

6. Natural Resources

A chief objective of the California Coastal Act is the preservation, protection, and enhancement of coastal resources, including land and marine habitats, and water quality. This chapter identifies and maps the sensitive habitat areas and special status species found in the Planning Area while requiring site-specific studies in association with development proposals to make up-to-date determinations of present and potential natural resources. Policies provide for protection and enhancement of Half Moon Bay's natural resources, including biological resources, hydrology, and coastal water quality.

Land Use Plan Framework

Half Moon Bay is rich in a variety of natural resources due to its setting between the Pacific Ocean and Santa Cruz Mountains, its expanses of open space and undeveloped areas, and its biodiversity. The city's diverse habitats, watercourses, beaches and bluffs serve important biological, hydrological, scientific, and educational roles in the community. While over a quarter of the Planning Area is undeveloped or in open space use, these lands are often vulnerable to disturbance from invasive species, development, and other anthropogenic pressures. In addition to land use controls, habitat restoration and active stewardship play a significant role in achieving Coastal Act objectives for natural resource protection and enhancement. The rarest and most ecologically important habitats are protected from non-resource dependent development. On this point, the Coastal Act includes special protections for Environmentally Sensitive Habitat Areas (ESHAs).

Per Coastal Act Section 30240, no development, except uses dependent on the resource (i.e., restoration, nature study, and low-intensity public access), is allowed within any ESHA, and such allowable development must be undertaken in a manner that protects against any significant disruption of its habitat values. This policy further requires that development adjacent to ESHA be sited and designed to prevent impacts that would significantly degrade ESHA and to be compatible with the continuance of the biological integrity of the habitat areas. Finally, development adjacent to parks and recreation areas must be sited and designed to prevent impacts.

Streams (also referred to as watercourses) and associated riparian habitat are protected in order to maintain biological productivity and coastal water quality. Section 30231 requires that natural vegetation buffer areas that protect riparian habitats be maintained, and that the alteration of natural streams be minimized. Section 30236 limits channelization, dams, or other substantial alterations of rivers and streams to only three purposes: necessary water supply; protection of existing structures where there is no feasible alternative; or

improvement of fish and wildlife habitat. Such projects must also incorporate the best management practices feasible.

Marine resources are protected to sustain the biological productivity of coastal waters and to maintain healthy populations of all species of marine organisms under Section 30230 requires that marine resources be maintained, enhanced, and where feasible restored. Section 30233 provides that the diking, filling, or dredging of open coastal waters, wetlands, or estuaries may only be permitted where there is no less environmentally damaging alternative, where feasible mitigation measures have been provided to minimize adverse environmental effects and where restricted to a limited number of allowable uses.

The Coastal Act also recognizes the potential adverse effects of alterations to the natural shoreline, including impacts on natural processes such as erosion and sedimentation. Coastal Act policy limits the construction of shoreline-altering devices to those needed to protect coastal-dependent uses, existing structures, and public beaches, and requires such development to mitigate any adverse impacts (Section 30235).

Finally, the Coastal Act requires that the biological productivity and quality of coastal waters be protected. Section 30231 requires managing wastewater discharges, controlling runoff, protecting groundwater and surface water, encouraging wastewater reclamation, and protecting streams, to maintain and enhance water quality.

COASTAL ACT DEFINITIONS AND POLICIES

The following California Coastal Act definitions and policies are relevant to the protection, preservation, and enhancement of natural resources and are incorporated into this LUP.

“Environmentally Sensitive Habitat Areas (ESHAs)” are defined as any area in which plant or animal life or their habitats are either rare or especially valuable because of their nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. (Coastal Act Section 30107.5)

“Wetland” is defined 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)

Article 4: Marine Environment

Section 30230 Marine resources; maintenance and uses

Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231 Biological productivity; water quality

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30232 Oil and hazardous substance spills

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Section 30233 Diking, filling or dredging; movement of sediment and nutrients

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
- (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
- (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
- (4) Incidental public service purposes, including, but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.
- (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
- (6) Restoration purposes.
- (7) Nature study, aquaculture, or similar resource-dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

Section 30235 Construction altering natural shoreline

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fishkills should be phased out or upgraded where feasible.

Section 30236 Water supply and flood control

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

Article 5: Land Resources

Section 30240 Environmentally sensitive habitat areas; adjacent developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas and shall be compatible with the continuance of those habitat and recreation areas.

Biological Resources

The Planning Area contains a diverse mixture of plant communities and habitat types adapted to the coastal zone, local topography and soils, and historic uses of the region. These habitats may provide foraging, nesting, breeding, dispersal, and shelter opportunities for numerous species, including special status species such as species listed as rare, threatened or endangered under federal or state Endangered Species Acts or considered as species of special concern. Numerous habitat types are present in the region that are unique to coastal

areas along the Pacific Ocean, including some that are considered sensitive by the California Department of Fish and Wildlife (CDFW) and California Coastal Commission (CCC), or that have been designated by the U.S. Fish and Wildlife Service (USFWS) as critical habitat for threatened or endangered species under the federal Endangered Species Act.

HABITAT TYPES IN THE PLANNING AREA

Habitat types in the Planning Area are depicted in Figure 6-1 and include the following:

- **Marine Environment.** The marine environment was mapped as defined by the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al 1979) as follows: “The marine system consists of the open ocean overlying the continental shelf and its associated high energy coastline.” Thus, the marine environment was mapped to include areas of ocean, sandy beach, and small estuaries at the mouths of major creeks. Wildlife found in the marine environment includes shorebirds, seabirds, and marine mammals such as harbor seals, sea otters, whales, and dolphins. Sandy beaches in the Planning Area have the potential to support foraging, nesting, and wintering activities of the Western Snowy Plover (*Charadrius alexandrinus nivosus*).
- **Sea Cliffs.** Where present, sea cliffs were mapped as areas of steep slope in the interface between the marine environment and land-based habitats. Sea cliffs are exposed to wind and waves and are largely devoid of vegetation in steep areas due to erosion but may support species found in Central Coast Scrub. These areas may provide refuge or nesting habitat for migratory and resident water-associated birds.
- **Central Coast Riparian Scrub.** Central Coast Riparian Scrub communities typically occur within or adjacent to stream channels, along seasonally flooded arroyos, or in depressional areas located close to ground water. Canopy vegetation within riparian corridors are typically dominated by willow (*Salix* sp.) but may include other riparian trees such as red alder (*Alnus rubra*), understory shrubs such as California blackberry (*Rubus ursinus*), and poison oak (*Toxicodendron deversilobum*), and non-native invasive species such as stinging nettle and Cape ivy. Riparian scrub can support a wide diversity of wildlife due to the availability of important features such as nesting sites, close proximity to water, escape and thermal cover, food, and dispersal corridors. Special-status species known to utilize Central Coast Riparian Scrub within the Planning Area and surrounding vicinity include California red-legged frog (*Rana draytonii*), Central California Coast steelhead (*Oncorhynchus mykiss*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), and San Francisco Common Yellowthroat (*Geothlypis trichas sinuosa*).
- **Central Coast Scrub.** Central Coast Scrub consists of dense low evergreen shrubs and herbs with scattered grassy openings. Central Coast Scrub in Half Moon Bay is generally dominated by coyote brush (*Baccharis pilularis*) and includes other scrub species such as yellow bush lupine (*Lupinus arboreus*), seaside golden yarrow (*Eriophyllum staechadifolium*) and coast buckwheat (*Eriogonum latifolium*). This

habitat occurs on windy, exposed sites with typically shallow, rocky soils and may provide habitat for Choris' popcorn flower (*Plagiobothrys chorisianus* var. *chorisianus*) or perennial goldfields (*Lasthenia californica* ssp. *macrantha*), suitable foraging and nesting habitat for numerous avian species, upland habitat for California red-legged frog, and upland habitat for the San Francisco garter snake.

- **Central Dune Scrub.** Central Dune Scrub occurs in areas of sand accumulation, generally forming a dense coastal scrub community of shrubs, subshrubs, and herbs. Typical species in this habitat include Coastal sagewort (*Artemisia pycnocephala*), Yellow Bush lupine (*Lupinus arboreus*), lizard tail (*Eriophyllum staechadifolium*), coyote brush (*Baccharis pilularis* ssp. *pilularis*), and California goldenbrush (*Ericameria ericoides*). Dune habitat, including degraded dunes, are mapped in Figure 6-1 to include the Central Dune Scrub vegetative community and foredunes free of vegetation to the base of the slope based on topographic information. This dune system in Half Moon Bay supports the federally listed Western Snowy Plover.
- **Coastal Freshwater Marsh.** Freshwater marsh is typically associated with natural and man-made ponds, intermittent and perennial creeks, wetlands, and roadside swales within or surrounded by other plant communities. Mapped areas include artificial impoundments, permanently flooded marshes, and seasonal marsh, including those with characteristics of vernal pools. Vegetation within permanently flooded marshes may include tules (*Scirpus* sp.) and cattails (*Typha* sp.). Seasonal wetlands, mostly found within depressions in grasslands, are composed of mostly low-growing annual herbs and taller perennials such as rushes (*Juncus* sp.), sedges (*Carex* sp.), California goldfields (*Lasthenia californica* ssp. *californica*), common spikerush (*Eleocharis macrostachya*), tall flat-sedge (*Cyperus eragrostis*) and pennyroyal (*Mentha pulegium*). These wetland habitats support a variety of wildlife species, especially birds and amphibians, which utilize the emergent vegetation for cover. Special status species such as California red-legged frog and San Francisco garter snake may utilize this habitat for foraging and cover and in some cases breeding.
- **Non-Native Grassland.** Non-native grasslands are composed of annual grasses with annual and perennial forbs, especially in years of favorable rainfall. This community provides foraging habitat for a variety of wildlife species, including raptors and small mammals, and provides nesting sites for birds. Grassland may provide upland habitat for California red-legged frog.
- **Coastal Terrace Prairie.** Coastal Terrace Prairie is a rare, species-rich habitat type occurring along the California Coast comprised of a combination of grasslands, wetlands and scrub habitat. Within the Planning Area, Coastal Terrace Prairie occurs on blufftops in the vacant fields west of Railroad Avenue and within Wavecrest and contains a highly variable mixture of native perennial grasses and forbs, native and non-native annual forbs, and non-native grasses. This habitat type is also supportive of raptor foraging. Native species found in this habitat type include maritime brome (*Bromus maritimus*), California oat grass (*Danthonia californica*), meadow barley (*Hordeum brachyantherum*), and perennial goldfields (*Lasthenia californica* ssp.

macrantha), a special status species. The areas mapped as coastal terrace prairie in Figures 6-1 and 6-2 are well-developed with a presence of distinctive coastal terrace prairie flora and composition of at least 75 percent native species. It is likely that there are additional areas that could be delineated as coastal terrace prairie, based on the Coastal Commission's guidance to define coastal terrace prairie as areas with at least 10 percent cover of native grasses and less than 25 percent cover of shrubs.

- **Agriculture.** Agricultural areas in the Planning Area are regularly disturbed by disking or plowing of soil and other agricultural operations. The edges of cultivated fields tend to support ruderal vegetation along disturbed margins of farm roads and in fallow areas. Wildlife observed in agricultural habitat in the Planning Area includes species protected by the MBTA or California Fish and Game Code.
- **Eucalyptus Forest.** Eucalyptus forests consist of dense stands of non-native, invasive eucalyptus trees (*Eucalyptus globulus*), and are usually devoid of an understory due to their invasive nature. Stands are frequently found in cooler coastal areas and along stream courses and may provide roosting or nesting habitat for avian species protected under the MBTA or California Fish and Game Code, roosting and overwintering opportunities for monarch butterfly, and habitat for San Francisco dusky-footed woodrat. However, the habitat quality for these species is typically low in comparison to native tree stands and vegetation. In general, eucalyptus is considered an invasive species with negative effect on biological diversity and healthy ecosystem functions, and removal is supported for invasive species eradication, fuel modification, and other restoration needs where it can be timed and phased with native replantings to avoid impacts to any sensitive species.
- **Monterey Cypress Forest.** Monterey cypress forest is dominated by Monterey cypress (*Hesperocyparis macrocarpa*), with a relatively open understory of scattered dwarf shrubs and perennial herbs. Monterey cypress stands often contain a component of Monterey Pine. This species has been widely planted and naturalized throughout coastal California, including San Mateo County and Half Moon Bay. This community provides nesting and roosting opportunities for various avian species (including raptors) and bat species and can also support monarch butterfly overwintering sites.
- **Monterey Pine Forest.** Monterey pine forest is dominated by Monterey pine (*Pinus radiata*), with some coast live oak (*Quercus agrifolia*) contributing to the canopy structure. Monterey pine stands often contain a component of Monterey cypress. All Monterey pines in the Planning Area are non-native stands that were originally planted during urbanization of the area and are now mostly in declining conditions from bark beetle infestation, disease, and old age.
- **Man-made Impoundments and Ponds.** The Planning Area contains a number of man-made impoundments and ponds, typically used or formerly used for agriculture, irrigation, and stormwater detention or treatment. Man-made impoundments and ponds can contain vegetation characteristic of Coastal Freshwater Marsh and can also

provide habitat for waterfowl, waterbirds, and in some cases listed species such as California red-legged frog or San Francisco garter snake.

