before animals are brought on site.
- 3) Within two weeks of vegetation removal, a Qualified Biologist should conduct a preconstruction survey for American badger burrows and San Francisco dusky-footed woodrat middens. All active San Francisco dusky-footed woodrat middens should be flagged (or fenced) with a 10-foot no disturbance buffer around each midden. If any active American badger dens are detected, CDFW should be contacted for guidance on establishing suitable buffer zones.

- 4) Within 72 hours of vegetation removal, a Qualified Biologist familiar with the identification and natural history of San Francisco garter snake and California red-legged frog should conduct a preconstruction survey for these species.
- 5) If vegetation removal is to be conducted during nesting bird season (approximately February 1st through August 31st), a nesting bird survey should be conducted by a Qualified Biologist within one week prior to vegetation removal. If active nests are found, a buffer zone should be delineated around the nest in which no work will be permitted while the nest is active. Buffers around active passerine and/or raptor nests will be based on current CDFW recommendations. If saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), white-tailed kite (*Elanus leucurus*), and/or any other special status bird species are found nesting in the project area, CDFW should be contacted to determine suitable buffer zones to avoid impacts to these species. Buffer zones should be delineated with flagging or fencing. Nesting bird surveys should be repeated every 7 days while work is occurring during the nesting bird season.
- 6) If any trees are to be removed or extensively pruned (removal of more than one third of the branches or roots within a twelve-month period), their diameter at breast height (DBH) shall be measured. All trees to be removed or heavily pruned with a DBH of 12" or greater shall be removed under the conditions of a Heritage Tree permit from the City of Half Moon Bay.
- 7) Prior to any tree removal or pruning of trees or snags, a bat habitat assessment should be conducted by a Qualified Biologist. If roosting bats are found or suspected in specific trees or snags, the Qualified Biologist will conduct a nighttime emergence survey for bats in suitable weather to detect bats. CDFW should be contacted for guidance if any special status bat species roosts, and/or bat maternity roosts are detected. Trees with suspected non-special status species bat roosts should be removed using a 2-step removal method during the non-breeding season and non-torpor seasons (March 1st to April 15; and September 15th to October 31st, respectively). Specifically, trimming of non-habitat branches, saplings and shrubs would be conducted on the first day of tree removal, and the remaining portions of the tree with bat roost habitat potential would be removed on the second day. This will allow any bats to vacate the roost prior to tree removal.
- 8) Prior to installation of a split rail fence around the boundary of the site, the proposed fencing plan showing the location shall be reviewed by a Qualified Biologist. The Qualified Biologist shall also survey all areas where the proposed fence will be installed within 48 hours of installation.
- 9) Though the property is dominated by upland vegetation, small patches of Soft and Western Rush – Sedge Marshes (plant community) and patches of calla lily (*Zantedeschia aethiopica*) may comprise seasonal wetlands and a separate wetland delineation should be conducted to determine if any wetlands are present on site. A wetland delineation conducted by a qualified biologist is recommended.

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Representative Photographs



Photo 1: Common rush (*Juncus patens*) growing along the northern edge of the site. Photo looking east from north of northwest corner. Photo date: July 10, 2024.



Photo 2: View of dense patch of Jubata grass (*Cortaderia jubata*). Monterey pines in background. Photo looking south from northern edge. Photo date: December 13, 2024.



Photo 3: Photo of coyote brush and grassland edge. Photo taken from southern edge looking east. Photo date: July 10, 2024.



Photo 4: San Francisco dusky-footed woodrat midden. Photo date: July, 10,2024.



Photo 5: Botha's pocket gopher burrows in grassland.
Photo date: July 10, 2024.



Photo 6: Coastal scrub vegetation on east side of property.
Photo date: December 13, 2024.

Table 4. Special-Status Species Documented in the Half Moon Bay and Five Surrounding USGS Quadrangle, and their Potential for Occurrence.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
MAMMALS			
American badger <i>Taxidea taxus</i>	SSC	Most abundant in drier open stages of shrub, forest, and herbaceous habitats, with friable soils.	Low potential within grassland area. Grassland is very limited in size, and burrows not observed.
Pallid bat <i>Antrozous pallidus</i>	SSC	Generally found in dry, open habitats including deserts, grasslands, shrublands, woodlands and forests. Roosts in protected structures and rocky outcrops.	No potential for breeding or roosting , lack of suitable foraging habitat, and no roosting structures on site.
Hoary bat <i>Lasiurus cinereus</i>	WBWG:M	Roosts in dense foliage of deciduous and evergreen trees, forages over streams and ponds. Prefers habitat edges for feeding.	Low potential for roosting only, no potential for breeding. Minimal suitable roosting sites present. This species does not breed in the San Francisco Bay area.
Big free-tailed bat <i>Nyctinomops macrotis</i>	SSC	Low-lying arid areas; roosts in high cliffs and rocky outcrops.	No potential for breeding or roosting , suitable roosting habitat not present onsite.
Santa Cruz kangaroo rat <i>Dipodomys venustus venustus</i>	G4T1, S1	Requires soft, well-drained sandy soils. Found in manzanita mixed chaparral.	No potential. Suitable habitat not present onsite.
Salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE, SE	Salt and brackish water wetlands in the San Francisco Bay only. Requires pickleweed (<i>Sarcocornia pacifica</i>) as cover and forage.	No potential. Pickleweed habitat not present.

⁷ Habitat requirements summarized from species accounts and descriptions of reported localities (Zeiner, et al., 1990; Jennings and Hayes, 1994; CNDDB, 2013; CNPS, 2013).

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Fringed myotis <i>Myotis thysanodes</i>	WBWG:H	Found in a wide variety of habitats, but prefers dry hardwood woodlands. Roosts in rock crevices, bridges, buildings and tree hollows.	No potential for breeding or roosting, foraging habitat only. No roosting habitat present.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	SSC	Forests and chapparal with moderate canopies and moderate to dense understory.	Present. Woodrat middens observed on site.
BIRDS			
Double-crested cormorant <i>Phalacrocorax auritus</i>	WL	Nesting habitat includes coastal cliffs, offshore islands, and along lake margins in inland areas.	No potential. No suitable nesting or foraging habitat present.
Great blue heron <i>Ardea herodias</i> (Rookeries)	Sensitive	Nests in colonial rookeries in trees and cliffs near marshes. Forages in marshes, lake margins, rivers and streams, wet meadows.	No potential for rookeries/breeding, low potential for foraging.
Burrowing owl <i>Athene cunicularia</i>	CC	Grassland, open areas with rodent activity; nest in burrows and is most often associated with the California ground squirrel.	No potential. Not observed and suitable habitat not present. No ground squirrel burrows observed.
Merlin <i>Falco columbarius</i>	WL	Seacoast, tidal estuaries, open woodlands, savannahs, grassland and desert edges, farms and ranches. Roosts in trees, nests in northern Canada and Alaska.	Low potential for overwinter or migratory foraging.
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT, SSC	Sandy beaches, salt pond levees, and alkali lake shores. Requires sandy, gravelly soils for nesting.	No potential. No suitable shoreline habitat on site. Suitable foraging habitat approximately 450 feet away (Venice Beach shoreline), but no nesting or foraging habitat present on site.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Bank swallow <i>Riparia riparia</i>	CT	Riparian ecosystems, forages in a variety of ecosystems, but primarily over water features. Colonial nester in vertical banks/cliffs with fine sandy soils.	Low potential. Suitable foraging only. No nesting habitat present.
American peregrine falcon <i>Falco peregrinus anatum</i>	CFP	Hunts on beaches, mudflats and near water features including wetlands, lakes and rivers. Nests on ledges in cliffs or buildings.	Low potential. Suitable foraging habitat present nearby but site does not provide suitable nesting habitat.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	SSC	Marshy, brushy vegetation in or near water. Prefers thick continuous cover down to water surface for foraging. Nests in willow, tall grasses, and tule patches.	Low potential, foraging only. No nesting habitat present on site.
California black rail <i>Laterallus jamaicensis coturniculus</i>	CT, FSC	Freshwater marsh, wet meadows, and margins of saltwater marshes. Requires water depths of approximately one inch for nesting habitat.	No potential. No foraging or nesting habitat present.
California clapper rail <i>Rallus longirostris obsoletus</i>	FE, CE	Salt-water and brackish marshes in the San Francisco Bay. Associated with pickleweed.	No potential. No suitable habitat present.
Alameda song sparrow <i>Melospiza melodia pusillula</i>	SSC	Salt marshes bordering south arm of San Francisco Bay. Inhabits <i>Sarcocornia</i> marshes and nests in <i>Grindelia</i> bushes.	No potential. Property is not located within the San Francisco Bay salt marshes.
Short-eared owl <i>Asio flammeus</i>	SSC	Short-eared owls are more numerous in winter, with migrating birds arriving in September and October and leaving in April. Nests are built on the ground in tall stands of grasses in lowland habitats near hunting grounds in marshes, meadows, and even agricultural fields	Low potential. Species is documented within 0.5 miles in winter, could utilize grassland edges of site. No potential for nesting

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Olive-sided flycatcher <i>Contopus cooperi</i>	SSC- nesting	Summer resident and migrant mainly from mid-April through early October. Nesting birds require large, tall trees in forested areas. In San Mateo County, primarily found in Monterey pine and cypress in coast range.	No potential for nesting, site does not have adequate tree cover, and is not near forested areas.
Loggerhead shrike <i>Lanius ludovicianus</i>	SSC	Inhabits a variety of habitats from open grasslands and scrub to woodlands and riparian areas. Species typically uses fenceposts, shrubs and small trees for perching while foraging in open habitats. Year-round resident of California.	Low potential. Known to winter on coastal bluffs in City of Half Moon Bay. No nearby recent nesting records.
Yellow warbler <i>Setophaga petechia</i> (nesting)	SSC- nesting	Riparian plant communities in close proximity to water. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	No potential for nesting. Incidental observations are possible due to proximity to potential nesting habitat along Frenchmans Creek and Arroyo Leon.
Grasshopper sparrow <i>Ammodramus savannarum</i>	SSC	Prefer moderately open grassland habitats with scattered shrub, found throughout the mosaic of grassland, wetland and coastal scrub habitats in Half Moon Bay, documented nesting within one mile..	Low potential. Scrub on site likely too dense for preferred habitat.
Bryant's savannah sparrow <i>Passerculus sandwichensis aladinus</i>	SSC	Subspecies restricted to a narrow coastal strip from Humboldt to Morro Bay, with a large population around the San Francisco Bay. Uses low tidally-influenced habitats and adjacent ruderal areas and grasslands.	Low potential. Tidal wetland not present, <i>Juncus</i> areas may provide marginal nesting habitat.
AMPHIBIANS AND REPTILES			
California red-legged frog <i>Rana draytonii</i>	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Moderate potential. Could occur on site during upland migratory movements.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
California tiger salamander <i>Ambystoma californiense</i>	FT, CT	Seasonal wetlands in grassland and oak-savannah. Requires underground refuges for cover and vernal pools or other seasonal water sources for breeding.	No potential. No suitable habitat present.
Foothill yellow-legged frog <i>Rana boylei</i>	SSC	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	No potential. Suitable habitat not present on site.
San Francisco garter snake <i>Thamnophis sirtalis tetrataenia</i>	FE, CT	Near freshwater marshes, ponds, and slow-moving streams. Prefers dense cover and water depths of at least one foot. Also found in upland habitats adjacent to water sources. Prefers south or west facing slopes with open habitats with occasional shrubs for cover.	Low potential. Site vegetation is too dense to provide ideal upland habitat for this species. Could occur on site during upland movements.
Western pond turtle <i>Emys marmorata</i>	SSC	Ponds, creeks in woodland, grassland. Species requires deep water ponds, streams, or marshes with sunny, emergent basking sites and sunny upland habitat for nesting.	No potential. No suitable habitat present.
FISH			
Tidewater goby <i>Eucyclogobius newberryi</i>	FE, SSC	Shallow marine areas, lagoons and adjacent streams	No potential. No aquatic habitat present on site.
Steelhead- central California coast DPS <i>Oncorhynchus mykiss irideus</i>	FT	Well oxygenated, moderate to fast flowing streams with woody debris, deep pools, riffles, and gravels.	No potential. No aquatic habitat present on site.
INVERTEBRATES			

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Western bumble bee <i>Bombus occidentalis</i>	SCE G3, S2 Sensitive XERCES:IM	Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Nests underground. Once common and widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	Low potential. Suitable nectar and pollen plants present, as well as friable soils for nesting. Nearest occurrence from San Francisco.
Obscure bumble bee <i>Bombus caliginosus</i>	G4?, S1S2	Coastal areas from Santa Barbara County to north to Washington state. Grassy coastal prairies and meadows. Nests underground and above ground in bird nests. Nectar and pollen plants include: <i>Ceanothus</i> , <i>Cirsium</i> , <i>Clarkia</i> , <i>Keckiella</i> , <i>Lathyrus</i> , <i>Lotus</i> , <i>Lupinus</i> , <i>Rhododendron</i> , <i>Rubus</i> , <i>Trifolium</i> , and <i>Vaccinium</i> .	Low potential. Some suitable nectar and pollen plants present, as well as friable soils for nesting. Nearest records within 10 miles to the east and southeast.
Bumblebee scarab beetle <i>Lichnanthe ursina</i>	G2, S2	Coastal sand dunes from Sonoma county south to San Mateo county. Usually stays close to sand surface.	No potential. No suitable sand dune habitat present.
Ricksecker's water scavenger beetle <i>Hydrochara rickseckeri</i>	G1G2, S1S2	Aquatic habitats, weedy shallow open water, and slow-moving stream habitats.	No potential. No aquatic habitat present.
San Bruno elfin butterfly <i>Callophrys mossii bayensis</i>	FE	Coastal mountains with grassy ground cover, mainly near San Bruno mountain. Host plant is <i>Sedum spathulifolium</i> .	No potential. Host plant not present, no suitable habitat present.
Mission blue butterfly <i>Icaricia icarioides missionensis</i>	FE	Grasslands of the San Francisco Peninsula. Uses three perennial lupines as larval host plants, <i>Lupinus albifrons</i> , <i>L. variicolor</i> , and <i>L. formosus</i> .	No potential. No suitable habitat. No host plants observed.
Myrtle's silverspot <i>Speyeria zerene myrtleae</i>	FE	Coastal habitats with <i>Viola adunca</i> . Restricted to foggy dunes and hills of the Point Reyes peninsula.	No potential. No suitable habitat present on site.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT	Native grasslands on outcrops of serpentine soils. Host plants include <i>Plantago erecta</i> , <i>Orthocarpus densiflorus</i> and <i>O. purpurascens</i> .	No potential. No suitable habitat present on site.
Monarch Butterfly <i>Danaus Plexippus Plexippus</i> - Pop 1 California overwintering population	FC G5, S3	Roosts located in wind protected tree groves (eucalyptus, Monterey pine, Monterey cypress) with nectar sources and water nearby.	Low potential. Although Monterey pine and Monterey cypress trees exist on the property, they are too small and wind exposed to provide roosting habitat for this species.
Large marble <i>Euchloe ausonides</i>	FP	Grasslands and open meadows along with streamsides, berms, beaches, canyons, montane slopes, and weedy flats. Feeds on plants of the mustard family including rockcress (<i>Arabis drummondii</i>), dyer's woad (<i>Isatis tinctoria</i>), mustards (<i>Brassica</i> species), and hedge mustard (<i>Sisymbrium</i> species).	Low potential. Suitable nectar and host plants present. Nearest records from 5 miles to the southeast.
San Francisco fork-tailed damselfly <i>Ichnura gemina</i>	G2, S2	Freshwater marshes and creeks with emergent and floating aquatic vegetation.	No potential. No suitable habitat present on site
Edgewood blind harvestman <i>Calicina minor</i>	G1, S1	Open grassland in areas of serpentine bedrock, found on the underside of serpentine rocks near permanent springs.	No potential. No suitable habitat present on site
Edgewood Park micro-blind harvestman <i>Microcina edgewoodensis</i>	G1, S1	Open grasslands with serpentine rocks, adjacent to scrub oaks.	No potential. No suitable habitat present on site
Mimic tryonia (=California brackishwater snail) <i>Tryonia imitator</i>	G2G3, S2S3	Coastal lagoons, estuaries and salt marshes.	No potential. No suitable habitat present on site
PLANTS			

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
San Mateo thorn-mint <i>Acanthomintha duttonii</i>	FE, CE, CNPS 1B.1	Chaparral, Serpentine, Valley and foothill grasslands. Elevation: 50 - 300 meters. Blooming period: Apr.-June.	No Potential. No suitable habitat on site.
Franciscan onion <i>Allium peninsulare</i> var. <i>franciscanum</i>	CNPS 1B.2	Cismontane woodland, Valley and foothill grassland. Clay soils, often on serpentine. Dry hillsides. Elevation: 100-300 m. Blooming: period: May-June.	No Potential. No suitable habitat on site.
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	CNPS 1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland. Elevation: 3 - 500 meters. Blooming period: Mar. – June.	No Potential. Potential habitat in coastal scrub. Not observed on site during survey.
Santa Cruz manzanita <i>Arctostaphylos andersonii</i>	CNPS 1B.2	Broadleaved upland forest, Chaparral, North coast coniferous, Chaparral, Mixed Evergreen Forest, Redwood Forest. Elevation: 60 - 760 meters.	No Potential. No suitable habitat on site. Not observed on site during survey.
Montara manzanita <i>Arctostaphylos montaraensis</i>	CNPS 1B.2	Chaparral, Coastal scrub, Elevation: 150 - 500 meters.	No Potential. No suitable habitat on site. Not observed on site during survey.
Kings Mountain manzanita <i>Arctostaphylos regismontana</i>	CNPS 1B.2	Broadleaved upland forest, Chaparral, North coast coniferous forest. Elevation: 305 - 730 meters.	No Potential. No suitable habitat on site. Not observed on site during survey.
Coastal marsh milk-vetch <i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	CNPS 1B.2	Moist dunes, marshes, streamsides, Wetland. Elevation: 0 - 30 meters. Blooming period: Apr.-Oct.	No Potential. No suitable habitat on site.
Round-leaved filaree <i>California macrophylla</i>	CNPS 1B.1	Cismontane woodland, Valley and foothill grassland/clay Elevation: 15 - 1200 meters. Blooming period: Mar. -May	No Potential. Grasslands on site highly disturbed.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>	CNPS 1B.2	Chaparral, coastal prairie, Marsh and swamp, meadow and seep, valley and foothill grassland (vernally mesic), often alkaline substrates. Elevation: 2 - 420 meters. Blooming period: May-Nov.	No Potential. Grasslands on site highly disturbed.
Point Reyes bird's-beak <i>Chloropyron maritimum</i> ssp. <i>palustre</i>	CNPS 1B.2	Marsh and swamp, Salt marsh, Elevation: 0 - 10 meters. Blooming period: June- Oct.	No Potential. No suitable habitat on site.
San Francisco Bay spineflower <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	CNPS 1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, open sandy soils. Elevation: 3 - 215 meters. Blooming period: Apr. - July.	No Potential. Lack of sandy soils on site.
Franciscan thistle <i>Cirsium andrewsii</i>	CNPS 1B.2	Coastal scrub, Broadleafed upland forest, Coastal bluff scrub, Coastal prairie Ultramafic. Elevation: 0 - 150 meters. Blooming period: Mar. - July.	No Potential. Potential habitat in coastal scrub habitat. . Not observed on site during survey.
Fountain thistle <i>Cirsium fontinale</i> var. <i>fontinale</i>	FE, CE, CNPS 1B.1	Chaparral, Meadow and seep, Valley and foothill grassland, Wetland, Serpentine soil. Elevation: 45- 175 meters. Blooming period: May- Oct.	No Potential. No suitable serpentine habitat on site.
San Francisco collinsia <i>Collinsia multicolor</i>	CNPS 1B.2	Closed cone coniferous forest, coastal scrub, Elevation: 30 - 250 meters. Blooming period: Mar.-May	No Potential. Not observed on site during survey.
Western leatherwood <i>Dirca occidentalis</i>	CNPS 1B.2	Moist ravines, riparian thickets on slopes, Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest. Elevation: 25 - 425 meters.	No Potential. No suitable habitat on site. Not observed on site during survey.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
San Mateo woolly sunflower <i>Eriophyllum latilobum</i>	FE, CE, CNPS 1B.1	Cismontane woodland, Ultramafic, Elevation: 45 - 150 meters. Blooming period: May- June.	No Potential. No suitable habitat on site.
Hillsborough chocolate lily <i>Fritillaria biflora</i> var. <i>ineziana</i>	CNPS 1B.1	Cismontane woodland, Ultramafic, Valley foothill grassland. Blooming period: Mar. – Apr.	No Potential. No suitable habitat on site.
Fragrant fritillary <i>Fritillaria liliacea</i>	CNPS 1B.2	Coastal scrub, Cismontane woodland, Coastal prairie, Valley and foothill grassland, clay or serpentine. Elevation: 3 - 410 meters. Blooming period: Feb.-Apr.	No Potential. Potential habitat in coastal scrub habitat. Not observed on site during survey.
San Francisco gumplant <i>Grindelia hirsutula</i> var. <i>maritima</i>	CNPS 3.2	Coastal bluff, coastal scrub, grasslands. Elevation: 15 - 400 meters. Blooming period: June-Sept.	No Potential. Potential habitat in coastal scrub. Not observed on site during survey.
Short-leaved evax <i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	CNPS 1B.2	Coastal bluff scrub, Coastal dunes, Sandy soils. Elevation: 0 - 215 meters. Blooming period: Mar.- June.	No Potential. Potential habitat in coastal scrub habitat. Not observed on site during survey.
Marin western flax <i>Hesperolinon congestum</i>	FT, CT, CNPS 1B.1	In serpentine barrens and in serpentine grassland and chaparral. Elevation: 5 - 370 meters. Blooming period: Apr.-July.	No Potential. No suitable habitat present.
Kellogg's horkelia <i>Horkelia cuneata</i> ssp. <i>sericea</i>	CNPS 1B.1	Closed-cone coniferous forest , chaparral, coastal dunes , coastal scrub /sandy or gravelly, openings. Blooming period: Apr. – Sept.	Low Potential. Potential in coastal scrub habitat within watershed.
Point Reyes horkelia <i>Horkelia marinensis</i>	CNPS 1B.2	Dunes, coastal scrub, coastal prairie. Elevation: 5 - 350 meters. Blooming period: May- Sept.	Low Potential. Potential in coastal scrub habitat.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Perennial goldfields <i>Lasthenia californica</i> ssp. <i>macrantha</i>	CNPS 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub. Elevation: 5 - 520 meters. Blooming period: Jan.-Nov.	Moderate Potential. Potential in coastal scrub habitat. Not observed on site during survey.
Coast yellow leptosiphon <i>Leptosiphon croceus</i>	CNPS 1B.1	Coastal bluff scrub, Coastal prairie. Elevation: 10 - 150 meters. Blooming period: Apr.-May.	Low Potential. Potential habitat in coastal scrub habitat.
Rose leptosiphon <i>Leptosiphon rosaceus</i>	CNPS 1B.1	Coastal bluff scrub. Elevation: 0 - 100 meters. Blooming period: Apr.-July.	Low Potential. Potential habitat in coastal scrub habitat. Not observed during site survey.
Crystal Springs lessingia <i>Lessingia arachnoidea</i>	CNPS 1B.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland, Strong affinity to serpentine soil. Elevation: 60 - 200 meters. Blooming period: July- Oct.	No Potential. No suitable habitat present on site.
Indian Valley bush-mallow <i>Malacothamnus aboriginum</i>	CNPS 1B.2	Chaparral, Cismontane woodland, Elevation: 150 - 1700 meters.	No Potential. No suitable habitat present on site. Not observed during site visit.
Arcuate bush-mallow <i>Malacothamnus arcuatus</i>	CNPS 1B.2	Chaparral, Cismontane woodland. Elevation: 15 - 355 meters.	No Potential. No suitable habitat present on site. Not observed during site visit.
Davidson's bush mallow <i>Malacothamnus davidsonii</i>	CNPS 1B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland, Elevation: 185 - 855 meters.	No Potential. No suitable habitat present on site. Not observed during site visit.
Hall's bush-mallow <i>Malacothamnus hallii</i>	CNPS 1B.2	Coastal scrub, chaparral, ultramafic. Elevation: 10 - 760 meters.	No Potential. No suitable habitat present on site. Not observed during site visit.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
Marsh microseris <i>Microseris paludosa</i>	FSC, CNPS 1B.2	Moist open woods or grassland; closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation: 5 - 300 meters Blooming period: April-June.	Low Potential. Potential in coastal scrub habitat. Not observed during site visit.
Woodland woollythreads <i>Monolopia gracilens</i>	CNPS 1B.2	Broadleaved upland forest (openings), chaparral, cismontane woodland, north coast coniferous forest (openings), ultramafic, valley and foothill grassland, Elevation: 100 - 1200 meters. Blooming period: Mar.-July	No Potential. No suitable habitat present on site.
White-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	FE, CE, CNPS 1B.1	Ultramafic grassland. Open dry rocky slopes and grassy areas. Often on soils derived from serpentine bedrock. Elevation: 35 - 620 meters. Blooming period: Mar-May	No Potential. No suitable habitat present on site.
Choris's popcornflower <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	CNPS 1B.2	Chaparral, coastal prairie, coastal scrub, mesic. Elevation: 15 - 160 meters. Blooming period: Mar. – June	Moderate Potential. Potential habitat in coastal scrub habitat.
Oregon polemonium <i>Polemonium carneum</i>	CNPS 2.2	Coastal prairie, coastal scrub, lower montane coniferous forest. Elevation: 0 - 1830 meters. Blooming period: Apr. – Sept.	No Potential. Nearby records are historical (prior to 1940's).
Hickman's cinquefoil <i>Potentilla hickmanii</i>	FE, CE, CNPS 1B.1	Closed-cone coniferous forest, coastal bluff scrub, Freshwater marsh, Marsh and swamp, Meadow and seep, Wetland. Elevation: 10 - 149 meters. Blooming period: Apr.-Aug.	Low Potential. Potential suitable habitat present on site.

Species Name	Status	Habitat ⁷	Potential to Occur Onsite
San Francisco campion <i>Silene verecunda</i> ssp. <i>verecunda</i>	CNPS 1B.2	Chaparral, coastal bluff scrub, coastal prairie, coastal scrub, valley and foothill grassland, Often on mudstone or shale, Sandy soils, Ultramafic. Elevation: 30 - 645 meters. Blooming period: Mar. - Aug.	No Potential. No suitable soils present on site.
Saline clover <i>Trifolium hydrophilum</i>	CNPS 1B.2	Marsh and swamp, valley and foothill grassland (mesic, alkaline), vernal pool. Elevation: 0 - 300 meters. Blooming period: Apr.-June	No Potential. No suitable habitat present on site.
San Francisco's owls'-clover <i>Triphysaria floribunda</i>	CNPS 1B.2	Coastal prairie, coastal scrub Valley and foothill grassland, often on serpentine. Elevation: 10 - 160 meters. Blooming period: Apr.-June	No Potential. Potential habitat coastal scrub.
Coastal triquetrella moss <i>Triquetrella californica</i>	CNPS 1B.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland, rocky slopes. Elevation: 10- 100 meters.	Low Potential. Potential in coastal scrub habitat and in disturbed grassland along perimeter of site. Not observed during site visit.
Long-beard lichen <i>Usnea longissima</i>	BLM sensitive, USFS_S-Sensitive	Broadleaved upland forest, north coast coniferous forest, old-growth, redwood. Elevation: 50-500 meters.	No Potential. No suitable habitat present on site.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)

FE = Listed as Endangered

FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.

BCC = Bird of Conservation Concern

FC = Candidate for federal listing

FEDERAL: (National Oceanic and Atmospheric Administration)

MMPA = Marine Mammal Protection Act

S = Strategic stock assessment D = Depleted stock assessment

STATE: (California Department of Fish and Wildlife [CDFW])

CT = Listed as Threatened by the State of California

CE = Listed as Endangered by the State of California

CC = Candidate for state listing

SSC = California Species of Special Concern

FP = CDFW designated “fully protected”

WL = CDFW designated “watch list”

§3503.5 = California Fish and Game Code Section §3503.5

This code protects nesting raptors and birds of prey

OTHER:

LS = Locally Significant Species

* = special status species inventoried by CDFW, including: Special Animals List (Nov 2018); Special Vascular Plants, Bryophytes, and Lichens List (Mar 2019)

California Native Plant Society (CNPS) Rare Plant Ranks (RPR):

1A = Presumed extirpated in California; Rare or extinct in other parts of its range.

1B = Rare, threatened, or endangered throughout range; Most species in this rank are endemic to California.

2A = Extirpated in California, but common in other parts of its range.

2B = Rare, threatened, or endangered in California but common in other parts of its range.

3 = Need more information about species to assign it a ranking.

4 = Limited distribution and therefore warrants monitoring of status.

.1 = Seriously endangered in California

.2 = Fairly endangered in California

NatureServe Element Ranking

Global Ranking (G-rank)

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.

State Ranking (S-rank)

S1 = Critically Imperiled—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) 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.

**AQUATIC RESOURCE DELINEATION
FOR WAVE AVENUE PROPERTIES
(APNs: 048-190-070, 048-190-050, and 048-191-040)
HALF MOON BAY, CALIFORNIA**

PREPARED FOR:
City of Half Moon Bay
501 Main St.
Half Moon Bay, CA 94019

PREPARED BY:
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1410 31st Avenue
San Francisco, CA 94122



December 2024

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1. SUMMARY

This report presents the results of a formal delineation of waters of the United States, including wetlands, at a 13.6-acre site (APNs: 048-190-070, 048-190-050, and 048-191-040) located on Wave Avenue in Half Moon Bay, California (“study area”). Potential jurisdictional features in the Study Area were assessed based on federal and state regulations, including Sections 404 and 401 of the Clean Water Act (CWA), the Porter-Cologne Water Quality Control Act, Sections 1600-1616 of the California Fish and Game (CDFW) Code, and Section 30121 of the California Coastal Act overseen by the California Coastal Commission (CCC). The USACE 1987 manual, in conjunction with the previously listed regulations, serves as the guidance document for identifying waters and wetland features under the jurisdiction of USACE, the Regional Water Quality Control Board (RWQCB), and the CDFW. The CDFW has jurisdiction over stream-dependent riparian areas, as defined by Section 2785 of the California Fish and Game Code. The project falls within the California coastal zone. The California Coastal Commission (CCC) is responsible for determining the presence of wetlands subject to regulation under the California Coastal Act, with the assistance of CDFW and depending on the USACE’s jurisdictional definition, but with stricter definitions. The results of this delineation are preliminary until verified by USACE and CCC.

Fieldwork was performed by Coast Ridge Ecology, LLC on August 2, 2024 using the routine determination method described in the *1987 US Army Corps of Engineers (USACE) Wetland Delineation Manual*, in conjunction with the USACE 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*. Two follow up site visits were conducted on November 8 and 24, 2024. Vegetation types were mapped in the field based on a visual assessment and using a Trimble GeoExplorer 6000 unit during field visits.