- **Ruderal.** Ruderal habitats are characterized by a lack of vegetation or are dominated by non-native and invasive weedy plant species. Ruderal habitats often occur along roadsides and fence lines, near developments, and in other areas experiencing severe surface disturbance. The wildlife habitat values provided by this community generally include species adapted to urban environments.
- **Landscaped.** Landscaped habitats occur in association with developed land uses and are planted vegetative communities primarily consisting of ornamental plantings and lawns. Mapped landscaped habitats include parks, cemeteries, and golf courses. Wildlife species adapted for life urban environments can be found in these habitats.
- **Developed/Urban.** Developed/urban habitat is found in regularly and highly disturbed areas, including areas that have been developed. These areas are not likely to support special status species due to the high level of disturbance and human activity; however, they may support nesting birds.

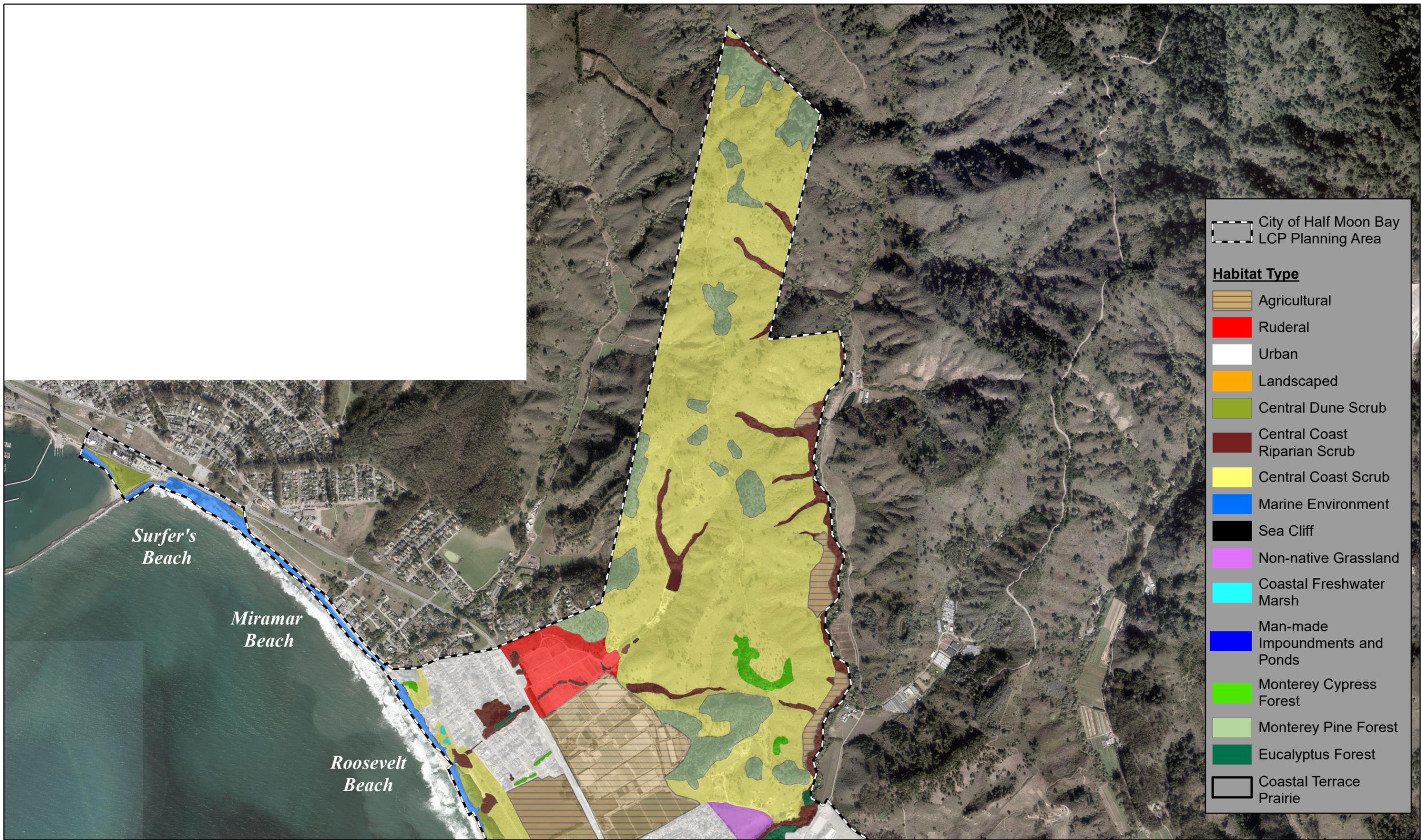


Figure 6-1: Habitat Types in the LCP Planning Area, Sheet 1 of 3

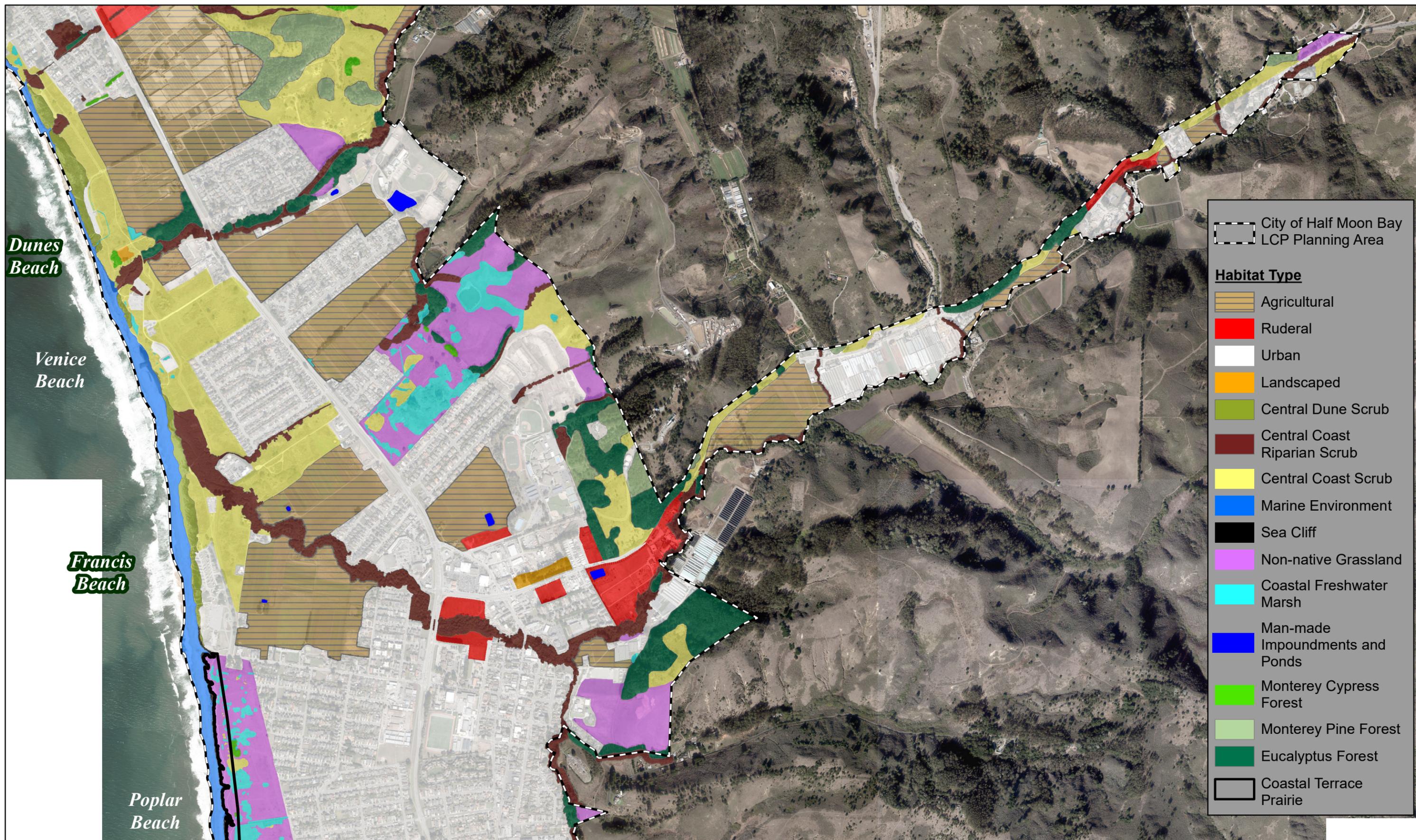
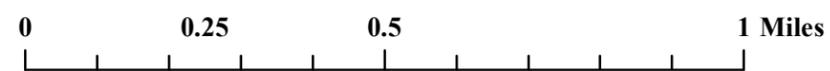


Figure 6-1: Habitat Types in the LCP Planning Area, Sheet 2 of 3



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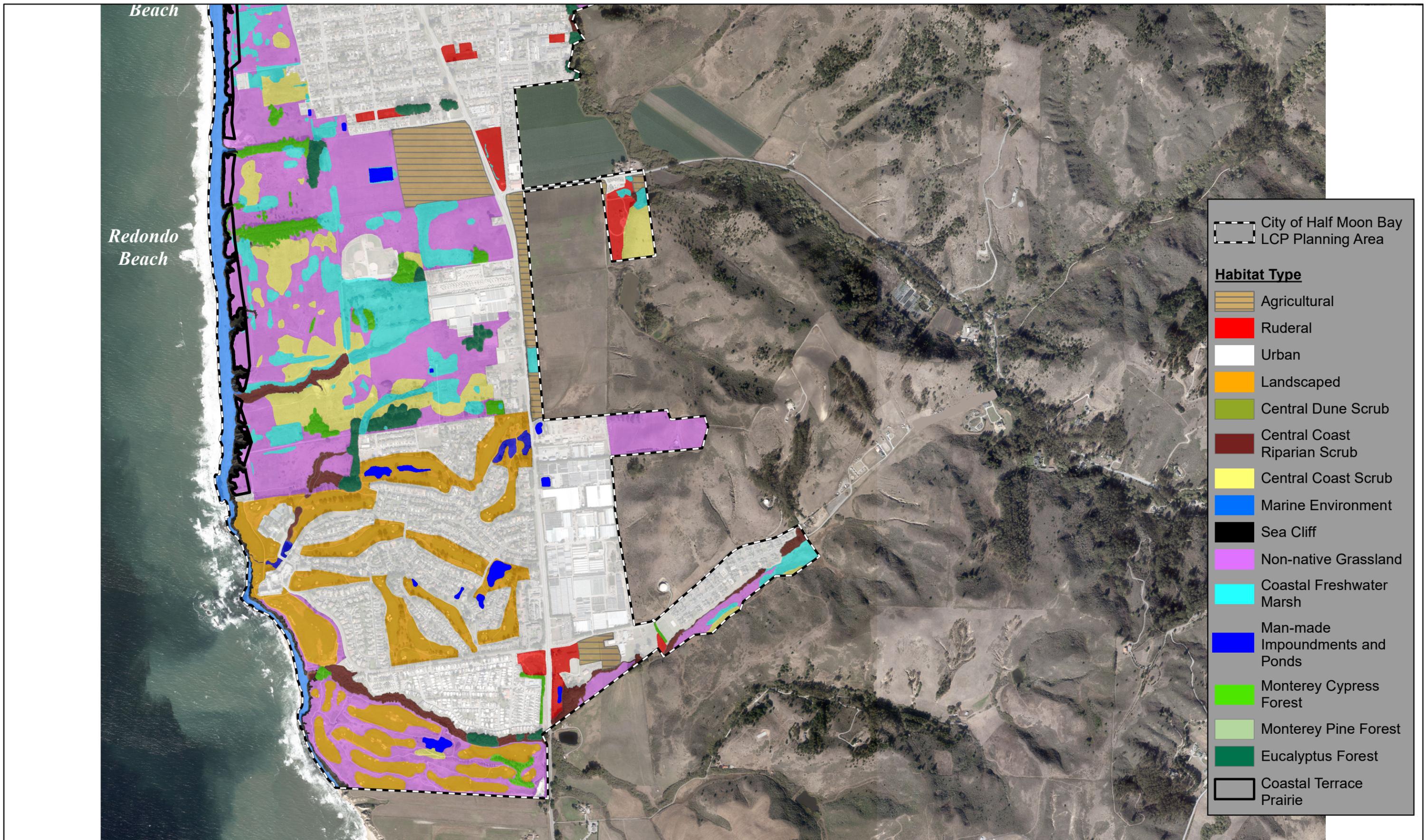


Figure 6-1: Habitat Types in the LCP Planning Area, Sheet 3 of 3



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SPECIAL STATUS SPECIES IN THE PLANNING AREA

Special status species are identified through the lists of rare, threatened, or endangered species prepared under the California and Federal Endangered Species acts; the lists of California Fully Protected Species and Species of Special Concern administered by CDFW and list of Bird Species of Conservation Concern administered by USFWS; and the rare, threatened, or endangered plant rankings administered by the California Native Plant Society (CNPS).