Field data, aerial photography and elevation data were analyzed to assess for the presence of a wetland boundary. No potentially jurisdictional federal wetlands were found to be present within the study area.

Patches of common rush (*Juncus patens*), (FACW), and calla lily (*Zantedeschia aethiopica*), (OBL) were observed on site. Two sample points (SP 1.1 and 1.2) met the dominance criteria for hydrophytic vegetation, but no wetland hydrology or hydric soils indicators were present. The dominant plant species at sample point 1.1 were common rush (*Juncus patens*; FACW) and rabbits-foot grass (*Polypogon monspeliensis*; FACW). Sample point 3.1 had the presence of calla lily (*Zantedeschia aethiopica*) and though classified as an obligate (OBL) species, it can grow in non-wetland habitats on the coast and did not indicate presence of a wetland (Appendix A).

Though areas of common rush, and calla lily can be present in wetlands, these species are shallow rooted and can also be found in upland habitats along the California coast. Common rush is a drought tolerant species that can be found growing in a wide variety of wetland and upland habitats (Calflora 2024).

At sample point 1.1, redoximorphic features were observed in the soil layer at a depth of 25 - 29" (5YR, 4/6), (well below the root zone for the hydrophytic species present) possibly indicative of an impermeable layer below 29" and/or indication of a relic wetland. Past disturbance of the site from farming operations (and the associated frequent land-use changes and water usage from crop rotation, irrigation, and drainage changes) may have influenced the formation of this potential relic feature.

Based on these findings, the study area does not support wetlands as defined by the California Coastal Act, the City of Half Moon Bay Local Coastal Program and Land Use Plan criteria, or aquatic resources defined as Waters of the US subject to Section 404 of the Clean Water Act, or Waters of the State subject to Porter-Cologne Water Quality Control Act.

2. METHODOLOGY

This Aquatic Resource Delineation was conducted in accordance with the USACE 1987 *Corps of Engineers Wetlands Delineation Manual* along with the USACE 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region*. This report also conforms to the guidelines given by the *San Francisco District Information Requested for Verification of Corps Jurisdiction* document prepared by the San Francisco District of the U.S. Army Corps of Engineers (revised April 2016), and the Corp's 2016 *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program*. A Level 3 Determination (*i.e.*, a combination of onsite inspection and aerial review) was conducted as defined in the *Wetland Delineation Manual*.

2.1. DEFINITION OF TERMS

The following section provides key definitions of terms used in this report that are relevant to the delineation of wetlands and other waters of the US and State.

Waters of the United States: Title 33, Chapter II, Part 328.3 of the Code of Federal Regulations¹ defines waters of the United States as:

¹ <https://www.ecfr.gov/current/title-33/section-328.3>

(a) Waters of the United States means:

(1) Waters which are: (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (ii) The territorial seas; or (iii) Interstate waters;

(2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under [paragraph \(a\)\(5\)](#) of this section;

(3) Tributaries of waters identified in [paragraph \(a\)\(1\)](#) or [\(2\)](#) of this section that are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in [paragraph \(a\)\(1\)](#) of this section; or (ii) Relatively permanent, standing or continuously flowing bodies of water identified in [paragraph \(a\)\(2\)](#) or [\(a\)\(3\)](#) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in [paragraphs \(a\)\(1\)](#) through [\(4\)](#) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in [paragraph \(a\)\(1\)](#) or [\(a\)\(3\)](#) of this section.

Federal Definition of Wetlands: In Title 33, Chapter II, Part 328.3 of the Code of Federal Regulations, defines wetlands as:

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

In addition, further definitions are provided in relation to waters of the U.S. and federal wetlands including:

Adjacent means having a continuous surface connection.

High tide line means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of

water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Ordinary high-water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Hydrophytic Vegetation: The USACE 1987 *Wetland Delineation Manual* describes hydrophytic vegetation as “sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. The vegetation occurring in a wetland may consist of more than one plant community (species association). Emphasis is placed on the assemblage of plant species that exert a controlling influence on the character of the plant community, rather than on indicator species.”

Hydric Soil: Defined by the USACE *Western Mountains, Valleys, and Coast Region Supplement* 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. Most hydric soils exhibit characteristic morphologies that result from repeated periods of saturation or inundation for more than a few days...These processes result in distinctive characteristics that persist in the soil during both wet and dry periods.”

Wetland Hydrology: The USACE 1987 *Wetland Delineation Manual* describes wetland hydrology as “all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively.”

Navigable Waters of the United States: Title 33, Chapter II, Part 329.4 of the Code of Federal Regulations defines navigable waters of the U.S. as “those waters subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for us to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity.” For the purposes of a USACE jurisdictional determination, navigable waters of the United States are considered Traditionally Navigable Waters.

State Definition of Wetlands: The State Water Resources Control Board (SWRCB) defines wetlands as follows:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation (State Water Resources Control Board 2019).

Waters of the State are defined as follows in Division 7, Chapter 2, Section 13050 of the California Code, Water Code (CA Water Code 2023):

“Waters of the state” means any surface water or groundwater, including saline waters, within the boundaries of the state.

California Coastal Commission (CCC) regulates wetlands in California's Coastal Zone under the California Coastal Act (CCA) of 1976, which is administered by the. Section 30121 of the CCA defines “wetlands” as *“lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens”* (Coastal Act Section 30121).

3. SETTING

3.1. SITE DESCRIPTION

The study area encompass three adjacent undeveloped parcels of land (APN 048-190-040, APN 048-190-050, and APN 048-190-070) totaling 13.6 acres in Half Moon Bay, CA. The study area is bordered to the north by an undeveloped parcel; to the east by Frontage Road and State Route 1; to the west by the Half Moon Bay Coastal Trail and Venice Beach; and to the south by Wave Avenue (Figures 1 and 2). The easternmost point of the site is located at the corner of Frontage Road and Wave Avenue (GPS Coordinates: 37°28'46.45"N, 122°26'36.12"W). The site is approximately 800 feet east of the Pacific Ocean. The topography of the site is relatively flat, and gradually slopes westwards towards the Pacific Ocean. Elevation of the property ranges from 31 to 54 feet.

The property currently consists of primarily coyote brush scrub and annual grassland vegetation, with ruderal non-native weeds and ornamentals (Figure 3). An approximately 30-foot-wide swath around the border of the site was mowed in 2015, 2016, and 2021 for fire control (Coast Ridge Ecology 2016, Google Earth 2024). Additional mowing was done by the landowner in Spring of 2023 along the southern and eastern boundaries. The site has no buildings or other structures. Undeveloped lots border the property to the north, and a residential subdivision is located to the south of Wave Ave. The southern edge of the site along

Wave Avenue is often used for parking by local residents. Surrounding land use includes a mix of suburban housing developments, agricultural lands and open space. Photographs of the study area can be found in Appendix B.

3.2. PROJECT DESCRIPTION

The study area is located within the Venice Beach Area Planned Unit Development District (PUD), as designated by the Half Moon Bay Local Coastal Program & Land Use Plan (City of Half Moon Bay 2020). No specific development project is proposed for the property at this time. However, a vegetation management plan is being prepared for the three parcels within the study area to comply with the Coastside Fire Protection District's Weed Abatement Standards, which require a firebreak around unimproved properties. The firebreak is required to be a minimum of 30' from the perimeter of the property. The vegetation management plan will also include invasive species removal recommendations to comply with recommendations in the City of Half Moon Bay Local Coastal Land Use Plan (LCLUP).

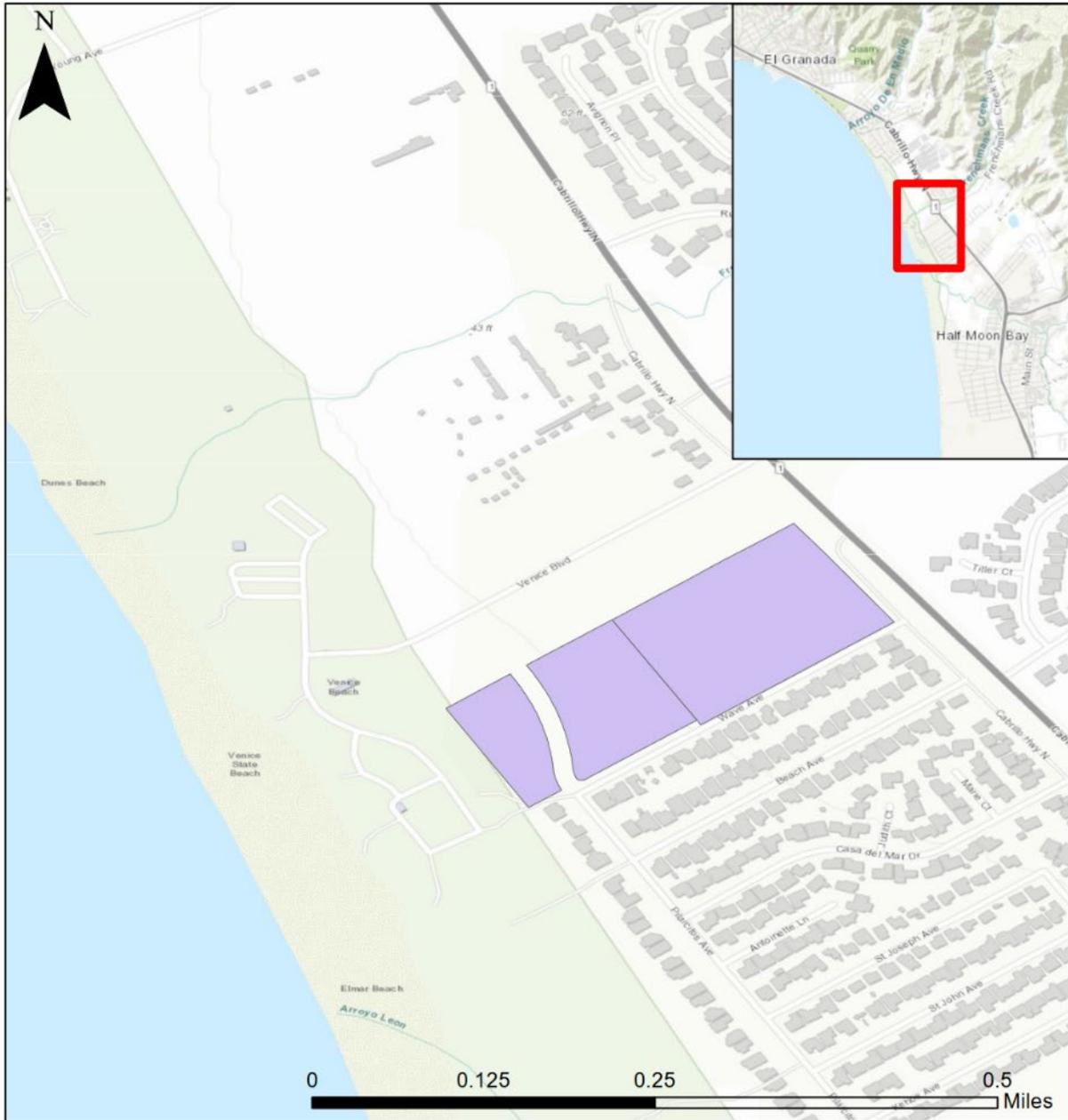


Figure 1: Project Location Map

Legend

 Project Area (APN(s): 048-191-040, 048-190-050, 048-190-070)

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance



Figure 2: USGS 7.5-minute 'Half Moon Bay' Quad with Project Boundary

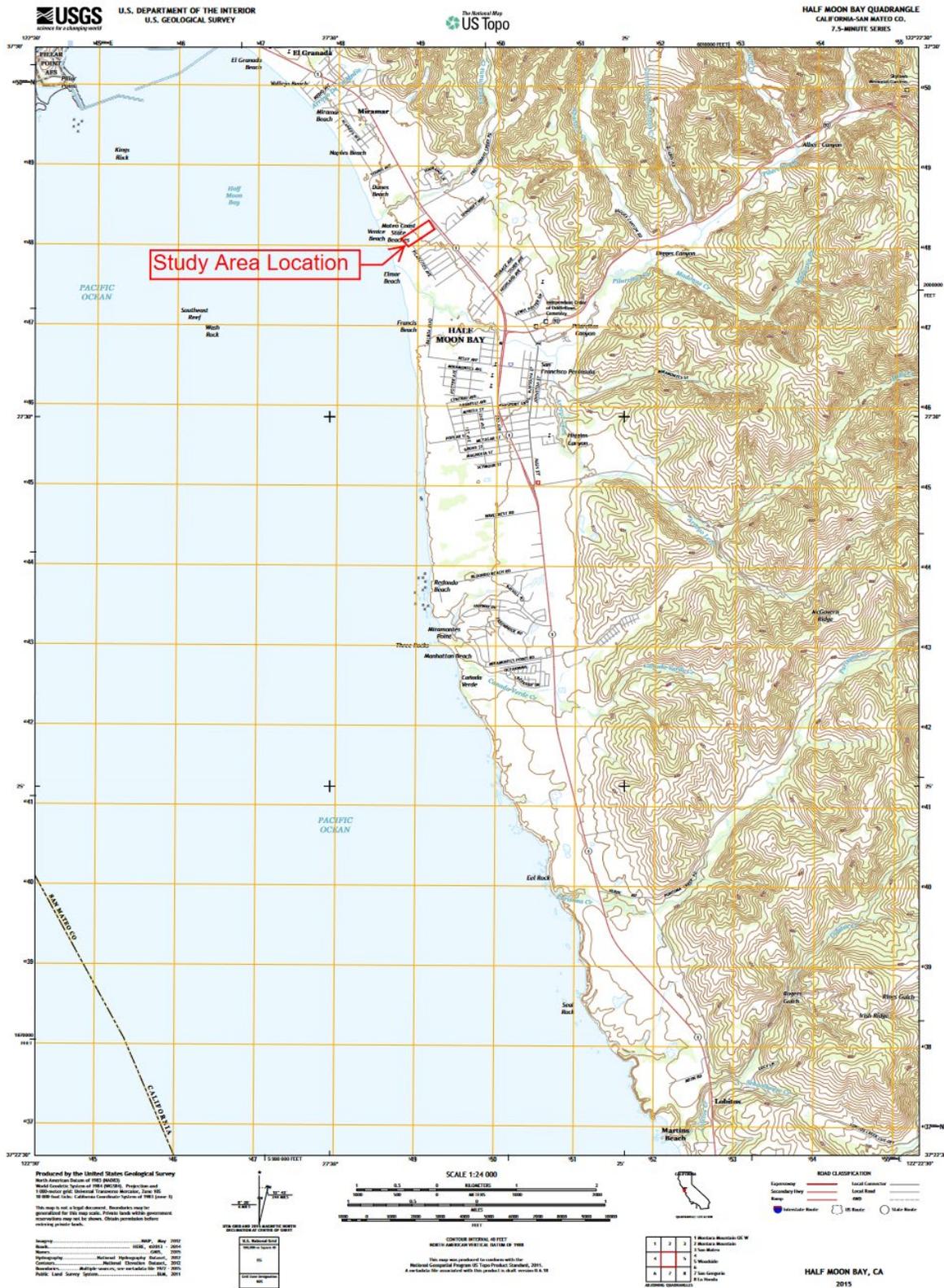
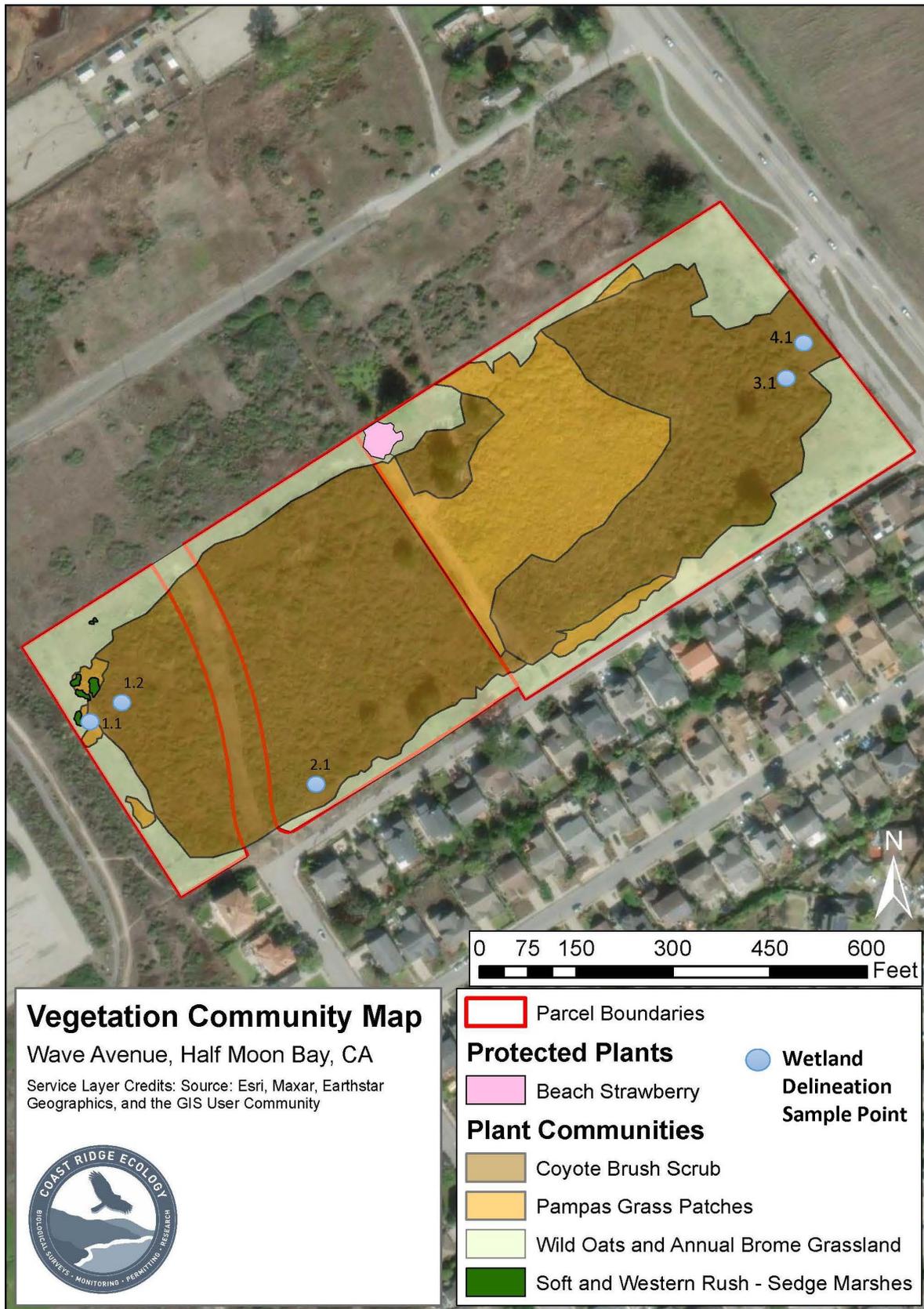