A brief summary of the listing status, relevant biology, and status within Half Moon Bay Planning Area of the key special status species most likely to be present in the Planning Area follows (see Appendix C for a comprehensive summary table). This information was gathered through the California Natural Diversity Data Base (CNDDDB) and through consultation with local experts. Animal species include (1) federally listed species; (2) state-designated species of special concern and/or USFWS Bird Species of Conservation Concern; and (3) California Fully Protected species. Monarch butterfly (*Danaus plexippus*) overwintering sites are also protected by CDFW and are discussed in the following section. Two special status plant species occur within the Planning Area: Choris's popcorn flower and perennial goldfields. These species are also discussed in greater detail below.

Unique species are also discussed below. Included in this discussion is the importance of the ocean bluffs in the area of the North Wavecrest Planned Development (PD) and the area west of Railroad Avenue to wintering populations of birds of prey.

Special Status Animal Species

Central California Coast Steelhead. Central California populations of steelhead trout (*Oncorhynchus mykiss*) were federally-listed as threatened under the Federal Endangered Species Act in August 1997. Steelhead require well-oxygenated streams with riffles and loose, silt-free gravel substrate for spawning. The USFWS designated Critical Habitat for steelhead within the Planning Area in Pilarcitos Creek, Frenchmans Creek, Arroyo Leon and Apanolio Creek. Pilarcitos Creek and Frenchmans Creek are also historic spawning sites for steelhead.

California Red-legged Frog. The California red-legged frog (CRLF, *Rana draytonii*) is a federally-listed threatened species and California species of special concern. CRLF are observed in aquatic and terrestrial habitats, including marshes, streams, lakes, reservoirs, ponds and other permanent, or near permanent, sources of water. CRLF are expected to breed in permanent deep-water pools with dense stands of overhanging willows and emergent vegetation. However, they have been observed in a variety of aquatic environments, including stock ponds and artificial pools with little to no vegetation. CRLF are usually observed near water but can move long distances over land between water sources during the rainy season. With the onset of winter rains, CRLF move from dry-season refuges to ponds and streams that can support breeding and successful tadpole development. During the dry season, CRLF seek suitable refuge sites that may include deep water holes in drying streams, springs and spring boxes, seeps, and ground squirrel burrows. To find these refuges, frogs will travel up to three miles in moist coastal areas. CRLF occur in the Planning Area at several known breeding sites and in suitable upland foraging and dispersal habitat.

San Francisco Garter Snake. The San Francisco garter snake (SFGS, *Thamnophis sirtalis tetrataenia*) is one of eleven recognized subspecies of the common garter snake (*Thamnophis sirtalis*) and is federally listed as endangered and state-listed as endangered and Fully Protected. The SFGS is endemic to the San Francisco Peninsula and is known only in San Mateo County. SFGS are observed most often near standing water, such as ponds, lakes, marshes and sloughs. However, temporary ponds and other seasonal water bodies are also utilized. Emergent and bankside vegetation such as cattail, bulrush, and rush are preferred cover. Breeding habitat for the species also includes open grassy uplands and shallow marshland with adequate emergent vegetation and the presence of both Pacific tree frog (*Pseudacris regilla*) and CRLF. The species also uses the dens of burrowing mammals as winter hibernacula and as cover much of the year.

There have been only two known sightings of SFGS in Half Moon Bay, both along Pilarcitos Creek. The species occurs in the Pilarcitos Creek watershed near Crystal Springs Reservoir, and many herpetologists suspect the species may occur along Pilarcitos Creek between Half Moon Bay and Crystal Springs within areas that have not been surveyed. Other areas within the Planning Area have been recognized by the USFWS and other regulatory agencies as suitable dispersal habitat for SFGS including the Pullman Watercourse, areas of Wavecrest, the Venice Beach PD area, Beachwood, and Pacific Ridge.

California Brown Pelican. California Brown Pelican (*Pelecanus occidentalis californicus*) is considered a Fully Protected Species in California. California Brown Pelicans are found in estuarine, marine subtidal, and marine pelagic waters throughout coastal California. Important habitat for pelicans during the nonbreeding season includes offshore rocks, islands, sandbars, breakwaters, and pilings. California Brown Pelican is fairly common in near-shore ocean waters near the Planning Area and forms large roosts during the summer months on the Pillar Point Harbor breakwaters.

Western Snowy Plover. Western Snowy Plover (*Charadrius alexandrinus nivosus*) is a federally listed threatened species and a species of special concern in California. Western Snowy Plover is a small shorebird that lives in sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars. The plover is present in California in fall and winter where it nests from April through August. Nests typically occur in flat, open areas with sandy or saline substrates and sparse vegetation. Western Snowy Plovers nest at Half Moon Bay State Beach, which has been designated as Critical Habitat for the species by the USFWS under the federal Endangered Species Act. A flock of approximately 40 to 60 birds also winters in the area of Half Moon Bay State Beach each year.

White-tailed Kite. The White-tailed Kite (*Elanus leucurus*) is a medium-sized raptor that is considered a Fully Protected Species in California and is a USFWS Bird Species of Conservation Concern. The species occurs in grasslands, agricultural fields, wetlands, oak woodland and oak savannah habitats in coastal foothills and valleys and nest in a variety of trees and shrubs. White-tailed Kites are a common winter foraging species in the mix of grassland, wetlands, and scrub habitats on the ocean bluffs of Wavecrest and the area west of Railroad Avenue. In 2007, a communal roost of over 100 individuals was seen in this area. White-tailed Kites have also nested in recent years at Wavecrest in trees south of Smith Field

park. The San Mateo County Breeding Bird Atlas (Sequoia Audubon Society 2001) also indicates possible past nesting near Miramontes Point.

Short-eared Owl. Short-eared Owl (*Asio flammeus*) is considered a California species of special concern for its nesting habitat due to threats related to habitat loss, grazing, invasive plants, water management projects and disease. Short-eared Owls are found in the open country of grasslands and marshes, inhabiting areas where small mammals, especially voles, are plentiful. The ocean bluffs of the North Wavecrest area between Redondo Beach Road and Seymour Street and the area west of Railroad Avenue support annual wintering populations of Short-eared Owl. Wavecrest is considered the most important wintering site for the species in San Mateo County.

Olive-sided Flycatcher. Olive-sided Flycatcher (*Contopus cooperi*) is a USFWS Bird Species of Conservation Concern and is a designated species of special concern in California with respect to nesting habitat. Olive-sided Flycatcher is a summer resident and migrant mainly from mid-April through early October with the breeding season in California extending from early May to late August. Nesting birds require large, tall trees, usually conifers, for nesting and roosting sites. Suitable breeding sites for Olive-sided Flycatcher within the Planning Area are mainly inland where taller Monterey pines and Monterey cypress occur.

Loggerhead Shrike. Loggerhead Shrike (*Lanius ludovicianus*) is a California-designated species of special concern and a USFWS Bird Species of Conservation Concern. Loggerhead Shrikes are resident and winter visitors in lowlands and foothills throughout California. Preferred habitat includes open areas such as desert, grasslands, and savannah. Loggerhead Shrikes nest in thickly foliated trees or tall shrubs and forage in open habitats which contain trees, fence posts, utility poles, and other perches. Suitable habitat for Loggerhead Shrike in the Planning Area includes the grassland and scrub habitats of the coastal bluffs. During some winters, Loggerhead Shrikes can be found on the coastal bluffs between Redondo Beach Road and Kelly Avenue and in the area around the Johnston House.

Yellow Warbler. The Yellow Warbler (*Setophaga petechia*) is a USFWS Bird Species of Conservation Concern and is a California species of special concern with respect to nesting habitat. Yellow Warblers occur in Coastal California as a migrant and summer resident between March and October with breeding in riparian habitats from April to July. The species has been known to nest in riparian habitats along Pilarcitos Creek, but suitable nesting habitat for the species occurs anywhere with significant riparian canopy along watercourses in the Planning Area.

San Francisco Common Yellowthroat. The San Francisco Common Yellowthroat (*Geothlypis trichas sinuosa*), a type of warbler, is designated as a California species of special concern. This year-round resident of San Mateo County is found in freshwater marshes, coastal swales, riparian thickets, brackish marshes, and saltwater marshes. The species requires thick, continuous cover such as tall grasses, tule patches, or riparian vegetation for foraging and prefers willows for nesting. Nesting has been documented within the Planning Area along Frenchmans Creek, Pilarcitos Creek, near the sewer treatment plant, within the riparian corridors at Wavecrest, and in a marsh within a man-made detention pond on the Half Moon Bay Golf Links (Old Course).

Grasshopper Sparrow. Grasshopper Sparrow (*Ammodramus savannarum*) has been designated as a species of special concern in California. Grasshopper Sparrows are common only in the Great Plains, but numbers are in decline due to loss of habitat, conversion of pasture to row crops, and fire suppression. Grasshopper Sparrows prefer moderately open grassland habitats with scattered shrubs. In California, agricultural and urban development has fragmented habitats within the range of the species. Suitable habitat for Grasshopper Sparrow can be found throughout the mosaic of grassland, wetland and coastal scrub habitats on the ocean bluffs between Kelly Avenue and Redondo Beach Road. Grasshopper Sparrow is documented as a nesting species at Wavecrest and the coastal terrace prairie habitat between Poplar Avenue and Kelly Avenue, as well as the grasslands near the Johnston House¹.

Bryant's Savannah Sparrow. Bryant's Savannah Sparrow (*Passerculus sandwichensis alaudinus*) is designated as a species of special concern in California primarily due to its limited range. Bryant's Savannah Sparrow is restricted to a narrow coastal strip between Humboldt Bay and Morro Bay, with a population center around the San Francisco Bay. This sparrow occupies low tidally-influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and sometimes drier grasslands. A sizeable and important breeding and wintering population in Half Moon Bay has been documented in Wavecrest and the area west of Railroad Avenue. Lower densities exist south of Redondo Beach Road adjacent to the golf course and some also occur to the north of Kelly Avenue².

San Francisco Dusky-footed Woodrat. The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), is a California species of special concern. The species is most abundant in riparian, oak woodland and scrub habitats. It typically constructs houses out of sticks and other debris that are used for rearing young, protection from predators, resting, food storage, thermal protection and social interaction. Houses are constructed on the ground, in rocky outcrops or in trees and are often found in concentrations along riparian corridors. In the Planning Area, San Francisco dusky-footed woodrat is fairly common in riparian vegetation and Central Coast Scrub, and in wooded habitats (including eucalyptus) in the eastern portion of the Planning Area. This species is not mapped on Figure 6-3 due to the prominence of habitats supporting this species but is afforded protection as a state-designated species of special concern and as a biological resource in the LUP policies below. Standard mitigation practice for this species in suitable habitats is for a qualified biologist to conduct a preconstruction survey for woodrat houses and, if outside the woodrat nesting and rearing season, accomplish relocation of houses from proposed construction areas to open space areas in the project vicinity prior to initiation of construction activities.