Figure 3. Aquatic Resource Delineation Sample Points and Vegetation Communities.



3.3. VEGETATION COMMUNITIES

Three major plant communities, as described in the CNPS Manual of California Vegetation (MCV)² are found on site: Coyote Brush Scrub, Pampas Grass Patches and Wild Oats and Annual Brome Grassland. Additionally, Soft and Western Rush – Sedge Marshes, comprise a few small areas within the site. A patch of California wild strawberry, which does not meet criteria for a separate MCV alliance, is described below as it has special protections under city codes. See [Figure 2](#) for a map of dominant vegetation communities. Also within the vegetation are scattered Monterey cypress (*Cupressus macrocarpa*), and Monterey pine (*Pinus radiata*) trees that have colonized the site over the last 30 years.

Coyote Brush Scrub (*Baccharis pilularis Shrubland Alliance*) is the dominant plant community on the site. Associates include California aster (*Symphotrichum chilense*), California coffeeberry (*Frangula californica*), poison oak (*Toxicodendron diversilobum*) red elderberry (*Sambucus racemosa*), western red dogwood (*Cornus sericea*) and California blackberry (*Rubus ursinus*), among others. This community is found throughout the site, and two large dense patches dominate most of the site, totaling 8.74 acres.

Pampas Grass Patches (*Cortaderia (jubata, selloana) Herbaceous Semi-Natural Alliance*) are located throughout the site. One large patch surrounded by the two major Coyote Brush Scrub patches appears to have spread from a mowed right-of way separating the northern two parcels. Total coverage onsite is 2.32 acres.

Wild Oats and Annual Brome Grassland (*Avena spp. - Bromus spp. Herbaceous Semi-Natural Alliance*) vegetation is found on the edges of the site along Frontage Road and Wave Avenue. Dominant species include non-native and invasive species including wild oat (*Avena barbata*), Mediterranean barley (*Hordeum marinum*), poison hemlock (*Conium maculatum*), and short-pod mustard (*Hirschfeldia incana*). The site has 3.16 acres of Wild Oats and Annual Brome Grassland.

Soft and Western Rush - Sedge Marshes (*Juncus (effusus, patens) Herbaceous Alliance*) is found near the northern and western borders of the site. A few small patches of this vegetation community were found which included common rush (*Juncus patens*) growing with nonnative grasses and forbs including hairy cat's ear (*Hypochaeris radicata*), Italian ryegrass (*Festuca perennis*), and bristly ox-tongue (*Helminthotheca echioides*), (Figure 3). This area totals approximately 0.02 acres. This habitat was not identified as containing any state and/or federal jurisdictional wetlands as part of a formal wetland delineation of the property (CRE 2024b). While the vegetation community classifies as 'marsh', the dominant plants in the community

² CNPS 2024b. A Manual of California Vegetation Online. Website accessed December 2024.
<https://vegetation.cnps.org/>

are facultative species that can grow in non-wetlands and are common in coastal grasslands and along the margins of coastal scrub.

California Wild Strawberry is located on the north side of the site in a large dense patch, composed primarily of beach strawberry (*Fragaria chiloensis*). While the species composition and cover of this patch do not meet requirements for a distinct MCV alliance, this patch is considered a significant plant community under the Half Moon Bay Municipal Code, measure 18.37.045, which protects California wild strawberry. This species has no protected status as a state or federally listed species, nor as a California Native Plant Society (CNPS) ranked species³. This patch covers 0.06 acres on site.

3.4. SOILS

Two soil units, Denison loam and Farallone loam, are mapped as occurring within the study area by the USDA Natural Resources Conservation Service (NRCS 2024 (b)). Denison loam is mapped as occurring on the majority of the site, and Farallone loam is mapped on approximately 2 acres on the eastern portion of the site.

Denison loam, nearly level, is a moderately well drained soil developed on coastal terraces from alluvium. The soil profile of Denison loam, nearly level is: loam from 0 to 15 inches, clay from 15 to 45 inches: clay loam from 45 to 60 inches, and loam from 60 to 70 inches (NRCS 2024 (b)). Annual precipitation for this soil unit is 20-30 inches, and average air temperature is 55 °F, and the number of frost-free days is over 325 per year.

Farallone loam, nearly level, is a well-drained soil, found on alluvial fans, and flood plains. The parent material of Farallone loam is Alluvium. The typical profile of this soil unit is loam from 0 to 20 inches, sandy loam from 20-48 inches, and stratified coarse sandy loam to sandy loam from 48 to 60 inches. Mean annual precipitation for Farallone loam is 20 to 30 inches, and average air temperature is 55 °F, and number of frost-free days is typically over 325 per year.

Denison loam, nearly level, is not listed on the National Hydric Soils List. Farallone loam, nearly level, is considered a hydric soil, but only when shaped in a depression (NRCS 2024 (a)). The landform of the study area is relatively flat without discernable depressions. Appendix C provides a soils map of the study area.

3.5. HYDROLOGY

The study area gradually slopes towards the west, and runoff from the site flows westward towards the ocean. The Half Moon Bay Coastal Trail runs approximately 65 feet west of the site,

³ California Native Plant Society, Inventory of Rare Plants. <https://www.cnps.org/rare-plants/cnps-inventory-of-rare-plants>

and is slightly elevated above the surrounding terrain. Venice Beach and the Pacific Ocean are located approximately 800 feet west of the site. Frenchman's creek, a perennial stream with native riparian vegetation, is located 1200 feet to the north. Another perennial stream, Pilarcitos Creek, drains into the Pacific Ocean approximately 800 feet southwest of the property. No wetlands are mapped in the project area according to the USFWS Wetland Mapper (Appendix E).

Based on a review of aerial photography for the site (UCSB 2024), the site was used for agriculture as far back as at least the 1940's, though is unclear how recent the property has been used for agriculture.

4. REGULATORY SETTING

The discharge (temporary or permanent) of dredged or fill material into waters of the United States, including wetlands, typically requires authorization from USACE, pursuant to Section 404 of the CWA (33 USC 1344); RWQCB, pursuant to Section 401 of the CWA and the Porter-Cologne Water Quality Control Act; and CDFW, pursuant to Sections 1600 through 1616 of the California Fish and Game Code. Permits, licenses, variances, or similar authorization may also be required by other local statutes. The applicable CWA and other federal and state regulations are described in the following sections.

4.1. FEDERAL REGULATIONS

4.1.1. Clean Water Act Section 404

The CWA serves as the primary federal law protecting the quality of the nation's wetlands and surface waters (other waters). Under Section 404, USACE and the U.S. Environmental Protection Agency (USEPA) regulate the discharge of dredged and fill materials into the waters of the United States. Waters of the United States include: 1) waters used for commerce and subject to tides; 2) interstate waters and wetlands; 3) other waters such as intrastate lakes, rivers, streams, and wetlands; 4) impoundments of waters; 5) tributaries of waters; 6) territorial seas; and 7) wetlands adjacent to waters.

The CWA defines wetlands as a subset of waters of the United States that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3[b]; 40 CFR 230.3[t]).

The definition of waters of the United States has been revised based on subsequent rulings by the U.S. Supreme Court (Court). Two cases brought before the Court, *Rapanos v. United States* (No. 04 1034) and *Carabell v. Army Corps of Engineers* (No. 04-1384), challenged USACE interpretation of waters of the United States (USACE/USEPA 2007). On June 19, 2006, the Court ruled in favor of tightening the definition of “waters of the United States.” Per the Court’s decision, a water or wetland constitutes “navigable waters” under CWA if it possesses a “significant nexus” to waters that are currently navigable or could feasibly be made navigable. A significant nexus requires that there be “more than an insubstantial or speculative effect on the chemical, physical, and/or biological integrity of a traditionally navigable water” (USACE 2008).

On June 5, 2007, USACE and USEPA issued a joint memorandum that provided new guidelines for establishing whether wetlands or other waters of the United States fall within USACE jurisdiction (USACE/USEPA 2007). Under these guidelines, the agencies assert jurisdiction over traditional navigable waters (TNWs), wetlands adjacent to TNWs, non-navigable tributaries to TNWs that are relatively permanent waters (RPWs), and wetlands that abut RPWs. The agencies may take jurisdiction over non-navigable tributaries that are not RPWs, wetlands that are adjacent to non-RPWs, and wetlands adjacent to but not directly abutting a relatively permanent, non-navigable tributary.

4.1.2. Executive Order 11990 for the Protection of Wetlands

Executive Order 11990 for the Protection of Wetlands (May 24, 1977) establishes a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. If wetland effects cannot be avoided, all practicable measures to minimize impacts must be included.

4.1.3. Revising the Definition of "Waters of the United States"

The Environmental Protection Agency and U.S. Army Corps of Engineers are interpreting “waters of the United States” consistent with the pre-2015 regulatory regime until further notice (EPA, 2021). On November 18, 2021, the U.S. Environmental Protection Agency and the Department of the Army (“the agencies”) announced the signing of a proposed rule to revise the definition of “waters of the United States.” On December 7, 2021, the proposed rule was published in the Federal Register. The public comment period closed on February 7, 2022.

The agencies propose to put back into place the pre-2015 definition of “waters of the United States,” updated to reflect consideration of Supreme Court decisions. This familiar approach would support a stable implementation of “waters of the United States” while the agencies continue to consult with states, tribes, local governments, and a broad array of stakeholders in both the current implementation and future regulatory actions.

4.2. STATE REGULATIONS

4.2.1. Porter-Cologne Water Quality Control Act and Clean Water Act Section 401

Waters of the state are regulated by RWQCB under the State Water Quality Certification Program, which regulates discharges of dredged and fill material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Waters of the state are broadly defined by the Porter-Cologne Water Quality Control Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Under this definition, isolated wetlands that may not be subject to regulations under federal law are considered waters of the state. Additionally, the California RWQCB adopted State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (RWQCB, 2019) and uses the methods of delineation prescribed in the USACE manuals (USACE 1987; USACE 2010) which was followed in conducting this wetland delineation.

RWQCB protects all waters in its regulatory scope but has special responsibility for isolated wetlands and headwaters that may not be regulated by other programs (such as Section 404 of the CWA). Projects that require a Section 404 CWA permit or fall under other federal jurisdiction and have the potential to impact waters of the state are required to obtain a Section 401 Water Quality Certification. If a project does not require a federal license or permit but involves activities that may result in a discharge of harmful substances to waters of the state, RWQCB has the option to regulate such activities under its authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

The (State) Water Code defines “waters of the state” broadly to include “any surface water or groundwater, including saline waters, within the boundaries of the state.” “Waters of the state” includes all “waters of the U.S.”⁴

4.2.2. California Coastal Commission

Coastal Act Section 30121 defines the term “wetland” as: “lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. The Coastal Commission’s regulations (California Code of Regulations Title 14 (14 CCR)) establish a “one parameter definition” that only requires evidence of a single parameter to establish wetland conditions:

⁴ (Procedures for Discharges of Dredged or Fill Material to Waters of the State, 2019)

https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/procedures_conformed.pdf

Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577).

As opposed to wetlands definitions, which describe general parameters that must be shown to establish three wetland conditions (hydrology, soils, and vegetation), the delineation of wetlands in the field typically requires substantial evidence of indicators, which are the physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter; and methodologies that guide the process of distinguishing wetland from non-wetland conditions. Such field tools are needed because the various characteristics of wetlands typically occur on physical gradients (i.e., wet to dry conditions, hydric to nonhydric soils, and hydrophytic to meso/xerophytic vegetation). The Coastal Commission's regulations acknowledge these distinctions by specifying some general decision rules for establishing the upland boundary of wetlands:

...the upland limit of a wetland shall be defined as:

- a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover.*
- b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
- c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not. (14 CCR Section 13577)*

It is important to recognize the importance of hydrologic conditions in creating and maintaining wetlands. Recurrent saturation of the substrate at or near the surface is the one condition that sustains all other characteristics of wetlands. Water at or near the surface supports the development of hydrophytic vegetation and hydric soils, rather than the reverse. Therefore, the hydrologic factor has special status as the agent of causation or control over creating and sustaining wetlands.

The California Coastal Commission relies on a one-parameter definition of wetlands. Section 30121 of the California Coastal Act has a broad definition for a wetland:

“Wetland means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater, marshes, open or closed brackish water marshes, swamps, mudflats, or fens.”

However, the CCC Administrative Regulations (Title 14 CCR Section 13577 (b)) provides a more explicit definition:

“Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance 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 deepwater habitat.”

In addition to the above definition, the Statewide Interpretive Guidelines for Identifying and Mapping Wetlands and Other Wet Environmentally Sensitive Habitat Areas⁵ provides technical criteria for use in identifying and delineating wetlands and other ESHAs within the Coastal Zone. The technical criteria presented in the guidelines are based on the Coastal Act definition and indicate that wetland hydrology is the most important parameter for determining a wetland, recognizing that:

“...the single feature that most wetlands share is soil or substrata that is at least periodically saturated with or covered by water, and this is the feature used to describe wetlands in the Coastal Act. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil, and therefore only plants adapted to these wet conditions (hydrophytes) could thrive in these wet (hydric) soils. Thus, 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 technical criteria require that saturation of soil in a wetland must be at or near the surface continuously for a period of time. The meaning of "at or near the surface" generally is considered to be approximately 1 foot from the surface or less (the root zone), and the saturation must be continuously present for a period of time (generally greater than two weeks) to create the necessary soil reduction (anaerobic) processes that create wetland conditions. For example, water from rain during a storm that causes saturation near the surface but then evaporates or infiltrates to 18 inches or deeper below the surface shortly after the

⁵ CCC (California Coastal Commission). 1981. Statewide Interpretive Guidelines. Accessed at <https://www.coastal.ca.gov/wetrev/wetappa.html>

storm does not meet the generally accepted criteria for wetland hydrology. This element of the wetland delineation methodology is important for the interpretation of wetland conditions.

According to Cowardin, et al , the definition of a wetland is as follows:

“In general terms, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. The single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil. 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 the classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season each year.”

California Coastal Act Wetlands – ‘One Parameter Wetlands’

The CCC requires observation of one diagnostic feature of a wetland such as wetland hydrology, dominance by wetland vegetation (hydrophytes), or presence of hydric soils as a basis for asserting jurisdiction under the Coastal Act. Therefore, the presence of hydrophytic vegetation, hydric soils or hydrology alone can confirm the presence of a wetland as defined by the CCC but does not automatically lead to this conclusion.

By definition, facultative (FAC) plant species have equal probability of occurring in wetlands and non-wetlands, and a Facultative Wetland (FACW) plant species has a 66% probability of occurring in wetlands. Considering a facultative and/or a facultative wetland plant species to be a hydrophyte in all circumstances is contrary to their designation. For example, Italian ryegrass (*Festuca perennis*) is a FAC species that occurs in a wide range of habitats and site conditions, including seasonal wetlands, but more commonly as a dominant or co-dominant species in annual grasslands, ruderal (i.e., chronically disturbed) sites, pastures, and erosion control applications, even occasionally in woodlands and shrublands. Identifying such circumstances as a one-parameter wetland on the basis of a facultative or facultative wetland plant species being present, in the absence of supporting evidence of hydric soils or hydrology, would potentially be an erroneous conclusion. The presence of Italian ryegrass in the upland grassland portions of a property does not lead to a conclusion that the entire sloping hillside qualifies as any kind of wetland.

Furthermore, FAC and FACW species are more prominent in grasslands in coastal areas, not due to the presence of hydric soils or wetland hydrology, but rather due to the additional moisture from summertime fog. This additional moisture within open grasslands will often be enough to extend the growing season but is not likely to result in saturated conditions that create hydric soil indicators and/or wetland hydrology. It is also true that grassland habitats can have pooled water during and immediately after heavy rain events, which can cause overland sheet flow. This pooling and saturation can last for days in some circumstances; however, this also cannot be construed as an indicator of wetland hydrology. Ponding and/or saturation must occur for enough time (typically two weeks or more) for hydric soil and wetland hydrology indicators to develop.

4.2.3. Sections 1600 to 1616 of the California Fish and Game Code

Streams, lakes, and riparian vegetation that provide habitat for fish and other wildlife species are subject to CDFW jurisdiction under Sections 1600 to 1616 of the California Fish and Game Code. These sections regulate any activity that may 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement (SAA) issued for the project.

The term “stream” also includes creeks and rivers and is defined in the California Code of Regulations (CCR) 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” (14 CCR 1.72). The term also includes ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Stream-dependent riparian habitat is defined in the California Fish and Game Code (Section 2785) as “lands which contain habitat which grows close to, and which depends upon soil moisture from a nearby freshwater source.” In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat. Removal of stream-dependent riparian vegetation or wetlands may also require a SAA from CDFW.

4.3. LOCAL REGULATIONS

The Half Moon Bay Local Coastal Land Use Plan (LCLUP) and the Zoning Ordinance together constitute the "Local Coastal Program" (LCP) for the City's coastal zone.

5. DELINEATION METHODS

Wetlands were delineated based on analysis of aerial photography, historical records, and other relevant data sources, as well as onsite surveys to characterize vegetation, soils, and hydrology. All survey protocol followed the 1987 USACE *Wetland Delineation Manual*, and the 2010 *Western Mountains, Valleys, and Coast Region* regional supplement. This supplement was chosen based on the project site location along the coast, where vegetation, soils, hydrology and climate were more consistent with this regional supplement (USACE 2010).

5.1. LITERATURE REVIEW

Prior to the field survey, aerial photographs were reviewed for current and historical data on shoreline locations and site vegetation. The National Wetlands Inventory was reviewed for existing mapped wetlands within the study area (USFWS 2024). Soil types were assessed using the online USDA Natural Resource Conservation Science Web Soil Survey.

A previous wetland delineation was conducted for the site by CRE in 2016 and was reviewed prior to the field survey.

5.2. FIELD SURVEY

The field delineation for the study area was conducted by Patrick Kobernus and Liza Kachko of Coast Ridge Ecology on August 2, 2024. Weather conditions at the time of the field visits included clear skies, temperatures of 60°F, and calm winds. The onsite inspection evaluated the three parameters that identify and delineate the boundaries of jurisdictional wetlands, including (1) the dominance of wetland vegetation; (2) the presence of hydric soils; and (3) hydrologic conditions that result in periods of inundation or saturation on the surface from flooding or ponding. Two follow up site visits were conducted on November 8 and 24, 2024 to investigate hydric soils and wetland hydrology at specific sample points.

Survey methods follow the protocol outlined in the 1987 USACE Wetland Delineation manual for Areas Less Than Five Acres in Size. Though the entire project area is greater than 5 acres in size, the actual areas that have potential wetlands are much smaller. GPS coordinates of each sample location were recorded in the field with a Trimble GeoExplorer 6000 unit. Vegetation, soils and hydrology data were taken at each of these points. The completed *Wetland*

Determination Data Forms for the *Western Mountains, Valleys, and Coast Region* are located in Appendix A. Photographs of the study area and individual sampling locations are provided in Appendix B.

Vegetation

Vegetation data was collected at each of the five (5) sample points taken during the field survey. A 1-meter square plot was used for the herb stratum, and 3-meter square for the shrub and woody vine stratum, 10-meter square plot was used for the tree stratum, but no trees were observed in any of the test plots, as the trees observed on site were not located within any potential wetland areas.

As per the 1987 *Wetland Delineation Manual* and the 2010 *Western Mountains, Valleys, and Coast Region* Regional Supplement, plants in the tree stratum are defined as woody plants with a diameter at breast height (DBH) of three inches or more. Saplings/shrubs are defined as woody plants with a diameter of less than three inches DBH, and herbs are defined as non-woody plants regardless of size. The woody vine stratum consisted of species observed to be growing as a woody vine. Species type and percent dominance of each species was recorded at each sample point. The USACE *National Wetland Plant List* was used to determine the wetland indicator status of plants observed in the study area (Lichvar et al., 2016). Wetland indicator status refers to the probability that a plant will occur within a wetland or upland area. The indicator status categories are defined as follows:

- *Obligate (OBL)*: almost always occurs in wetlands
- *Facultative wetland (FACW)*: usually occurs in wetlands, sometimes may occur in uplands
- *Facultative (FAC)*: equally likely to occur in wetlands or non-wetlands
- *Facultative upland (FACU)*: usually occurs in uplands but may occasionally occur in wetlands
- *Obligate upland (UPL)*: almost never occurs in wetlands
- *No indicator (NI)*: no indicator assigned due to lack of information

The presence of hydrophytic vegetation data was then determined using the dominance test and prevalence index described in the USACE *Wetland Delineation Manual* and *Western Mountains, Valleys and Coast* Regional Supplement.

Soils

Soils were assessed by digging a soil pit at each sample point location. Soil pits were excavated to the maximum depth possible and soil color and texture was assessed and recorded onto the data sheets. Soil color was determined by matching samples to Munsell Soils Color Charts

(Munsell Color 2011). Soils were then assessed for hydric features, such as the presence of redoximorphic concentrations, muck, or gleyed soils.

Two types of soils occur in the study area Denison Loam, nearly level (DmA) occurs in the majority of the site, and Farallone loam, nearly level (FaA) occurs in the eastern portion of the site, see Appendix C (NRCS 2024). Soils samples taken in the field confirm that the NRCS soil mapping for FaA is accurate, and the soil mapping for DmA is somewhat accurate in the study area. The DmA soil profile 0-10 inches is shown to have clay loam soils and 10-34 inches to have clay soils. We found that our soil samples were mostly sandy loam to 0-14", and clay loam or clay at greater depths.

Hydrology

The site is relatively flat, gently sloping (average slope 2.6 %) from east to west towards the Pacific Ocean, no distinct channelization, depressional features or benches that could pond or transport water were observed.

The study area is not situated within a flood plain (Appendix D - FEMA Flood Zone Mapping for the Review Area flood hazard zone). There are no wetlands in the study area according to the USFWS National Wetlands Inventory Mapper (Appendix E).

Hydrology at each of the sample points was assessed based upon the USACE *Western Mountains, Valleys, and Coast Region* Regional Supplement hydrology guidelines. Positive hydrological indicators include the presence of surface water, a visible water table, saturation, water marks, surface soil cracks, oxidized roots, and hydrogen sulfide odor.

6. RESULTS

6.1. FEDERAL WETLANDS

No federal potentially jurisdictional wetlands were identified within the study area. While hydrophytic vegetation was mapped as occurring within one sample point, hydric soils and wetland hydrology were not detected on site. No wetlands were mapped as occurring within the study area by the USFWS National Wetland Inventory (2024).

6.2. STATE WETLANDS

No state potentially jurisdictional wetlands occur within the study per the definition of the water control boards (RWQCB/ SWQCB).

Small patches of common rush (*Juncus patens*) (FACW) and calla lily (*Zantedeschia aethiopica*) (OBL) were documented in the study area (Figure 3). These isolated patches of vegetation were found to occur in areas that did not have wetland hydrology or wetland soils present, and therefore do not meet the definition of a wetland as described in Section 30121 of the California Coastal Act (land covered periodically or permanently with shallow water). These areas also did not contain the species composition of riparian and wetland areas as described by the Half Moon Bay LCLP (Chapter 6).

6.3. WETLAND INDICATORS

6.3.1. Vegetation

Vegetation at the sample points were comprised primarily of facultative species (FAC) including bristly ox-tongue (*Helminthotheca echioides*), California aster (*Symphyotrichum chilense*) and poison oak (*Toxicodendron diversilobum*), poison hemlock (*Conium maculatum*), and cape ivy (*Delairea odorata*). Some sample points had dominant upland or facultative upland shrubs and herbs including coyote brush (*Baccharis pilularis*) and coffee berry (*Frangula californica*).

Calla lily (*Zantedeschia aethiopica*), an ornamental plant that is an obligate (OBL) wetland species, was observed at sample point 3.1, but did not comprise enough of the vegetation at the sample point to pass the Dominance Test, and for the sample point to be considered containing hydrophytic vegetation.

Two sample points (Sample Point 1.1 and 1.2) had hydrophytic vegetation as determined through the Dominance Test and the Prevalence Index. Sample point 1.1 had two facultative wetland (FACW) species (common rush, *Juncus patens* and rabbit's-foot grass, *Polypogon monspeliensis*), and two facultative species (FAC), (California aster, *Symphyotrichum chilense* and bristly ox-tongue, *Helminthotheca echioides*). Sample point 1.2 was dominated by facultative wetland species (FAC) that have an equal chance of occurring in non-wetlands, and no wetland hydrology or hydric soils were found at this sample point.

A total of 0.06 acres (3,050 square feet) of common rush and two small patches (less than 0.01 acres) of calla lily (*Zantedeschia aethiopica*) were mapped in the study area. In addition, areas with red osier dogwood (*Cornus sericea*) (FACW)⁶, a plant that can sometimes occur in riparian woodland, wetlands and coastal scrub were mapped as points (Figure 3). Though areas of common rush, and calla lily can be present in wetlands, these species can also be found in upland habitats along the California coast; common rush is a drought tolerant species that can be found growing in a wide variety of wetland and upland habitats (Calflora 2024). Calla lily is

⁶ *Cornus sericea* is not shown on the National Wetland Plant List, though it is commonly considered a FACW species in other regions.

an escaped ornamental that can be found near human habitation in non-wetland coastal prairies, as well as in wetland areas (Cal-IPC 2024).

6.3.2. Soils

No hydric soils were found within the study area. Soil pits were dug by shovel to an approximate depth of 12 -18 inches. All sample points were taken on a landform described as flat terrace. Sample Points 1.1, 3.1 and 4.1 were taken on a local relief described as (slightly) concave. No hydric soil indicators were observed within any of the sample points, with one exception.

An additional site visit was conducted on November 8, 2024 to evaluate deeper underlying soil layers at sample points 1.1 and 3.1 using an auger. Soil samples were taken to a depth of 29 inches at each point. At sample point 1.1, clay loam soil was found at a depth of 11-25" and clay at a depth of 25-30" with uniform color 10YR 2/1. Redoximorphic features were observed in the soil layer at a depth of 25 - 29" (5YR, 4/6), well below the root zone for the hydrophytic species present, possibly indicative of an impermeable layer below 29" and/or indication of a relic wetland. No redoximorphic features or other hydric soil indicators were observed at sample point 3.1. For soil saturation to influence vegetation, it must occur within a major portion of the root zone (usually within 12 inches of the surface) of the prevalent vegetation. The soil profile within the root zone at sample point 1.1 would not qualify as hydric soil under present conditions, as the root zone of dominant hydrophytic vegetation at the sample point (*Juncus patens* and *Polypogon monspeliensis*) only extends to 2-4" depth, therefore hydric soil indicators observed at a depth of 25" are unlikely to indicate present wetland conditions at the site. An impermeable layer (sandstone or heavy clay) may create an impermeable layer at this depth. Past disturbance of the site from farming operations (and the associated frequent land-use changes and water usage from crop rotation, irrigation, and drainage changes) may also have influenced the formation of this potential relic feature.

6.3.3. Hydrology

No wetland hydrology indicators were present at the sample points taken. There was no indication of surface water, soil saturation, water marks, algal mats, or presence of reduced iron. Some fine soil cracks were visible in the soil surface of the site including in upland habitats. These soil cracks are likely due to the high shrink-swell potential of Denison loam, which is mapped on the majority of the site (USDA NRCS 2013, Soil Survey Staff 2024), and are not indicative of wetland hydrology.

No channels, significant depressions or any other evidence of water flowing or pooling in the study area was observed during the field investigation. A follow up site visit was conducted on

November 24, 2024, after over 3.2 inches⁷ of rainfall over the previous 72 hours. No sign of any ponding or surface water flow was observed on site (Photo 12, Appendix B).