Monarch Butterfly. The monarch butterfly (*Danaus plexippus*) is considered California Rare and is a CDFW ranked S3 (state vulnerable) species. The species is well-known for its north-south migrations from Canada to Mexico which span the lives of several generations. Monarch butterfly winter roost sites, typically used between October and February, consist of hundreds or thousands of monarchs in wind-protected tree groves close to sources of nectar and water. On the California coast, these roosts usually form in eucalyptus, but

¹ Alvaro Jaramillo, Local Expert Ornithologist and Senior Biologist, San Francisco Bay Bird Observatory, 2018

² Alvaro Jaramillo, Local Expert Ornithologist and Senior Biologist, San Francisco Bay Bird Observatory, 2018

Monterey pine and Monterey cypress groves are also used. However, native tree species are typically preferred for their higher habitat value.

Within the Planning Area, winter roost sites for monarchs noted in the CNDDDB include the eucalyptus grove area of Frenchmans Creek (specifically the area around the Sweetwood Group Camp) and a eucalyptus grove southwest of Seymour Street in the North Wavecrest area. This latter roost formed in a protected area within the eucalyptus grove that resulted from a fire and was used by monarchs as an overwintering site in the late 1980s and early 1990s. Information in the CNDDDB suggests that monarchs ceased using the site after an arson fire in 1992.

Special Status Plant Species

Choris's popcornflower. Choris's popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*) is an annual dicot native and endemic to California. The species is known from coastal terrace prairie, chaparral, northern coastal scrub and wetland/riparian habitats, but almost always occurs under natural conditions in wetlands. Choris's popcornflower is known from populations in Alameda, Santa Cruz, San Mateo, and San Francisco Counties. The species is listed by the California Native Plant Society (CNPS) on list 1B.2 (species considered to be rare, threatened or endangered in California and elsewhere). Reports in the CNDDDB show that Choris's popcornflower occurs within wetlands scattered throughout various locations at Wavecrest and the open fields west of Railroad Avenue.

Perennial goldfields. Perennial goldfields (*Lasthenia californica* ssp. *macrantha*) is an annual dicot that is native and near endemic to California (found only slightly beyond California borders). The species is known primarily from Coastal scrub habitats but occasionally occurs in wetlands. The species has been recorded in San Luis Obispo, San Mateo, Marin, Sonoma, and Mendocino Counties. The species is listed by the California Native Plant Society (CNPS) on list 1B.2. Perennial goldfields are known from Central Coast Scrub and pockets of wetlands scattered throughout various locations within the open fields west of Railroad Avenue and at Wavecrest, primarily within the Coastal Terrace Prairie habitat along the coastal bluff edge.

Unique Species – Winter Raptor Foraging Habitat

Unique species are defined as an organism or group of organisms that has scientific or historic value, few indigenous habitats, some characteristic(s) that draw attention or are locally uncommon, or that are common only locally or are of limited range. In the Planning Area, unique species include winter raptor populations found on the ocean bluffs and open fields of the North Wavecrest area between Redondo Beach Road and Seymour Street and the area west of Railroad Avenue. The local Audubon chapter (Sequoia Audubon Society) considers Wavecrest to be the most important habitat for wintering raptors in San Mateo County, as it supports a greater diversity of raptors and number of individuals than any other site. Factors contributing to the value of this area as a wintering area for raptors are the habitat that includes grasslands, coastal terrace prairie, and wetlands for foraging; shrubs for cover; trees for roosting; and a large population of California voles that provide ample prey. Together, these factors combine to create a large, contiguous mosaic of suitable conditions for

wintering raptors. Both CDFW and the Coastal Commission have recognized the importance of these populations and the need to conserve this area.

Observations by residents of the neighborhood, area birders, and ornithologists demonstrate extensive winter use of these ocean bluffs by Red-tailed Hawk (*Buteo jamaicensis*), Red-shouldered Hawk (*Buteo lineatus*), White-tailed Kite (*Elanus leucurus*), Northern Harrier (*Circus cyaneus*), and American Kestrel (*Falco sparverius*). Other species such as Sharp-shinned Hawk (*Accipiter striatus*), Cooper's Hawk (*Accipiter cooperii*), Great Horned Owl (*Bubo virginianus*) and Barn Owl (*Tyto alba*) are also present but are less common. Peregrine Falcon (*Falco peregrinus*), Merlin (*Falco columbarius*) and Osprey (*Pandion haliaetus*) are observed annually. A population of between one and five Short-eared Owls (*Asio flammeus*) winters at Wavecrest and the surrounding area each year, and these birds are sometimes seen foraging over the fields on winter mornings or evenings. Rare bird of prey species that have been sighted in this area include Golden Eagle (*Aquila chrysaetos*), Prairie Falcon (*Falco mexicanus*), Swainson's Hawk (*Buteo swainsoni*), Ferruginous Hawk (*Buteo regalis*), Rough-legged Hawk (*Buteo lagopus*) and Burrowing Owl (*Athene cunicularia*).

Many of these raptor species are species with special status. Raptor species that are designated as species of concern in California for nesting habitat, are on the California Watch List, or are designated as USFWS Bird Species of Conservation Concern include regularly-occurring species in the area such as Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk and Short-eared Owl, and the rare Prairie Falcon and Osprey, all of which occur in the area in winter and are not breeding species at this location. Several of the raptor species are state-designated species of concern or USFWS Bird Species of Conservation Concern for both nesting and wintering habitat, including Golden Eagle, Ferruginous Hawk and Merlin. Merlin are seen on the bluffs every year, and the fields of Wavecrest and the area west of Railroad Avenue are an important wintering habitat for this species. Ferruginous Hawk is seen occasionally in winter and Golden Eagles have been observed but are rare. Peregrine Falcon is a species of concern in California and a USFWS Bird Species of Conservation Concern and has been documented nesting at Devil's Slide north of the city.

Table 6-1 below presents the Planning Area's habitat types with their corresponding regulatory context and associations with special status species.

Table 6-1: Habitats and Special Status Species Summary

<i>Habitat Type</i>	<i>Potential Special Status Species Associations</i>	<i>Regulatory Considerations</i>
Marine Environment/Sandy Beach	<ul style="list-style-type: none"> • Western Snowy Plover • Marine mammals (e.g., seals, whales) • California Brown Pelican • Migratory sea birds including Marbled Murrelet • Central California coast steelhead 	<ul style="list-style-type: none"> • Regulated by USFWS, NMFS, CDFW, RWQCB, and CCC • Contains critical habitat for Western Snowy Plover • Seasonal passage of anadromous fish • Marine Environment including sandy beach is considered ESHA
Sea Cliff	<ul style="list-style-type: none"> • Migratory birds/raptors 	<ul style="list-style-type: none"> • Regulated by CCC • Sea cliff is considered ESHA
Central Coast Riparian Scrub	<ul style="list-style-type: none"> • Central California coast steelhead • California red-legged frog • San Francisco garter snake • San Francisco Common Yellowthroat • Yellow Warbler • San Francisco dusky-footed woodrat • Migratory birds/raptors 	<ul style="list-style-type: none"> • Regulated by USACE, RWQCB, USFWS, NMFS, CDFW, and CCC • May be considered Wetlands/Waters of the U.S. and State • May contain critical habitat for central California coast steelhead • Central Coast Riparian Scrub could be considered ESHA
Central Coast Scrub	<ul style="list-style-type: none"> • California red-legged frog • San Francisco garter snake • Winter raptor foraging for Short-eared Owl, and other raptor species • Loggerhead Shrike foraging • Migratory birds/raptors • Choris’s popcorn flower • Perennial goldfields 	<ul style="list-style-type: none"> • May be regulated by CCC • Potential for sensitive plant species • Central Coast Scrub could be considered ESHA
Central Dune Scrub	<ul style="list-style-type: none"> • Western Snowy Plover • Migratory birds/raptors 	<ul style="list-style-type: none"> • Regulated by CCC • Central Dune Scrub is considered ESHA

<i>Habitat Type</i>	<i>Potential Special Status Species Associations</i>	<i>Regulatory Considerations</i>
Coastal Freshwater Marsh	<ul style="list-style-type: none"> • California red-legged frog • San Francisco garter snake • San Francisco Common Yellowthroat • Western pond turtle • Winter raptor foraging for Short-eared Owl, and other raptor species • Migratory birds/raptors 	<ul style="list-style-type: none"> • Regulated by USACE, USFWS, RWQCB, CDFW, and CCC • Considered Wetlands/Waters of the U.S. and State • Coastal Freshwater Marsh is protected wetland and could be considered ESHA
Non-native Annual Grassland	<ul style="list-style-type: none"> • Winter raptor foraging for Short-eared Owl, and other raptor species • Migratory birds/raptors • California red-legged frog • San Francisco garter snake • Bryant’s Savannah Sparrow and Grasshopper Sparrow nesting • Loggerhead Shrike foraging • Choris’s popcorn flower • Perennial goldfields 	<ul style="list-style-type: none"> • May be regulated by CCC • Potential for sensitive plant species • Non-native Annual Grassland could be considered ESHA
Coastal Terrace Prairie	<ul style="list-style-type: none"> • Winter raptor foraging for Short-eared Owl, and other raptor species • Migratory birds/raptors • Upland habitat for California red-legged frog • Upland habitat for San Francisco garter snake • Bryant’s Savannah Sparrow and Grasshopper Sparrow nesting • Loggerhead shrike foraging • Choris’s popcorn flower • Perennial goldfields 	<ul style="list-style-type: none"> • Regulated by CCC • Potential for sensitive plant species • Coastal Terrace Prairie is considered ESHA

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<i>Habitat Type</i>	<i>Potential Special Status Species Associations</i>	<i>Regulatory Considerations</i>
Agriculture	<ul style="list-style-type: none"> • Winter raptor foraging for Short-eared Owl, and other raptor species • Migratory birds/raptors 	<ul style="list-style-type: none"> • May be regulated by RWQCB, CCC
Forest (Includes eucalyptus, Monterey cypress, and Monterey pine)	<ul style="list-style-type: none"> • Migratory birds/raptors • Monarch butterfly overwintering sites • San Francisco dusky-footed woodrat • Olive-sided Flycatcher • Bats 	<ul style="list-style-type: none"> • May be regulated by CCC • Non-invasive forest habitats could be considered ESHA
Man-Made Impoundments/Ponds	<ul style="list-style-type: none"> • California red-legged frog • San Francisco garter snake • Migratory birds 	<ul style="list-style-type: none"> • May be regulated by USACE, USFWS, RWQCB, CDFW and CCC • May provide foraging and aquatic habitat for special status species • Man-made impoundments and ponds could be considered ESHA
Ruderal / Landscaped	<ul style="list-style-type: none"> • Migratory birds/raptors • Bats 	<ul style="list-style-type: none"> • In the case of high-fidelity nesting, ruderal/landscaped habitats could be considered ESHA
Developed/ Urban	<ul style="list-style-type: none"> • Migratory birds/raptors • Bats 	<ul style="list-style-type: none"> • In the case of high-fidelity nesting, developed areas could contain ESHA

ENVIRONMENTALLY SENSITIVE HABITAT AREAS

The LCP defines environmentally sensitive habitat areas (ESHAs) 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. ESHAs can be categorized into three types: terrestrial, wetlands, and watercourses. Terrestrial ESHA may include the marine environment, sea cliffs, dunes, coastal terrace prairie, and non-aquatic habitat for special status and unique species, such as those described in the previous section; wetlands may include perennial and seasonal freshwater marsh; and watercourses may include perennial, intermittent, and ephemeral streams and channels with or without riparian vegetation. As wetlands and watercourses have significantly different biological functions and protections under the Coastal Act, the LCP treats these habitat types distinctly from terrestrial ESHA.

The following figures are maps of lands where ESHA may occur based on previous biological studies, known conservation areas, and citywide biological mapping efforts conducted for the 2020 Land Use Plan update. Areas mapped as “ESHA” are either previously well-studied with known natural resource value or are likely to contain ESHA and occur on land that has been permanently conserved (e.g., by conservation easement). Areas mapped as “Potential ESHA” may support sensitive habitat or special status species but require further site-specific study to make this determination. Potential ESHA is meant to serve as a flag for further studies to be undertaken when development is proposed. In both cases, however, the maps are illustrative and for information purposes only; site-specific biological studies are required as part of proposed development review to determine the presence and extent of ESHA and its required buffer zone.

The following figures include:

- Figure 6-2, Habitat ESHAs: A map based on the presence of wetlands, watercourses, marine environment, sea cliffs, dunes, and coastal terrace prairie.
- Figure 6-3, Special Status Species ESHAs: A map based on the known and potential ranges and documented observations of special status and unique species.
- Figure 6-4, ESHA Summary Map: A map presenting all ESHAs and Potential ESHAs as depicted in Figures 6-2 and 6-3 on a single map for easier interpretation.

ESHA could also occur on any vacant or undeveloped parcel or portions of developed properties throughout the Planning Area, but may not have been mapped because it has not been subject to previous biological study by qualified professionals. It is important, therefore, that all vacant parcels with potential to support sensitive plant or animal species be subject to a biological resource evaluation early in any project review process and prior to any ground disturbance, in order to determine if sensitive habitats or special status species or their habitats are present and require protection as mandated by the policies of the Coastal Act and this LCP.

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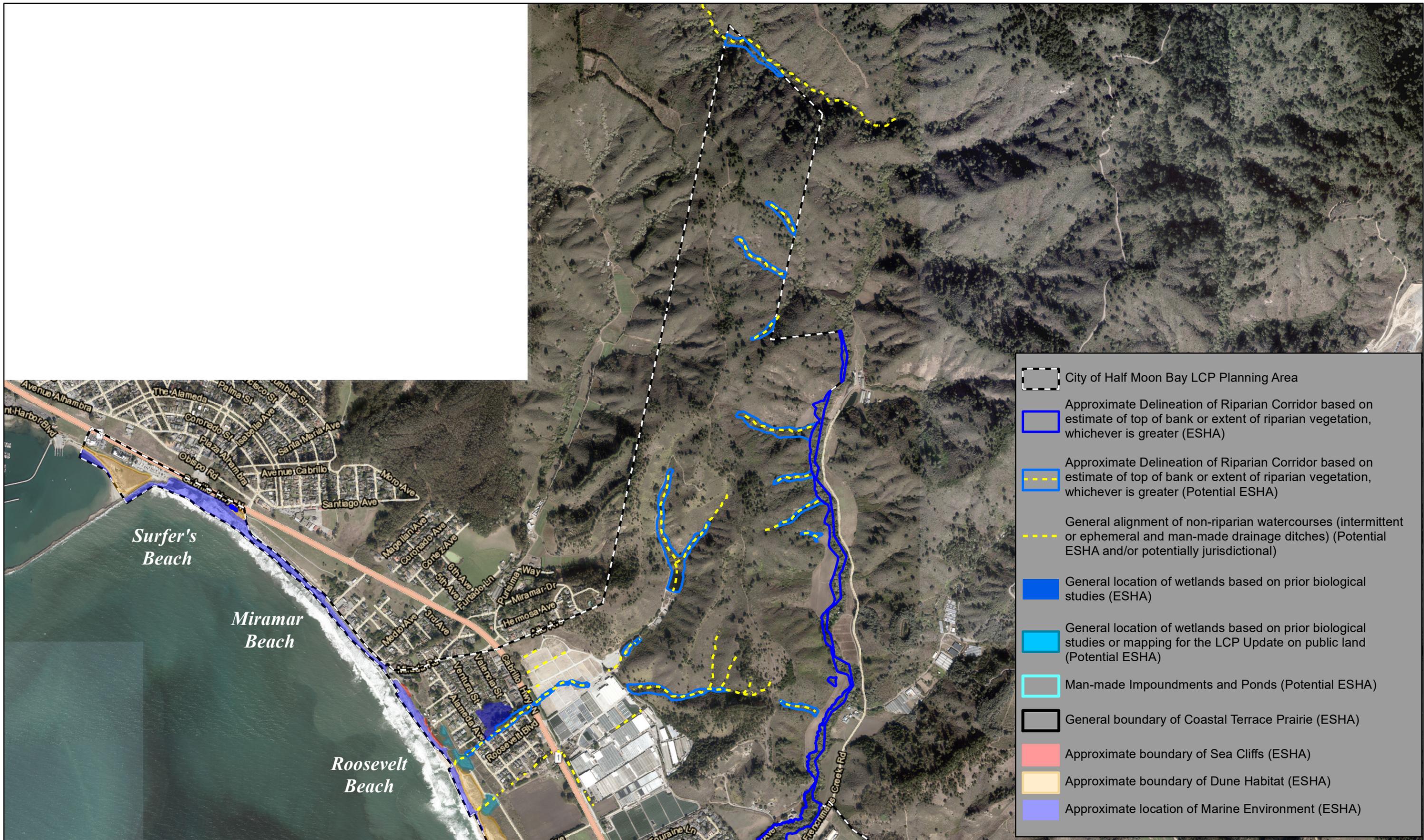


Figure 6-2: Environmentally Sensitive Habitat Areas (Habitat ESHAs), Sheet 1 of 3



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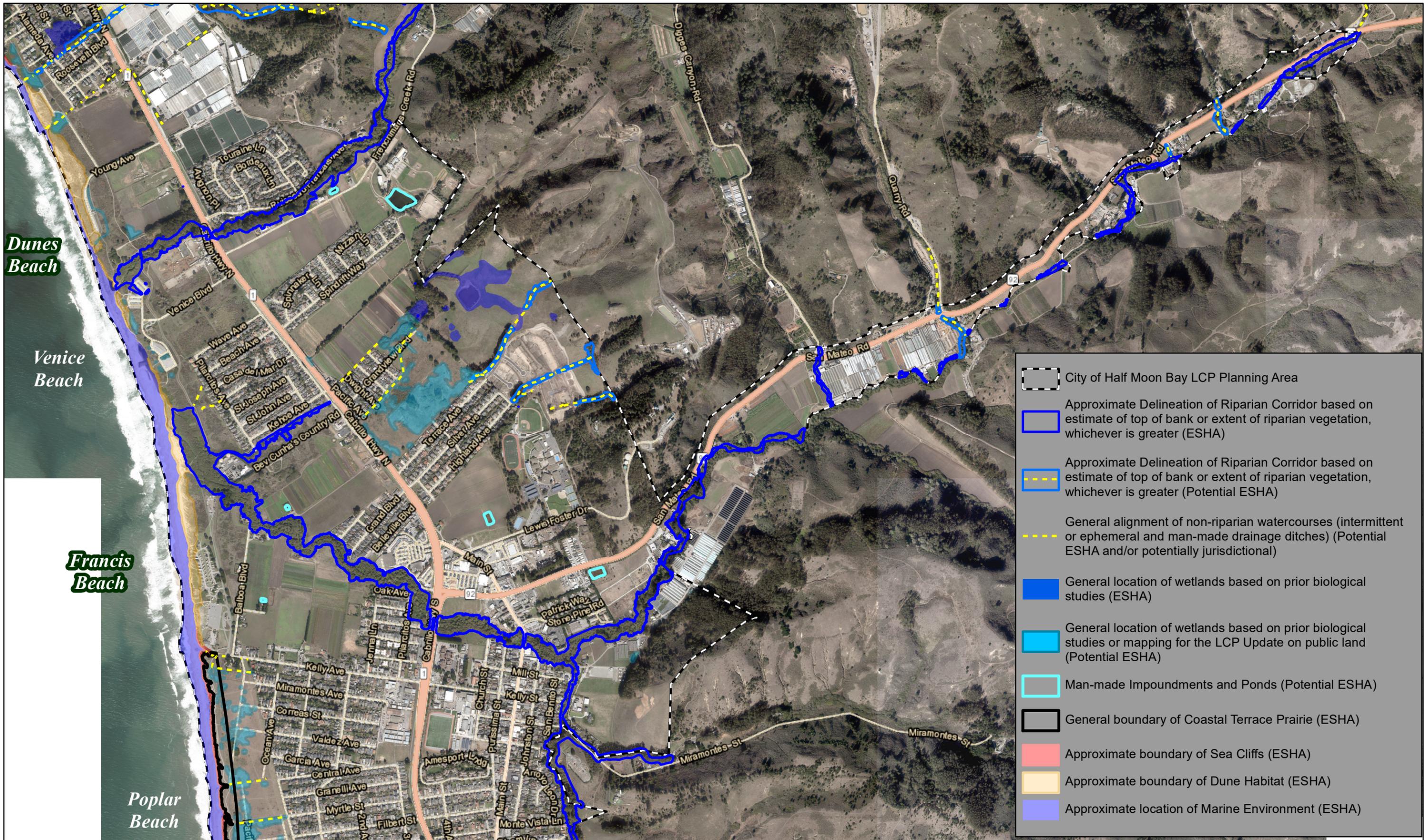


Figure 6-2: Environmentally Sensitive Habitat Areas (Habitat ESHAs), Sheet 2 of 3