Hydrology is the primary driver in the formation of wetlands. Sedge marshes identified on site (Figure 3), were classified as ‘marshes’ based on vegetation type, however the lack of wetland hydrology indicates the dominant plants in the community are facultative species that can grow in non-wetlands and are common in coastal grasslands and along the margins of coastal scrub.

WATERS OF THE US and STATE

No waters of the U.S. or State exist within the study area. To the west of the site, the Pacific Ocean is used for international and intrastate commerce and is considered traditional navigable waters (TNW) for the purposes of Section 404 and Section 10 jurisdiction. Additionally, the nearby Frenchman’s and Pilarcitos Creeks are tributaries to this TNW. However, all TNWs and tributaries are approximately 800 feet or greater from the study area, and the study area does not contain any wetlands or other potentially jurisdictional waters of the U.S. or State.

6.4. SUMMARY OF FINDINGS

Based on these findings, the study area does not support wetlands as defined by the California Coastal Act, the City of Half Moon Bay Local Coastal Program and Land Use Plan criteria, or aquatic resources defined as Waters of the US subject to Section 404 of the Clean Water Act, or Waters of the State subject to Porter-Cologne Water Quality Control Act.

⁷ <https://www.localconditions.com/weather-half-moon-bay-california/94019/past.php>

7. REPORT PREPARATION AND REFERENCES

7.1. REPORT PREPARATION

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Field work and report preparation were completed by Patrick Kobernus (Senior Biologist), Liza Kachko (Associate Biologist).

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APPENDIX A

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Wave Ave City/County Half Moon Bay, San Mateo Co Sampling Date: August 2, 2024
 Applicant/Owner: City of Half Moon Bay State: CA Sampling Point: 1.1
 Investigator(s): Patrick Kobernus, Liza Kachko Section, Township, Range: T05S R05W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): 3%
 Subregion (LRR): A Lat: 37°28'42.11"N Long: 122°26'52.05"W Datum: NAD 84
 Soil Map Unit Name: Denison Loam, nearly level NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No _____	Is the Sampled Area within a Wetland?	Yes _____	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes _____	No <input checked="" type="checkbox"/>			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>N/A</u>				Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>75%</u> (A/B)
4. _____					
_____ = Total Cover					
Sapling/Shrub Stratum (Plot size: <u>3m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u>N/A</u>				Total % Cover of:	Multiply by:
2. _____				OBL species <u>0</u>	x 1 = _____
3. _____				FACW species <u>56</u>	x 2 = <u>112</u>
4. _____				FAC species <u>32</u>	x 3 = <u>96</u>
5. _____				FACU species <u>0</u>	x 4 = _____
_____ = Total Cover				UPL species _____	x 5 = _____
				Column Totals: <u>88</u> (A)	<u>208</u> (B)
				Prevalence Index = B/A =	<u>2.36</u>
Herb Stratum (Plot size: <u>1m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <u>Juncus patens</u>	25%	Y	FACW	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
2. <u>Helminthotheca echioides</u>	30%	Y	FAC	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
3. <u>Polypogon monspeliensis</u>	30%	Y	FACW	<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
4. <u>Symphotrichum chilense</u>	2%		FAC	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate _____)	
5. <u>Zeltnera muehlenbergii</u>	1%		FACW	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹	
6. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present?	
				Yes <input checked="" type="checkbox"/>	No _____
Woody Vine Stratum (Plot size: <u>3m</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Rubus ursinus</u>	2%		FACU		
2. _____					
_____ = Total Cover					
% Bare Ground in Herb Stratum <u>10%</u>					
Remarks:					

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Wave Ave City/County Half Moon Bay, San Mateo Co Sampling Date: August 2, 2024
 Applicant/Owner: City of Half Moon Bay State: CA Sampling Point: 2.1
 Investigator(s): Patrick Kobernus, Liza Kachko Section, Township, Range: T05S R05W
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0%
 Subregion (LRR): A Lat: 37°28'41.10"N Long: 122°26'47.33"W Datum: NAD 84
 Soil Map Unit Name: Denison Loam, nearly level NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____	No <input checked="" type="checkbox"/>	
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>N/A</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
4. _____				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>3m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Frangula californica</u>	<u>30%</u>	<u>Y</u>	<u>NL</u>	Total % Cover of: Multiply by:
2. <u>Cornus sericea</u>	<u>15%</u>	<u>Y</u>	<u>FACW</u>	OBL species _____ x 1 = _____
3. <u>Baccharis pilularis</u>	<u>10%</u>		<u>NL</u>	FACW species <u>15</u> x 2 = <u>30</u>
4. <u>Toxicodendron diversilobum</u>	<u>5%</u>		<u>FAC</u>	FAC species <u>25</u> x 3 = <u>75</u>
5. _____				FACU species <u>12</u> x 4 = <u>48</u>
_____ = Total Cover				UPL species <u>40</u> x 5 = <u>200</u>
				Column Totals: <u>92</u> (A) <u>353</u> (B)
				Prevalence Index = B/A = <u>3.8</u>
Herb Stratum (Plot size: <u>1m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Delairea odorata</u>	<u>20%</u>	<u>Y</u>	<u>FAC</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Pseudognaphalium sp.</u>	<u>1%</u>			<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
6. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
_____ = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>3m</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. <u>Rubus ursinus</u>	<u>12%</u>		<u>FACU</u>	Yes _____ No <input checked="" type="checkbox"/>
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>5%</u>				
Remarks: High amount of pampas grass thatch (40%) on ground. Not Listed species (NL) treated as upland (UPL).				

SOIL

Sampling Point: 3.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12"	10 YR/ 2/1	100					Sandy loam	

APPENDIX B

Representative Photographs



Photo 1: Sample Point 1.1, patch of *Juncus patens* in the top portion of photo and weedy annuals in the lower portion. Photo date: 08/02/2024.



Photo 2: Sample Point 1.1, soil sample with no indicators of redoximorphic features to a depth of 16 inches. Photo date: 08/02/2024.



Photo 3: Sample Point 1.1, redoximorphic features observed at soil depth of 25" – 29". These features may be indicative of a relic wetland, as redoximorphic features were not observed in the root zone. Photo date: 11/08/2024.



Photo 4: Sample Point 1.2, showing upland vegetation (coyote brush scrub). Photo date: 08/02/2024.



Photo 5: Sample Point 3.1, showing vegetation comprised of coyote brush, Red Oseir dogwood and California blackberry. Photo date: 08/02/2024.



Photo 6: Sample Point 3.1, vegetation present includes Calla lily and coyote brush, among others. Photo date: 08/02/2024.



Photo 7: Sample point 4.1, *Conium maculatum* present.
Photo date: 08/02/2024.



Photo 8: View of Coyote brush scrub that is dominant within study area.
View is looking north from Wave Avenue. Photo date: 08/02/2024.



Photo 9: Annual grassland, weedy ruderal area along Wave Ave, looking west. Photo date: 08/02/2024.



Photo 10: The edge of coyote brush scrub and annual grassland, looking east. Photo date: 08/02/2024.



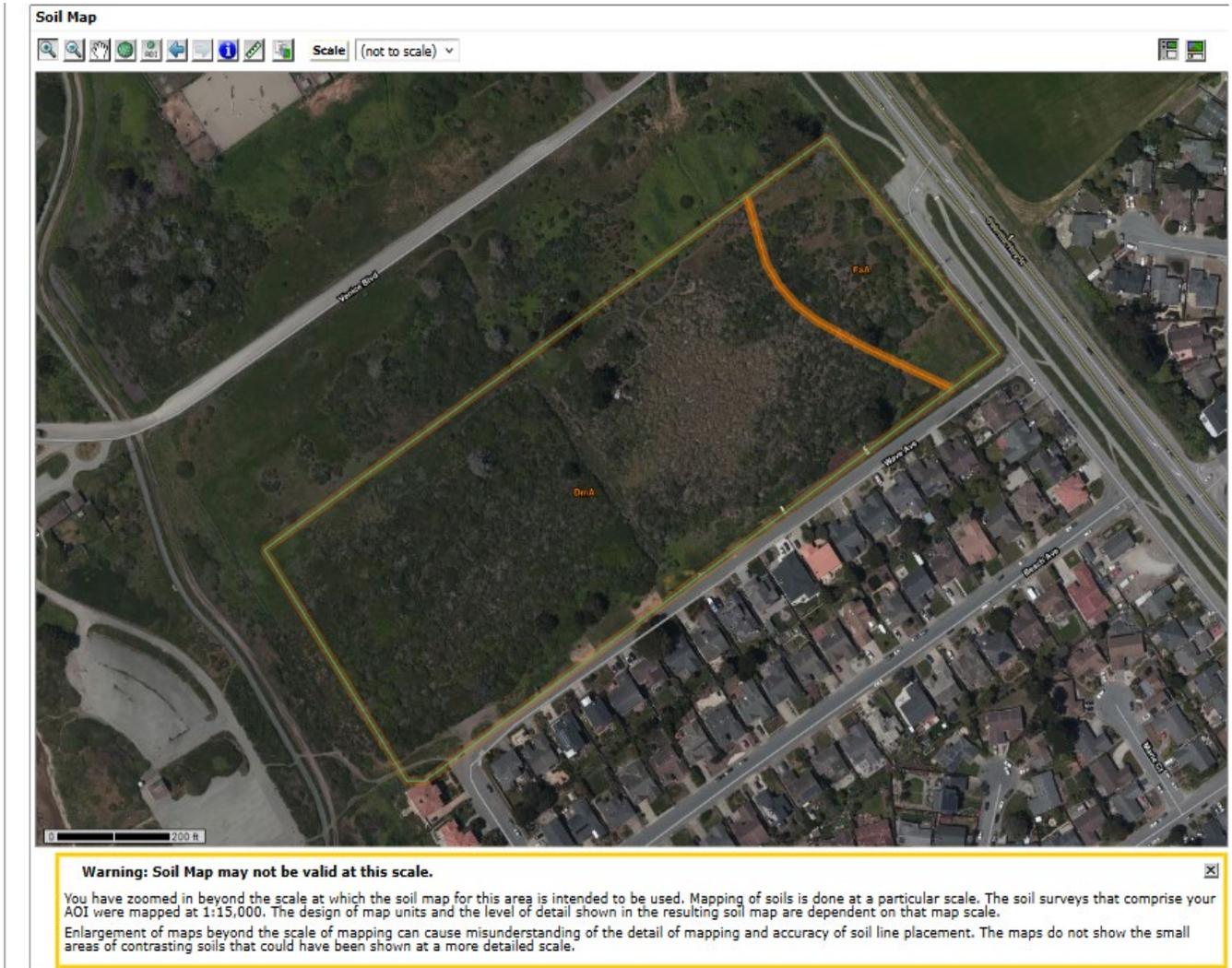
Photo 11: Juncus patches along the north edge of the site.
Photo date: 08/02/2024.



Photo 12: Sample Point 1.1. Photo taken after 3.2 inches of rain in previous 72 hours. No sign of surface flow or ponding/pooling in area.
Photo date: 11/24/2024.

APPENDIX C

Soil Survey Map



Search			
Map Unit Legend			
San Mateo Area, California (CA637)			
San Mateo Area, California (CA637)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DmA	Denison loam, nearly level	11.7	85.2%
FaA	Farallone loam, nearly level	2.0	14.8%
Totals for Area of Interest		13.7	100.0%

Appendix D

FEMA Flood Map

National Flood Hazard Layer FIRMette



122°27'4"W 37°28'59"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | |
|------------------------------------|--|
| SPECIAL FLOOD HAZARD AREAS | <ul style="list-style-type: none"> Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | <ul style="list-style-type: none"> 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | <ul style="list-style-type: none"> NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> Effective LOMRs Area of Undetermined Flood Hazard <i>Zone D</i> |
| GENERAL STRUCTURES | <ul style="list-style-type: none"> Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall |
| OTHER FEATURES | <ul style="list-style-type: none"> Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature |
| MAP PANELS | <ul style="list-style-type: none"> Digital Data Available No Digital Data Available Unmapped |
- The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/4/2024 at 9:47 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap Imagery Source: USGS National Map 2023

Appendix E

USFWS National Wetlands Inventory Map



USFWS National Wetlands Inventory Mapping

Legend

 Project Area (APN(s): 048-191-040, 048-190-050, 048-190-070)

WETLAND_TYPE

-  Riverine
-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo,

DRAFT VEGETATION MANAGEMENT PLAN
For Wave Avenue Property
APNs: 048-190-070, 048-190-050, 048-191-040
HALF MOON BAY, CALIFORNIA

PREPARED FOR:
City of Half Moon Bay
501 Main St.
Half Moon Bay, CA 94019

PREPARED BY:
Coast Ridge Ecology
1410 31st Avenue
San Francisco, CA 94122
(415) 404-6757



December 2024

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Section 1: Project Description and Goals and Objectives

1.1 Introduction

This Vegetation Management Plan (plan) was prepared for the Wave Ave property (APN: 048191040, APN: 048190050, APN: 048190070), Half Moon Bay, San Mateo County, California. The property includes three adjoining parcels north of Wave Avenue totaling 13.6 acres; the eastern most parcel bordered by Frontage Road to the east APN 048-190-070, the middle parcel APN 048-190-050, and the western most parcel APN 048-191-040. No development is currently planned for the property. The goal of this plan is to provide guidance for vegetation management to mitigate fire risk while protecting biological resources on site.

1.2 Project Location and Setting

The property is located north of Wave Avenue and west of Frontage Road in Half Moon Bay, California ([Figure 1](#)). The property is comprised of three lots totaling 13.6 acres in size, APN 048-190-070 (7.65 acres), APN 048-190-050 (3.85 acres) and APN-048-191-040 (2.13 acres). The property is located just west of Cabrillo Highway 1 and Frontage Road, north of Wave Ave, and approximately 650 feet east of the Pacific Ocean.

Topography on the project site is mostly flat and rises gradually to the east. Elevations at the site range from approximately 32 to 56 feet above MSL. Photographs of the project site can be found in [Appendix A](#).

Over the past several decades, the site has been used for illegal dumping, unauthorized horticultural planting, and parking on the southern edge of the property. The site is primarily comprised of coyote brush scrub with large patches of invasive jubata grass (*Cortaderia jubata*) and annual grasses and ruderal weedy vegetation. A 30-foot-wide perimeter around the site is mowed for fire control.

1.3 Purpose and Objectives

The purpose of this vegetation management plan is to recommend methods of fire risk and fuel load reduction that are also in compliance with the HMB Local Coastal Land Use Plan (LCLUP, City of Half Moon Bay 2021) policies detailed in Section 1.5 below. The plan also provides recommendations for invasive species management and suggested habitat restoration techniques.

The primary project objective is to maintain a 30-foot fire-break around the parcels, especially along Wave Ave and Frontage Road and to reduce overgrown vegetation in the ruderal weedy areas of the site to reduce potential fire risk for the property. A secondary objective is to

control invasive species on the property. Invasive plants are defined as non-native species rated by the California Invasive Plant Council (Cal-IPC) as high or moderate¹.

The property is mapped as a Potential Environmentally Sensitive Habitat Area (ESHA) in the Half Moon Bay Local Coastal Land Use Plan (HMB LCLUP), as the property contains potential upland, dispersal and foraging habitat for the state and federally listed San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and the state listed and state species of concern, the California red-legged frog (*Rana draytonii*),.