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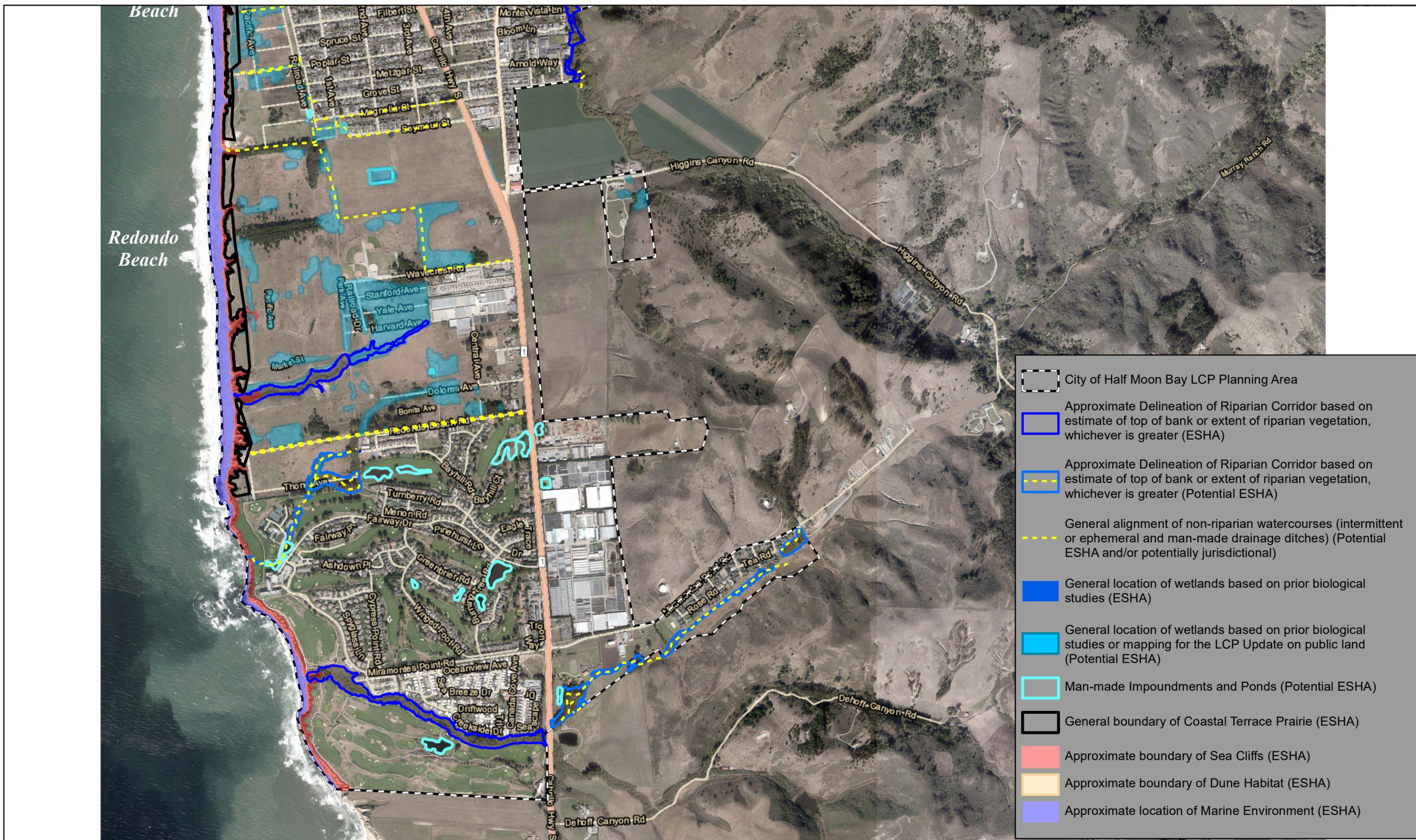
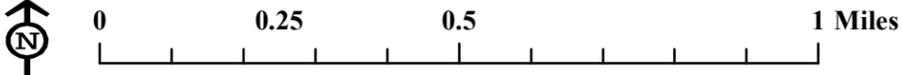
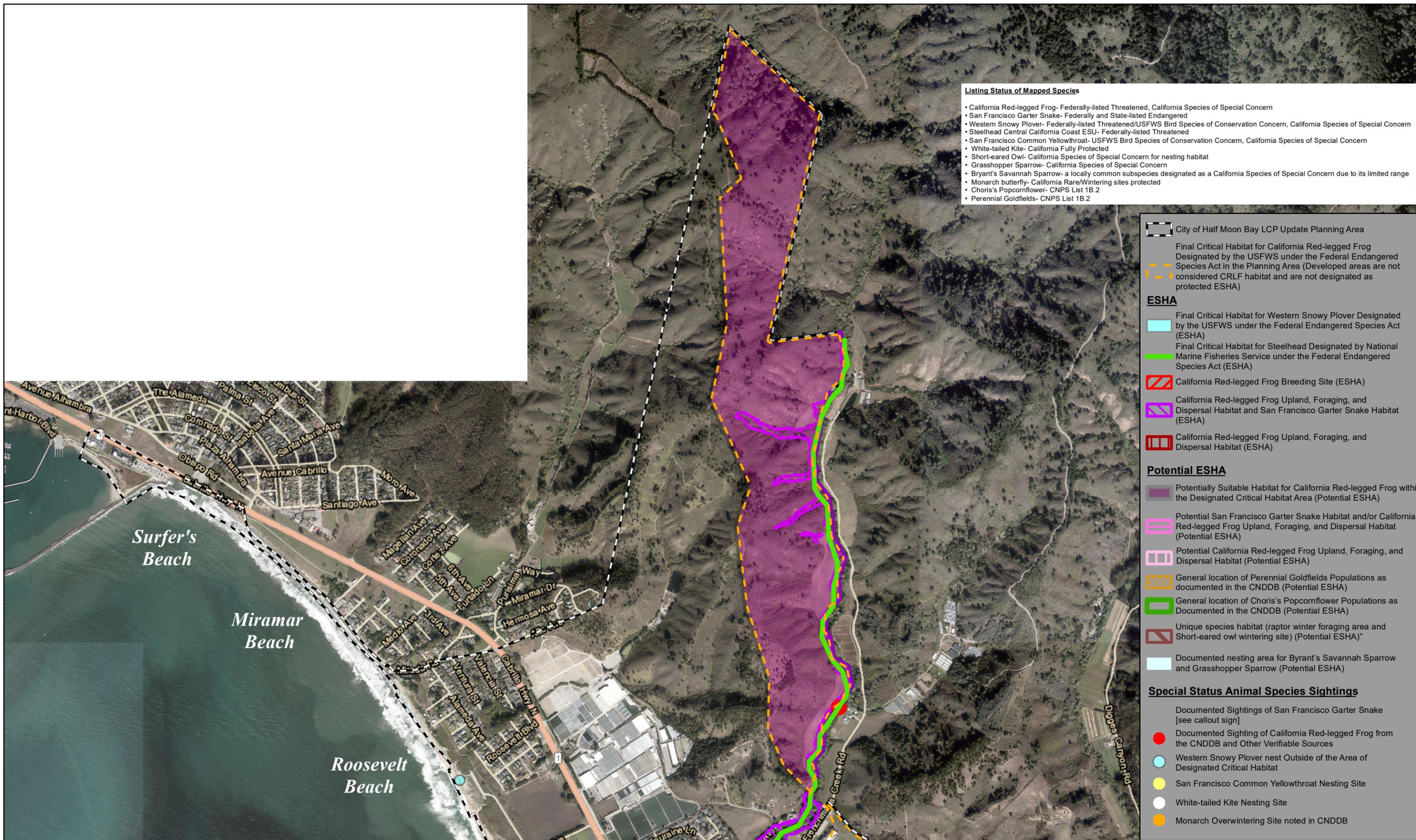


Figure 6-2: Environmentally Sensitive Habitat Areas (Habitat ESHAs), Sheet 3 of 3



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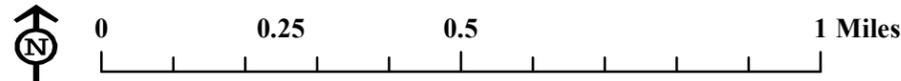
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- Listing Status of Mapped Species**
- California Red-legged Frog- Federally-listed Threatened, California Species of Special Concern
 - San Francisco Garter Snake- Federally and State-listed Endangered
 - Western Snowy Plover- Federally-listed Threatened/USFWS Bird Species of Conservation Concern, California Species of Special Concern
 - Steelhead Central California Coast ESU- Federally-listed Threatened
 - San Francisco Common Yellowthroat- USFWS Bird Species of Conservation Concern, California Species of Special Concern
 - White-tailed Kite- California Fully Protected
 - Short-eared Owl- California Species of Special Concern for nesting habitat
 - Grasshopper Sparrow- California Species of Special Concern
 - Bryant's Savannah Sparrow- a locally common subspecies designated as a California Species of Special Concern due to its limited range
 - Monarch butterfly- California Rare/Wintering sites protected
 - Choris's Popcornflower- CNPS List 1B.2
 - Perennial Goldfields- CNPS List 1B.2

- City of Half Moon Bay LCP Update Planning Area
 - Final Critical Habitat for California Red-legged Frog Designated by the USFWS under the Federal Endangered Species Act in the Planning Area (Developed areas are not considered CRLF habitat and are not designated as protected ESHA)
- ESHA**
- Final Critical Habitat for Western Snowy Plover Designated by the USFWS under the Federal Endangered Species Act (ESHA)
 - Final Critical Habitat for Steelhead Designated by National Marine Fisheries Service under the Federal Endangered Species Act (ESHA)
 - California Red-legged Frog Breeding Site (ESHA)
 - California Red-legged Frog Upland, Foraging, and Dispersal Habitat and San Francisco Garter Snake Habitat (ESHA)
 - California Red-legged Frog Upland, Foraging, and Dispersal Habitat (ESHA)
- Potential ESHA**
- Potentially Suitable Habitat for California Red-legged Frog within the Designated Critical Habitat Area (Potential ESHA)
 - Potential San Francisco Garter Snake Habitat and/or California Red-legged Frog Upland, Foraging, and Dispersal Habitat (Potential ESHA)
 - Potential California Red-legged Frog Upland, Foraging, and Dispersal Habitat (Potential ESHA)
 - General location of Perennial Goldfields Populations as documented in the CNDDb (Potential ESHA)
 - General location of Choris's Popcornflower Populations as Documented in the CNDDb (Potential ESHA)
 - Unique species habitat (raptor winter foraging area and Short-eared owl wintering site) (Potential ESHA)*
 - Documented nesting area for Bryant's Savannah Sparrow and Grasshopper Sparrow (Potential ESHA)
- Special Status Animal Species Sightings**
- Documented Sightings of San Francisco Garter Snake [see callout sign]
 - Documented Sighting of California Red-legged Frog from the CNDDb and Other Verifiable Sources
 - Western Snowy Plover nest Outside of the Area of Designated Critical Habitat
 - San Francisco Common Yellowthroat Nesting Site
 - White-tailed Kite Nesting Site
 - Monarch Overwintering Site noted in CNDDb

Figure 6-3: Environmentally Sensitive Habitat Areas (Special Status Species ESHAs), Sheet 1 of 3



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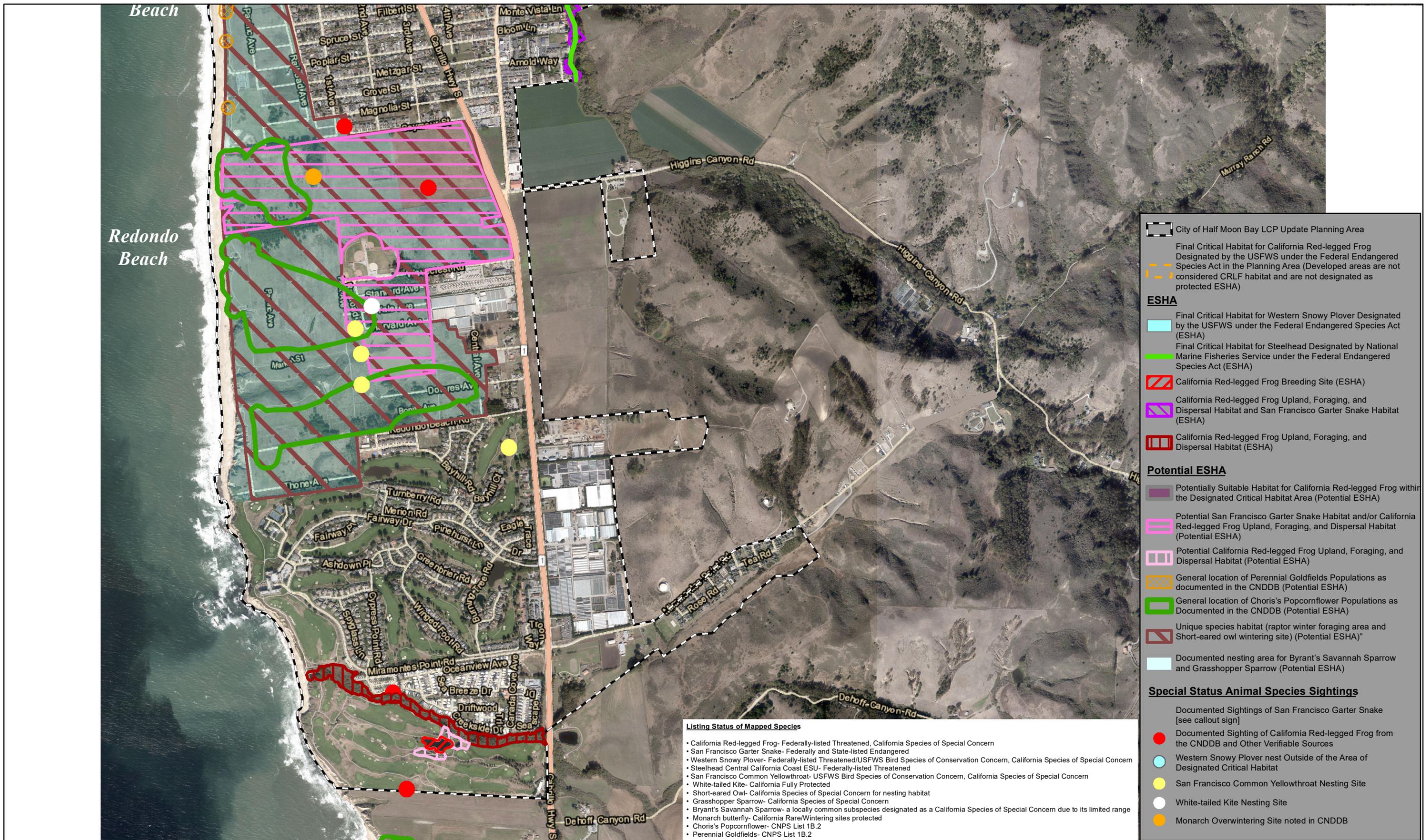
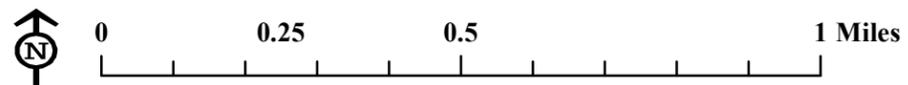


Figure 6-3: Environmentally Sensitive Habitat Areas (Special Status Species ESHAs), Sheet 3 of 3



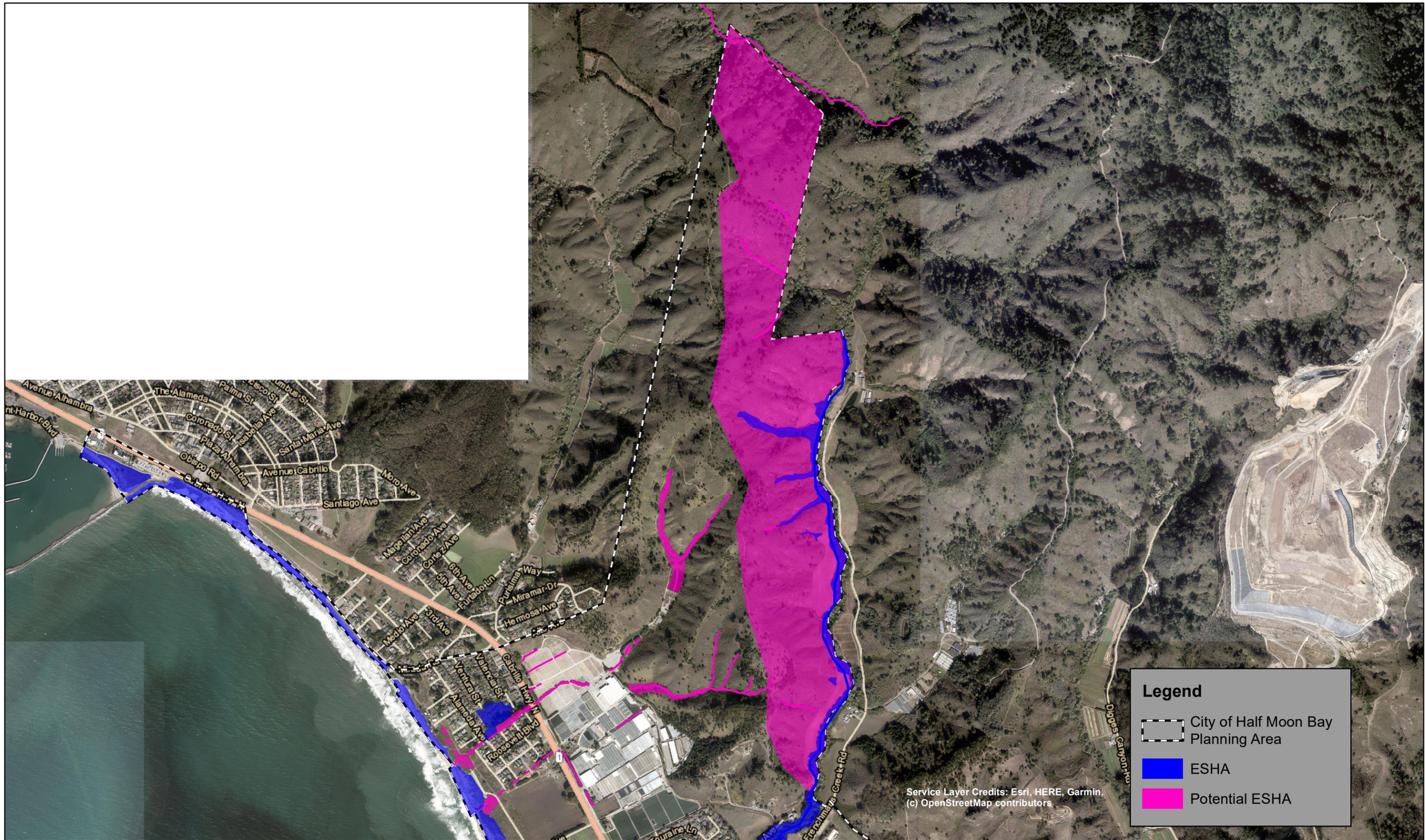


Figure 6-4: Summary of ESHAs and Potential ESHAs, Sheet 1 of 3

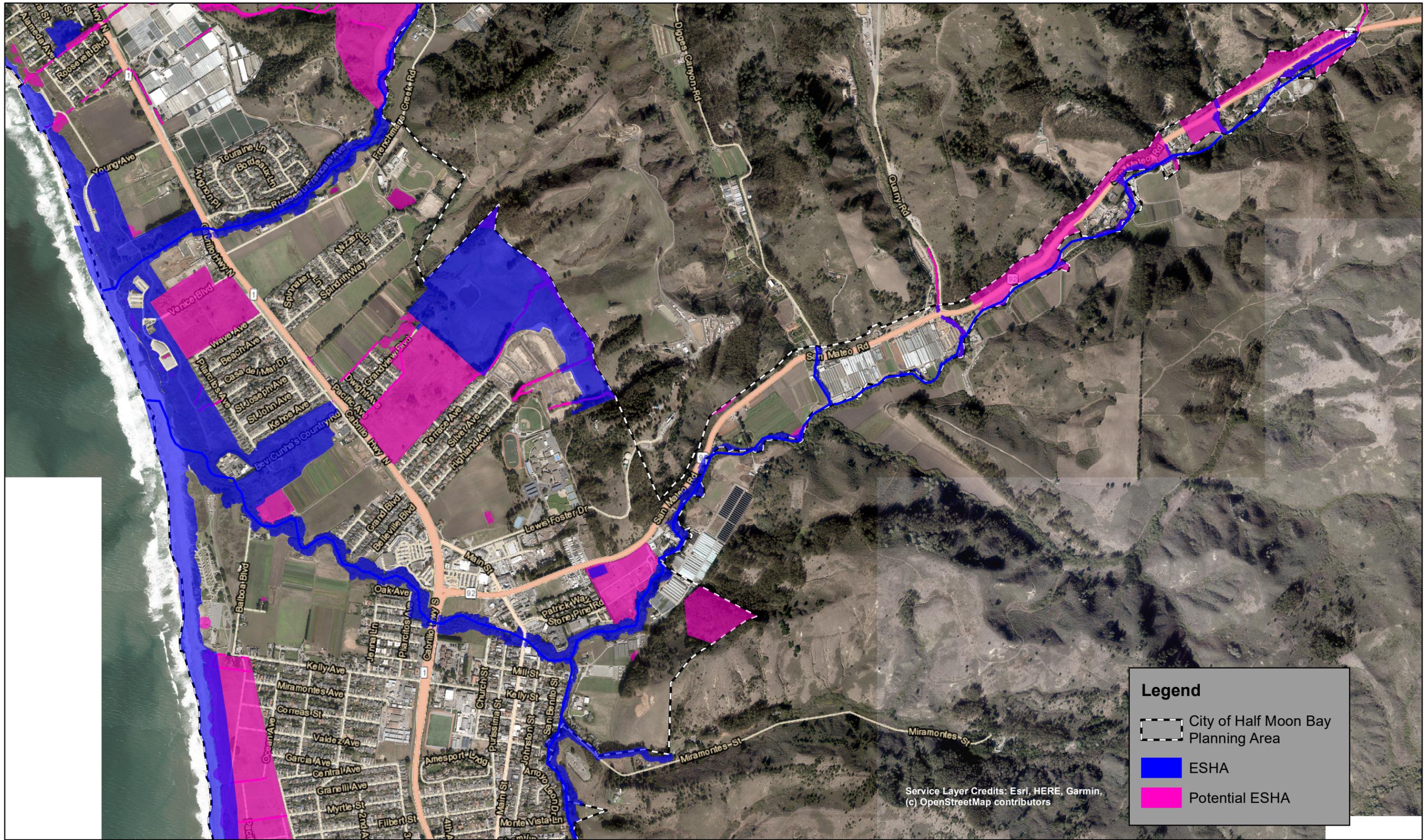
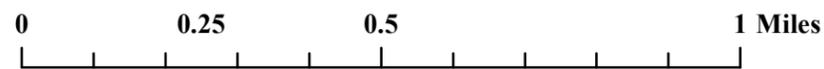


Figure 6-4: Summary of ESHAs and Potential ESHAs, Sheet 2 of 3



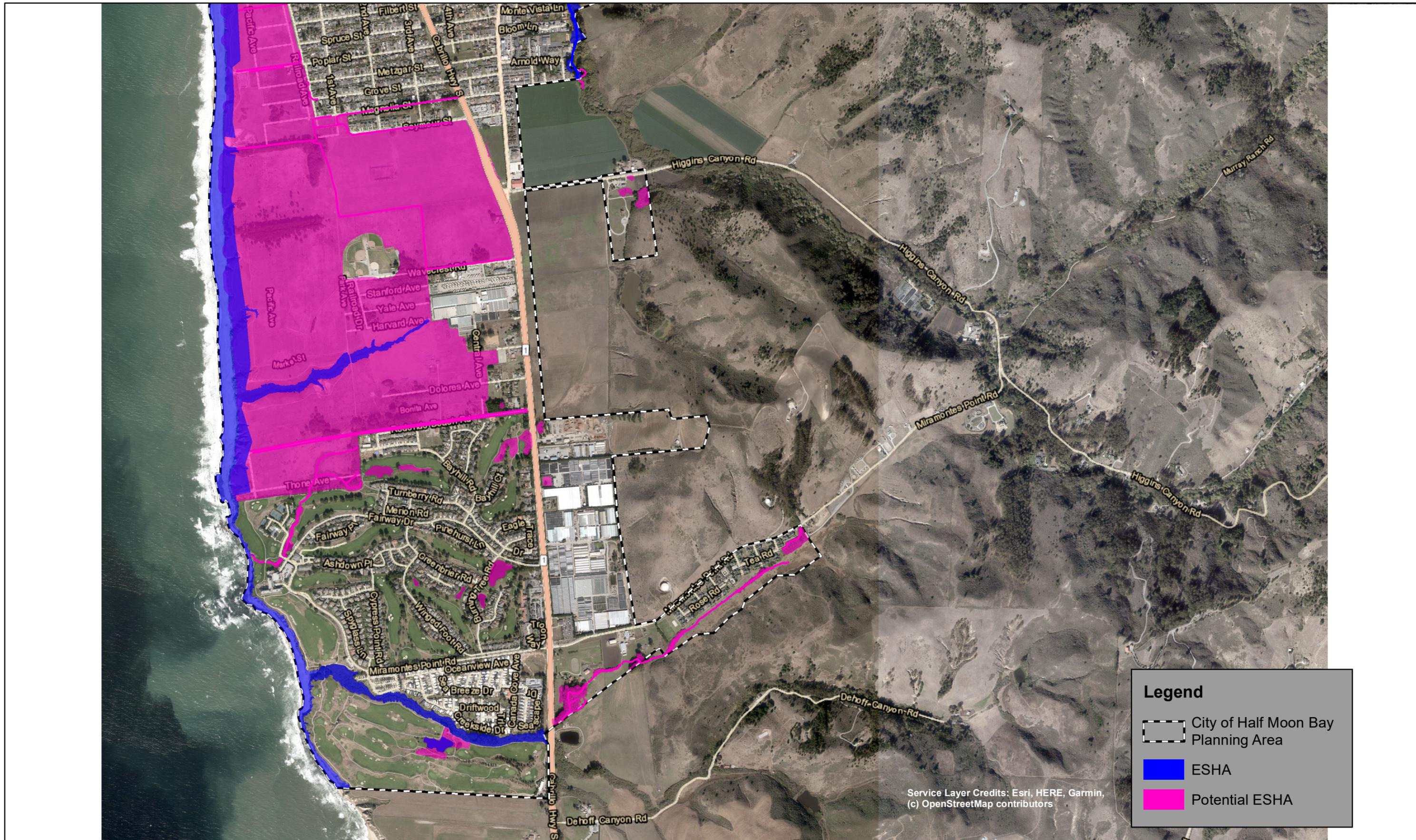


Figure 6-4: Summary of ESHAs and Potential ESHAs, Sheet 3 of 3

Terrestrial ESHAs

Terrestrial ESHAs play a significant role in supporting rare, endangered, and especially valuable species and habitat types. Areas that may qualify as terrestrial ESHA are described below.