1.4 Policy Background

The Coastside Fire Protection District requires a fire break not less than 30 feet in width around the perimeter of the property. Half Moon Bay LCLUP Section 7.62 states that landowners should “balance the need for fire protection...with the need to protect environmental resources. Examples of such measures include: “restoring Environmentally Sensitive Habitat Areas (ESHAs) for better biological function and defensible fire-fighting space, surrounding ESHAs with fire breaks, and limiting activities in areas adjacent to ESHAs.” The HMB LCLUP Section 7-64 also provides guidelines to remove “fire-prone, non-native and invasive species such as Cape ivy (*Delairea odorata*) and blue gym eucalyptus (*Eucalyptus globulus*) to reduce fuel load where appropriate, avoiding adverse impacts to sensitive habitats and replacing with fire-retardant, native species of higher habitat value. HMB LCLUP Section 7.63.d recommends landscaping with fire-retardant, native plant species.

Additionally, the HMB LCLUP states that mitigation in the form of habitat creation or restoration will be implemented when impacts to ESHAs cannot be avoided (Section 6-69). This applies to all forms of ESHAs as stated in Section 6-2. The LCLUP also provides the following mitigation ratios that should be applied at minimum if ESHAs are impacted (Section 6.70). These include:

- a. 10:1 for native tree replacement;
- b. 4:1 for wetlands;
- c. 3:1 for riparian habitats;
- d. 3:1 for other habitats that support state or federal rare, threatened, or endangered species, species of special concern (designated by the CDFW), or CNPS 1b or 2 listed plants;
- e. 2:1 for Central Dune Scrub not occupied by listed species;
- f. 1:1 for heritage tree replacement (e.g., Monterey cypress, Monterey pine); and
- g. 1:1 for temporary impacts to any of the above habitat types.

¹ California Invasive Plant Council. <https://www.cal-ipc.org/>

The ratios represent the acreage of the area to be restored/created to the acreage impacted.

Section 6-67 of the HMB LCLUP encourages private landowners and public agencies to remove invasive species from their lands and replace them with native, non-invasive species.

DRAFT

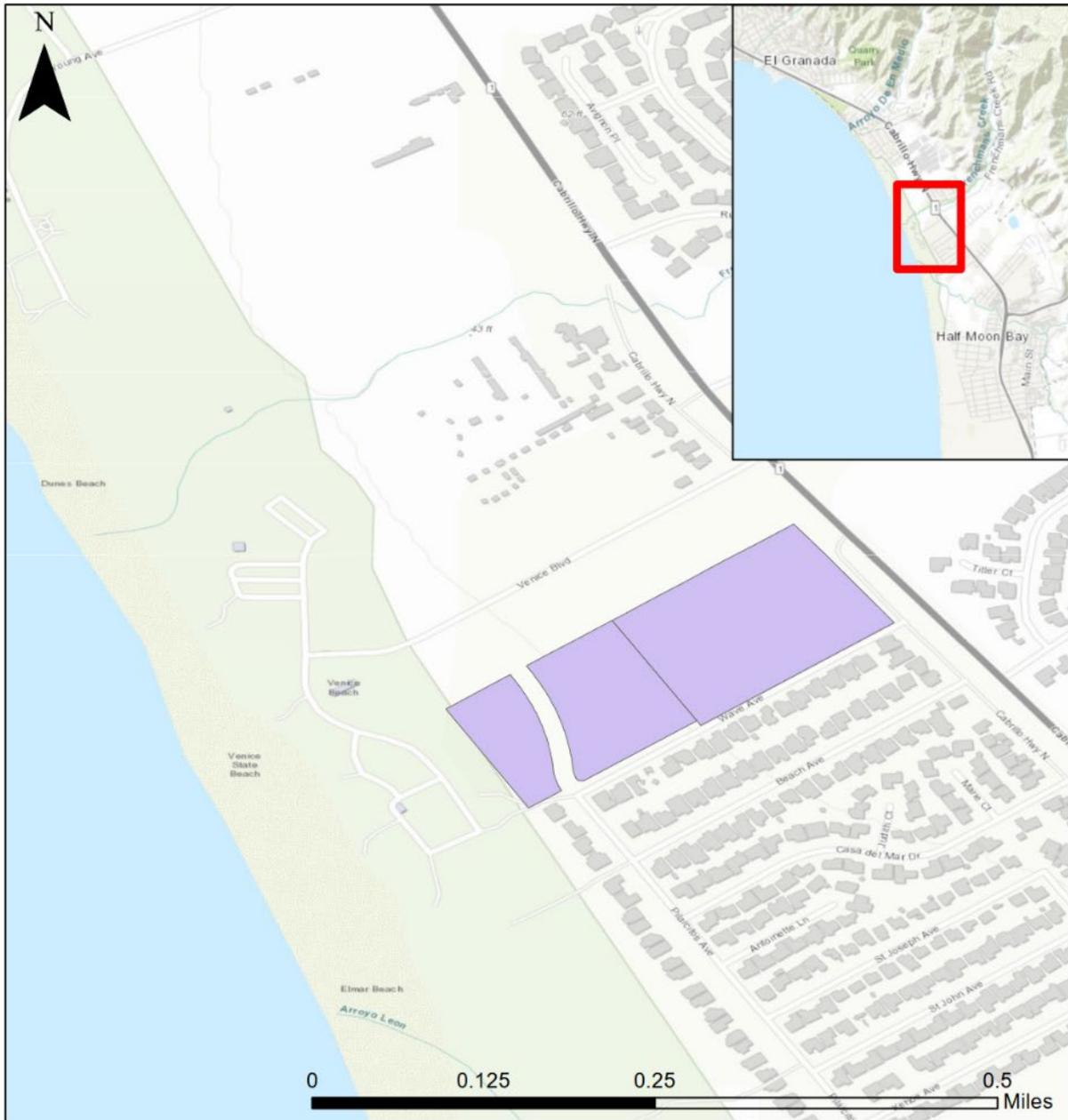


Figure 1: Project Location Map

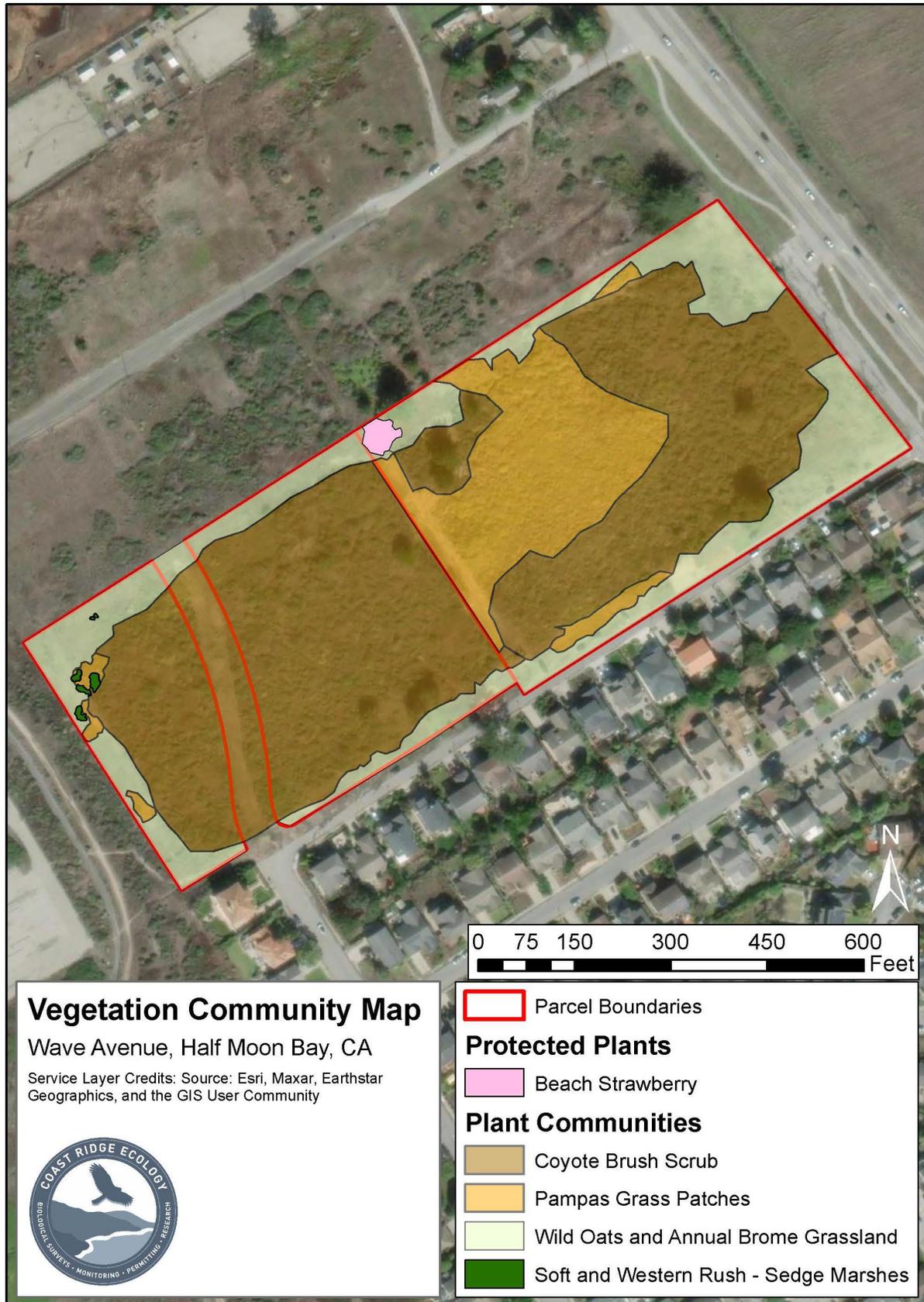
Legend

 Project Area (APN(s): 048-191-040, 048-190-050, 048-190-070)

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance



Figure 2: Vegetation Communities



Section 2: Site Evaluation and Existing Conditions

2.1 Methodology

A field visit was conducted by CRE biologists Liza Kachko and Alyssa Olenberg-Meltzer on June 26 and July 10, 2024. Plant communities mapped on site are shown in Figure 2. Research was conducted on invasive plant removal methods recommended by the Cal-IPC and utilized on in open space areas in similar habitat types on Golden Gate National Recreation (GGNRA), San Francisco Public Utilities Commission (SFPUC) and San Mateo County Park lands.

2.2 Site Vegetation

Three major plant communities, as described in the CNPS Manual of California Vegetation (MCV)² are found on site: Coyote Brush Scrub, Pampas Grass Patches and Wild Oats and Annual Brome Grassland. Additionally, Soft and Western Rush – Sedge Marshes, comprise a few small areas within the site. A patch of California wild strawberry, which does not meet criteria for a separate MCV alliance, is described below as it has special protections under city codes. See [Figure 2](#) for a map of dominant vegetation communities. Also within the vegetation are scattered Monterey cypress (*Cupressus macrocarpa*), and Monterey pine (*Pinus radiata*) trees that have colonized the site over the last 30 years.

Coyote Brush Scrub (*Baccharis pilularis Shrubland Alliance*) is the dominant plant community on the site. Associates include California aster (*Symphotrichum chilense*), California coffeeberry (*Frangula californica*), poison oak (*Toxicodendron diversilobum*) red elderberry (*Sambucus racemosa*), western red dogwood (*Cornus sericea*) and California blackberry (*Rubus ursinus*), among others. This community is found throughout the site, and two large dense patches dominate most of the site, totaling 8.74 acres.

Wild Oats and Annual Brome Grassland (*Avena spp. - Bromus spp. Herbaceous Semi-Natural Alliance*) vegetation is found on the edges of the site along Frontage Road and Wave Avenue. Dominant species include non-native and invasive species including wild oat (*Avena barbata*), Mediterranean barley (*Hordeum marinum*), poison hemlock (*Conium maculatum*), and short-pod mustard (*Hirschfeldia incana*). The site has 3.16 acres of Wild Oats and Annual Brome Grassland.

Soft and Western Rush - Sedge Marshes (*Juncus (effusus, patens) Herbaceous Alliance*) is found near the northern and western borders of the site. A few small patches of this vegetation community were found which included common rush (*Juncus patens*) growing with nonnative

² CNPS 2024b. A Manual of California Vegetation Online. Website accessed December 2024.
<https://vegetation.cnps.org/>

grasses and forbs including hairy cat's ear (*Hypochaeris radicata*), Italian ryegrass (*Festuca perennis*), and bristly ox-tongue (*Helminthotheca echioides*). This area totals approximately 0.02 acres. This habitat was not identified as containing any state and/or federal jurisdictional wetlands as part of a formal wetland delineation of the property (CRE 2024b).

Pampas Grass Patches (*Cortaderia (jubata, selloana)* Herbaceous Semi-Natural Alliance) are located throughout the site. One large patch surrounded by the two major Coyote Brush Scrub patches appears to have spread from a mowed right-of way separating the northern two parcels. Total coverage onsite is 2.32 acres.

California Wild Strawberry is located on the north side of the site in a large dense patch, composed primarily of beach strawberry (*Fragaria chiloensis*). While the species composition and cover of this patch do not meet requirements for a distinct MCV alliance, this patch is considered a significant plant community under the Half Moon Bay Municipal Code, measure 18.37.045, which protects California wild strawberry. This species has no protected status as a state or federally listed species, nor as a California Native Plant Society (CNPS) ranked species³. This patch covers 0.06 acres on site.

2.3 Environmentally Sensitive Habitat Areas (ESHAs) and Special-Status Species

The property is mapped as a Potential Environmentally Sensitive Habitat Area (ESHA) in the Half Moon Bay Local Coastal Land Use Plan (HMB LCLUP), as it contains potential upland, dispersal and foraging habitat for the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and the California red-legged frog (*Rana draytonii*) (Figure 6-3 of the HMB LCLUP). The San Francisco garter snake is listed as endangered by the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), with the nearest occurrence recorded 0.4 miles away, (CNDDB 2024). The California red-legged frog is listed as threatened by the USFWS and is a CDFW species of special concern. There have been confirmed sightings within 0.1 miles of the site. Additionally, four middens of the San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), a California species of special concern, were observed onsite during the site visit.

As a Potential ESHA, the site must comply with any LCLUP policies pertaining to ESHAs as outlined in Section 1.3 Policy background. In addition, impacts to listed species such as San Francisco garter snake, California red-legged frog, and San Francisco dusky-footed woodrat must be avoided.

³ California Native Plant Society, Inventory of Rare Plants. <https://www.cnps.org/rare-plants/cnps-inventory-of-rare-plants>

2.4 Special Status Plants and Sensitive Natural Communities

No special status plants have been observed on the site. Many special status plant species that occur in the region are found in open, native grassland habitats, on serpentine soils, or on dunes that are not present on the property. Rare plant surveys were conducted by CRE staff during suitable bloom periods in 2015 (CRE 2015) and 2016 (CRE 2016) and no special status plant species were identified during those surveys. No change in conditions has occurred on site since the completion of previous surveys, and no special status plant species are expected to occur on site.

No Sensitive Natural Communities listed by the California Department of Fish and Wildlife were identified on site⁴.

2.5 Invasive Weeds

Invasive weed species are generally ranked as High or Moderate by the California Invasive Plant Council (Cal-IPC). Invasive species observed on site include:

- Jubata grass (*Cortaderia jubata*), Cal-IPC High
- Cape ivy (*Delairea odorata*), Cal-IPC High
- Fennel (*Foeniculum vulgare*), Cal-IPC High
- Poison hemlock (*Conium maculatum*), Cal-IPC Moderate
- Italian thistle (*Carduus pycnocephalus*), Cal-IPC Moderate
- Bull thistle (*Cirsium vulgare*), Cal-IPC Moderate
- Ice plant (*Carpobrotus edulis*), Cal-IPC Moderate
- Stinkwort (*Dittrichia graveolens*), Cal-IPC Moderate
- Cape weed (*Arctotheca prostrata*), Cal-IPC Moderate
- Periwinkle (*Vinca major*), Cal-IPC Moderate

The invasive species are densely concentrated in some areas but are spread out in low densities throughout the site within the predominately native Coyote Brush Scrub habitat.

2.6 Previous Management Activities and Impacts

Since 2015, a 30-foot wide buffer has been mowed along the edge of the property along Wave Avenue and Frontage Road. Vegetation mowed has consisted primarily of the nonnative Wild

⁴ California Sensitive Natural Communities. Updated June 1, 2023.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609>

Oat and Annual Brome Grassland areas. The mowing has been conducted approximately every other year or so, and was most recently mowed in spring 2023 (Coast Ridge Ecology 2016, Google Earth 2024, Pers. Comm. City of Half Moon Bay, Scott Phillips).

No significant impacts to potentially sensitive resources on site were observed from previous vegetation management activities. Weed-whacking or mowing is generally a low impact and effective method for clearing vegetation. San Francisco dusky footed woodrat middens were observed located in scrub or scrub edge and were not likely to be impacted by vegetation management around the edges.

Historical aerial imagery show that the site was largely annual grassland and scrub cover in the early 1990's, with scrub cover increasing over the last three decades (Google Earth 2024). Prior to this, the site had been used for agriculture with some houses and/or other structures present along Frontage Road in the 1960's (UCSB 2024).

SECTION 3: Vegetation Management Plan

The Vegetation Management Plan provides methods of fuel load reduction while also preserving and protecting sensitive resources that could be present on site. In addition, it provides recommendations for management of invasive species and restoration to native perennial habitat. Fuel load reduction may be performed via mowing, weed whacking or goat grazing. Management of invasive species may be performed through mowing, weed whacking, goat grazing, chemical (herbicide), or manual (hand-weeding) methods.

3.1 Maintaining Fuel Breaks and Fuel Load Reduction

The landowner is responsible for maintaining a 30-foot fuel break around the perimeter of the property, especially next to roads and other structures. Coastside Fire Protection District requires "Unimproved properties of more than one acre shall be abated by the clearing of a fire break not less than 30 feet in width around the perimeter of the property. With approval of the Fire Marshal, firebreaks may be provided on just those sides of the property at risk to neighbors" (Coastside Fire Protection District 2024). While previous fire control may have been performed by disking of the site, disking is no longer allowed (Coastside Fire Protection District 2024).

The most recent vegetation abatement was done by mowing. Mowing or string trimming is an efficient and cost-effective way of maintaining the fire break next to roads. The vegetation around the perimeter of the property is largely annual grassland with weedy ruderal species and tends to be non-woody. However, there is some scrub encroachment on the east side of the property along Frontage Road. Larger woody shrubs may need other methods of removal such as manual or mechanical removal. Goat grazing could be utilized an effective method to maintain firebreaks.

Precautions to avoid starting fires from vegetation management work should be followed. These include using spark arrestors, not conducting work on high temperature / low humidity days, and refueling equipment only in nonvegetated areas. CalFire fire safety measures should be consulted prior to any vegetation management work⁵.

3.2 Invasive Weed Removal

Invasive weed removal methods are shown in Table 1. As feasible, areas of dense weed infestations (such as Jubata grass) should be removed with heavy machinery such as an excavator or backhoe due to the large size of the plants and the difficulty in removing by hand. Large individual clusters of jubata grass can be dug out with an excavator or backhoe, and should be removed from the site if seed heads are present.

In areas where mechanical removal by heavy machinery is not feasible, invasive plants should be managed through the use of hand tools or string trimmers and mowers. Perennial and biennial invasives such as jubata grass (smaller-sized plants), fennel, and cape ivy should be dug out with hand tools to prevent resprouting or treated with herbicide. Annuals such as Italian thistle can be string trimmed at the appropriate time (when the stem is bolting and the plant is beginning to flower) to prevent seed set, or removed by hand pulling. Herbicides should be used sparingly and only upon the recommendation of the restoration contractor. Table 1 provides a summary of the characteristics and recommended removal methods of target invasive species found on the site.

Weeds should be controlled via hand or mechanical cutting (string trimmer, mower) in all areas in the spring/summer (beginning in April and extending through August, or similar timing based on the recommendations of a knowledgeable restoration ecologist/ biologist). For maintaining the fire break, weed control should be conducted 1-2 times annually, however for habitat restoration purposes, aggressive weed control may be required up to 1 time per month. To reduce the weed seedbank, it is recommended that mowing, string trimming and hand removal of weeds be completed prior to any seed set. Smaller infestations or individual plants may be removed completely via Hula hoe, handpick, or other hand tools. If weeds have set seed, or are flowering and have the potential to set seed after removal, weed plant mass should be removed from the site and disposed of properly to prevent inadvertent seed dispersal.

Jubata grass

Due to widespread infestation of Jubata grass (*Cortaderia jubata*) on site, with several large dense patches covering approximately 2 acres, we recommend making it a high priority to remove /reduce the spread of this species Jubata grass is rated as “High” by Cal-IPC, and the

⁵ CalFire. <https://www.fire.ca.gov/prevention>

high rating is given to species that “have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure” (Cal-IPC 2024). In addition jubata grass creates a fire hazard as it creates a buildup of dried leaves and flowering stalks. The most effective methods of removal are mechanical or chemical (Cal-IPC 2024).

Table 1. Target Invasive Species Characteristics and Recommended Removal Methods

Target Invasive Species	Cal-IPC Rating; Plant Characteristics	Recommended Removal Methods
Jubata grass (<i>Cortaderia jubata</i>)	High; large perennial grass	Remove large grass clumps with heavy equipment such as excavator or backhoe. Chemical herbicide can be used. Hand pull seedling and smaller grasses, or remove with shovel, hand pick or other hand tools. Grazing can be used to reduce sprouts.
Cape ivy (<i>Delairea odorata</i>)	High; perennial herb	Removal plants and rhizomes, bag and remove off site. Follow up treatment is required. Can use chemical herbicide as follow up treatment for any resprouting. Mowing or cutting is not recommended as plant can resprout from pieces of stem, root or stolon.
Fennel (<i>Foeniculum vulgare</i>)	High; short-lived perennial herb	Hand pull small seedlings. Remove larger plants with shovel, pick, or other hand tool. Brush cutting is less effective; cut every 1-2 months beginning in March/April, 3-4 times/ year.
Poison hemlock (<i>Conium maculatum</i>)	Moderate; biennial herb	Remove dense infestation by scraping away plants and roots with heavy equipment. Remove sparser infestations with shovel, hand pick, or other hand tool, taking care to remove the entire tap root. Cutting is generally ineffective. ** Species contains piperidine alkaloids that are highly toxic to humans and animals. Wear gloves and wash hands after hemlock removal.
Italian thistle (<i>Carduus pycnocephalus</i>)	Moderate; annual herb	Remove dense infestation by scraping away plants and topsoil with heavy equipment during construction phase. Line trim/mow repeatedly as plant bolts and begins to flower, or remove with hand pick or other hand tool.

Target Invasive Species	Cal-IPC Rating; Plant Characteristics	Recommended Removal Methods
Bull thistle (<i>Cirsium vulgare</i>)	Moderate; short-lived perennial herb	Hand-pull entire plant below surface. Line trim/mow repeatedly as plant bolts and begins to flower, or remove with hand pick or other hand tool.
Ice plant (<i>Carpobrotus edulis</i>)	High; perennial herb	Mechanical removal by hand or with machinery, plant material should be bagged and taken off site.
Stinkwort (<i>Dittrichia graveolens</i>)	Moderate; annual herb	Line trim/mow repeatedly as plant bolts and begins to flower, or remove with hand pick or other hand tool. Pull plant and bag to take off site once it has flowered (usually late September) as this species can set seed once it has bloomed even after being pulled.
Cape weed (<i>Arctotheca prostrata</i>)	Moderate; perennial herb	Removed by grubbing, digging or hand pulling.
Periwinkle (<i>Vinca major</i>)	Moderate; perennial herb	Hand pulling removing all stems, root nodes and stolons. Repeated treatments necessary. Mowing or cutting is not recommended as plant can resprout from pieces of stem, root or stolon.

3.3 Restoration Seeding and Erosion Control

In areas where topsoil or surface vegetation has been removed due to weed management the following soil preparation and erosion control measures should be followed, prior to reseeding. The top 2-3 inches of surface soils should be scarified to create an uneven surface for seeds to lodge, to decrease water runoff velocity and increase filtration, and to encourage sediment trapping. Any areas with exposed soils should then be seeded with a restoration seed mix comprised of coastal terrace species, which include both native perennial grasses and forbs Table 2 below shows an example of a coastal seed mix and is based upon existing native vegetation found onsite and in the surrounding areas, however other coastal seed mixes native to our region may be suitable. As feasible, seeding and erosion control should be applied in the late fall (October through December) to provide the best conditions for seed growth. Seed mixes should be obtained from a local provider such as Pacific Coast Seed and may be modified based upon species availability.

Additionally, erosion control blankets or sterile wheat or rice straw mulch should be used on all scarified and hand-seeded soils to reduce surface runoff impacts and surface erosion. Erosion control blankets should be composed entirely of biodegradable materials such as coir fabric, coconut fiber, or sterile, weed-free straw. These materials will break down over time once the restoration areas are fully established.

TABLE 2. Recommended Perennial Grass and Forb Seed Mix.

Scientific Name	Common Name	*lbs./acre
<i>Elymus glaucus</i>	Blue wildrye	1
<i>Stipa pulchra</i>	Purple needle grass	3
<i>Bromus carinatus</i>	California brome	3
<i>Sisyrinchium bellum</i>	Western blue-eyed grass	2
<i>Lupinus nanus</i>	Sky lupine	3
<i>Hordeum brachyantherum ssp. californicum</i>	California meadow barley	2
<i>Achillea millefolium</i>	Yarrow	2
<i>Elymus triticoides</i>	Beardless wild rye	1
<i>Elymus glaucus ssp. virescens</i>	Virginia wildrye	1
<i>Eriogonum latifolium</i>	Coast buckwheat	3
<i>Helenium puberulum</i>	Sneezeweed	2
<i>Horkelia californica</i>	California horkelia	2
<i>Lasthenia californica ssp. californica</i>	California goldfields	3
<i>Sanicula crassicaulis</i>	Pacific sanicle	2
	TOTAL	30 lbs./acre

Seed mix should consist of seed that is fresh, clean, and mixed by an approved method. All seeds should be in conformance with the California Seed Law (Section 52288, California Food and Agricultural Code)⁶.

Seeds may be broadcast by hand or by mechanical means (e.g., using a hopper or rotary spreader with a material regulating system that feeds seed at a given rate). Broadcasting should meet the following specifications:

- Broadcast seed application will be at the rate of 22 – 33 lbs./acre
- Half the seed will be spread in one direction and the other half will spread in the other direction (e.g., first east-west or horizontally and then north-south or vertically)

⁶ <https://www.cdfa.ca.gov/plant/pe/nsc/docs/seed/SeedLaw.pdf>

- Broadcast seed will be lightly raked, rolled, or tracked into the soil as feasible to enhance seed to soil contact
- Seeded areas will be covered by sterile wheat or rice straw mulch, or by erosion control blanket

3.4 Grazing

Grazing is a popular method for weed abatement and fire break management throughout California. Goats have been successfully utilized to manage vegetation on parcels owned by the City of Half Moon Bay and by the Coastside Land Trust⁷.

There is research supporting benefits of grazing in reducing fuel loads, and invasive species while causing minimal harm to protected species such as California red-legged frog (CRF). The majority of published research is focused on cattle grazing in grasslands and has been shown to have some potential benefits for CRF (Ford et al. 2013).

Goats are primarily browsers preferring woody species and forbs. Goat grazing could be utilized for vegetation management of the 30-foot fuel break buffer and as follow-up treatment for areas where invasives are removed. Goat grazing is not likely to be an effective method for targeted removal of invasive species, see [Table 2](#), but can reduce fuel loads overall and reduce resprouting of trees, shrubs and some invasives like jubata grass.

Goats however can negatively impact native plant communities, as goat grazing can reduce the native brush and herbaceous species and thatch while simultaneously creating disturbed openings where invasive species can become established⁸. If grazing is to be conducted within the coyote brush scrub area, care must be taken to avoid any overall negative impacts to the native coyote brush scrub plant community, common wildlife, and any special status species.

⁷ Coastal Development Permit for Natural Vegetation Management (Goat Grazing) on City-Owned Properties (PDP-19-033). https://legistarwebproduction.s3.amazonaws.com/uploads/attachment/pdf/364803/PC_STAFF_REPORT_5-28-19_Goat_Grazing_Program.pdf

⁸ https://www.cal-ipc.org/wp-content/uploads/2019/11/Cal_IPC_Symposium_2019_Alyssa_Cope_Prescribed-goat-grazing-for-wildland-management.pdf

3.5 Conservation Measures

The following recommendations are provided to minimize potential impacts to special status species and native habitats within the project area. These recommended measures apply to all methods of vegetation removal.

- 1) Vegetation removal should be restricted to the dry season (May 15 – October 15), and only conducted during suitable weather conditions (i.e., not during high temperature/low humidity days).
- 2) Prior to the start of vegetation removal, a Qualified Biologist should flag potentially sensitive areas including Soft and Western Rush - Sedge Marshes and beach strawberry patches for avoidance. If grazing is to occur, these areas should be protected with an exclusion fence before animals are brought on site.
- 3) Within two weeks of vegetation removal, a Qualified Biologist should conduct a preconstruction survey for American badger burrows and San Francisco dusky-footed woodrat middens. All active San Francisco dusky-footed woodrat middens should be flagged (or fenced) with a 10-foot no disturbance buffer around each midden. If any active American badger dens are detected, CDFW should be contacted for guidance on establishing suitable buffer zones.
- 4) Within 72 hours of vegetation removal, a Qualified Biologist familiar with the identification and natural history of San Francisco garter snake and California red-legged frog should conduct a preconstruction survey for these species.
- 5) If vegetation removal is to be conducted during nesting bird season (approximately February 1st through August 31st), a nesting bird survey should be conducted by a Qualified Biologist within one week prior to vegetation removal. If active nests are found, a buffer zone should be delineated around the nest in which no work will be permitted while the nest is active. Buffers around active passerine and/or raptor nests will be based on current CDFW recommendations. If saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), white-tailed kite (*Elanus leucurus*), and/or any other special status bird species are found nesting in the project area, CDFW should be contacted to determine suitable buffer zones to avoid impacts to these species. Buffer zones should be delineated with flagging or fencing. Nesting bird surveys should be repeated every 7 days while work is occurring during the nesting bird season.
- 6) If any trees are to be removed or extensively pruned (removal of more than one third of the branches or roots within a twelve-month period), their diameter at breast height (DBH) shall be measured. All trees to be removed or heavily pruned with a DBH of 12" or greater shall be removed under the conditions of a Heritage Tree permit from the City of Half Moon Bay.
- 7) Prior to any tree removal or pruning of trees or snags, a bat habitat assessment should be conducted by a Qualified Biologist. If roosting bats are found or suspected in specific

trees or snags, the Qualified Biologist will conduct a nighttime emergence survey for bats in suitable weather to detect bats. CDFW should be contacted for guidance if any special status bat species roosts, and/or bat maternity roosts are detected. Trees with suspected non-special status species bat roosts should be removed using a 2-step removal method during the non-breeding season and non-torpor seasons (March 1st to April 15; and September 15th to October 31st, respectively). Specifically, trimming of non-habitat branches, saplings and shrubs would be conducted on the first day of tree removal, and the remaining portions of the tree with bat roost habitat potential would be removed on the second day. This will allow any bats to vacate the roost prior to tree removal.

SECTION 4: Report Preparers and References

4.1 Plan Preparation

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4.2 References

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