Marine Environment. The marine environment is defined by the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al 1979) as follows: “The marine system consists of the open ocean overlying the continental shelf and its associated high energy coastline.” The marine environment thus includes areas of ocean, sandy beach and small estuaries at the mouths of major creeks. All areas that meet this definition of Marine Environment are considered ESHA.

Sea Cliffs. Sea cliffs are areas of steep slopes at the interface between the marine environment and land-based habitats including blufftop terraces. Sea cliffs are generally present along bluff/marine environment interface in areas where dune habitat is lacking, primarily south of Half Moon Bay State Beach. All areas that meet this definition of Sea Cliffs are considered ESHA.

Dunes. Dune habitat includes the Central Dune Scrub vegetative community and foredunes free of vegetation to the base of the slope. Dunes are the interface between the marine environment and land-based habitats generally present in areas where sea cliffs are lacking. All areas that meet this definition of Dunes are considered ESHA.

Coastal Terrace Prairie. Coastal Terrace Prairie is a combination of coastal grasslands, wetlands and scrub habitat containing a highly variable mixture of native perennial grasses and forbs (including perennial goldfields and Choris’s popcornflower), native and non-native annual forbs, and non-native grasses. This species-rich habitat generally occurs immediately adjacent to the top of the bluff in the vacant fields between Kelly Avenue to the north and Thone Avenue to the south. Coastal terrace prairie can generally be identified through plant surveys of representative sample sizes, preferably during late spring, as areas with at least 10 percent cover of native grasses and less than 25 percent cover of shrubs. Percent cover may vary due to seasonal and climatic changes, species composition, and restoration needs. All areas that meet this description of Coastal Terrace Prairie are considered ESHA.

Non-Aquatic Habitat for Special Status and Unique Species. Several different types of special status and unique species rely on non-aquatic habitat areas in Half Moon Bay, including those listed below. These non-aquatic habitat areas may qualify as terrestrial ESHA where they are considered rare or especially valuable for their role in an ecosystem as noted below.

- **Western Snowy Plover:** Nesting and breeding habitat for the Western snowy plover, generally including the sandy beach and dune area designated by the USFWS as Critical Habitat between Young Avenue and Kelly Avenue, are considered ESHA.
- **California red-legged frog (CRLF):** Upland foraging and dispersal habitat for CRLF are considered ESHA. Such areas may be within the areas designated by the USFWS as Critical Habitat (e.g. northeast portion of city jurisdiction), may be in proximity to

breeding sites (e.g. publicly owned lands near the sewer plant and Kehoe Watercourse), may provide a linkage between watercourses and breeding sites (e.g. undeveloped State Park lands between Pilarcitos Creek and Frenchmans Creek), or may be protected by deed restriction or conservation easement with the intent to preserve suitable upland CRLF habitat (e.g. Pacific Ridge Areas A and B).

- **San Francisco garter snake (SFGS):** Upland dispersal habitat is considered ESHA. Such areas may be in proximity to Pilarcitos Creek, may coincide with CRLF upland habitat areas, or may be protected by deed restriction or conservation easement with the intent to preserve suitable upland SFGS habitat (e.g. Pacific Ridge Areas A and B).
- **Special status plant species:** Populations of Choris's popcornflower and perennial goldfields, both special status plants on CNPS List 1B.2, are considered ESHA. The general locations of these rare plant populations include some areas of North Wavecrest and the area west of Railroad Avenue. Population sizes vary from year to year and would require more precise delineation to determine the extent of ESHA.
- **Unique species:** Foraging habitat for a diverse range of wintering raptor species is considered ESHA. Such areas generally include the coastal bluffs and open fields of the North Wavecrest area between Redondo Beach Road and Seymour Street and the area west of Railroad Avenue. The precise location and extent of this type of ESHA may consider availability of nearby comparable habitat, and ability for species to relocate.

Wetlands

Wetlands are considered valuable features, as they support diverse plant and animal species, including some found only in wetlands, and provide many functions such as protecting the quality of coastal waters by filtering or fixing contaminants; protecting the shoreline by acting as a buffer against waves and storms; detaining storm or flood waters; allowing for groundwater recharge; providing recreation areas; and contributing to an area's visual quality.³ In the Coastal Act, wetlands are referred to 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" (Section 30121). More specifically, the Coastal Commission's regulations in the California Code of Regulations §13577(b) provides the following definition of wetlands and criteria for identification:

"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

³ California Coastal Commission, 2011. Definition and Delineation of Wetlands in the Coastal Zone. California Coastal Commission October 5, 2011 Briefing Background Information Handout.

their location within, or adjacent to, vegetated wetlands or deep-water habitats.”

The Coastal Commission’s definition of wetlands is a single-parameter definition that requires evidence of only one of three wetland indicators (hydrophytic vegetation, hydric soils, or saturated substrate). In contrast, the US Army Corps of Engineers uses a three-parameter definition that requires evidence of all three wetland indicators in order to classify an area as wetland. As a result, more areas qualify as wetlands under the Coastal Act than under the federal Clean Water Act. The LCP is consistent with the Coastal Act, and therefore uses the single-parameter definition.

Areas that meet this definition generally include but are not limited to perennial and seasonal freshwater marsh and man-made impoundments and ponds as further described below. These areas may also qualify as ESHA where they are found to be rare or especially valuable for their role in an ecosystem, such as contributing to the viability of special status species, and could be easily disturbed or degraded by human activities and development. Such areas may include CRLF breeding sites (e.g. the Caltrans wetland mitigation site adjacent to Pilarcitos Creek and the man-made pond near the City’s corporation yard east of Stone Pine Center), or may be protected by deed restriction or conservation easement (e.g. the Guerrero wetlands in the Miramar neighborhood and the wetlands and man-made pond in Pacific Ridge Areas A and B). In any case, as the Coastal Act provides separate and additional requirements for wetlands, LUP policies provide separate and additional wetland protections independent of an ESHA determination. These more habitat-specific policies apply in review of development projects that involve wetlands.

Perennial and Seasonal Freshwater Marsh. Wetlands are generally present within the Coastal Freshwater Marsh habitat type in the Planning Area, which includes both perennial marsh and seasonal marsh (also referred to as “vernal marsh,” which include vernal pools). The general locations of these wetlands mapped in Figure 6-2 do not represent precise wetland boundaries; rather, they represent areas where wetlands have been or are known to occur. Wetlands are dynamic systems and boundaries may change over time; thus, the precise extent of wetlands must be determined based on site-specific biological resource evaluations and/or wetland delineations. Such evaluations must include the precise boundaries, a consideration of wetland functions and values both on and off-site, and the identification of any rare or endangered species for the purposes of the LUP protection policies.

Man-Made Impoundments and Ponds. Other water features found in the Planning Area and mapped in Figure 6-2 include man-made impoundments and ponds. These features are often constructed as part of previously permitted development and are actively used for irrigation or stormwater detention. However, there is potential for these features to support biological value. Similar to marsh wetlands, man-made impoundments and ponds require further study of precise boundaries, biological functions and values, and status as actively managed or abandoned. LUP policies allow for continued use, repair, and maintenance of both the previously permitted adjacent development, as well as active ponds themselves, so that they can continue to serve and be maintained for their intended function.

Watercourses

Watercourses play a significant role in supporting aquatic and non-aquatic species, providing riparian habitat, capturing stormwater runoff and filtering its contaminants, and transporting sediments. A watercourse is defined as “the course over which water currently flows or has flowed.” Areas that meet this definition include perennial, intermittent and ephemeral streams with or without riparian vegetation, as well as man-made drainage features redirecting flows from a traditional watercourse or redirecting stormwater runoff as further described below. These areas may also qualify as ESHA as further described below. In any case, as the Coastal Act provides separate and additional requirements for rivers and streams, LUP policies provide separate and additional watercourse protections independent of an ESHA determination. These more habitat-specific policies apply in review of development projects that involve watercourses.

Riparian Corridors. Riparian corridors are defined on the ground by an association of primarily native riparian plant and animal species within or adjacent to a watercourse. The boundary of a riparian corridor is defined by the limit of riparian vegetation or top of bank, or other confining topography, whichever is greater. The limit of riparian vegetation is determined by the drip line of canopy trees or the limit of riparian shrubs or herbaceous vegetation. This vegetation is generally interconnected by surface or subsurface flow within the watercourse. Within these boundaries, the intent of the LCP is to protect the ecosystem and any wildlife species it supports as whole, including the understory and emergent vegetation, the soil microbiology, and the water itself.

Riparian corridors are considered ESHA where they are found to be rare or especially valuable for their role in an ecosystem, such as contributing to the viability of special status species and could be easily disturbed or degraded by human activities and development. Such areas, with the accompanying rationale, include but may not be limited to:

- Pilarcitos Creek. Perennial stream, well-developed riparian canopy, Critical Habitat for Central California Coast steelhead, Critical Habitat for CRLF in eastern portion of the Planning Area (outside city limits), known occupied habitat for CRLF and SFGS, past nesting for San Francisco Common Yellowthroat.
- Frenchmans Creek. Perennial stream, well-developed riparian canopy, Critical Habitat for Central California Coast steelhead, Critical Habitat for CRLF in northeastern portion of the Planning Area, known occupied habitat for CRLF, past nesting for San Francisco Common Yellowthroat, has harbored monarch overwintering sites.
- Arroyo Leon. Perennial stream, well-developed riparian canopy, Critical Habitat for Central California Coast steelhead, suitable habitat for CRLF and possibly SFGS.
- Apanolio Creek. Perennial stream, well-developed riparian canopy, Critical Habitat for Central California Coast steelhead, suitable habitat for CRLF and possibly SFGS.
- Arroyo Cañada Verde (west of Highway 1). Perennial stream, well-developed riparian canopy, known occupied habitat for CRLF.
- Kehoe Watercourse. Intermittent stream, well-developed riparian canopy, known occupied habitat for CRLF, potential habitat for SFGS, past nesting for San Francisco Common Yellowthroat.

- Wavecrest Arroyo. Intermittent stream, well developed riparian canopy, suitable habitat for CRLF, past nesting for San Francisco Common Yellowthroat.

Other riparian habitats along intermittent and ephemeral watercourses with lesser known habitat value include Roosevelt Creek, a riparian corridor in the northwestern area of Ocean Colony, and Arroyo Cañada Verde east of Highway 1.

Non-Riparian Watercourses. Many non-riparian watercourses, including man-made drainage ditches, are found throughout the city. These features primarily capture and carry stormwater runoff and typically do not support sensitive habitat. Non-riparian watercourses may be considered ESHA where they are found to be rare or especially valuable for their role in an ecosystem, and may be potentially jurisdictional where there is a defined bed and bank or navigable waters. Many drainage features noted on Figure 6-2 are under a maintenance agreement with CDFW. Buffers from new structures should be provided to allow space for potential meander belts and to reduce risk of natural erosion or flooding hazards.

ESHA BUFFER ZONES

Buffer zones are areas which separate development from environmentally sensitive habitat areas and lessen the adverse impacts of human disturbance. Buffer zones are important in order to protect natural ecosystem functions of the respective habitat and organisms supported by the habitat. Buffer zones serve as transitional habitat and provide distance and physical barriers from human degradation and disturbance. Buffer zones adjacent to wetlands and riparian corridors, for instance, can be effective in lessening the adverse impacts of stormwater runoff such as soil erosion and filtering pollutants including suspended solids, nutrients, and toxic substances, and in moderating water level fluctuations. Buffer zones may also provide space for habitat to migrate or expand. Required buffer zone widths are dependent on many factors, including the habitat type and value, the proposed development, the existing development patterns, and site-specific biological resource evaluations. Minimum buffer zone requirements are established in LCP policies. Permitted uses within buffer zones are also established to ensure that the types of development permitted in these areas are consistent with the on-going biological productivity of the habitat area. As agricultural operations are historically sited adjacent to water sources for access to irrigation for crops and other agricultural purposes, allowances are made for agricultural uses in the applicable policies.

CONSERVATION & RESTORATION STRATEGIES

Half Moon Bay's biological resources face numerous threats from anthropogenic impacts such as urban development, habitat fragmentation and degradation, climate change and sea level rise. The policies contained in the Coastal Act and this LUP are intended to prevent and avoid such impacts by regulating land use and development and providing opportunities for habitat conservation and restoration.

Conservation and restoration can come in many forms and should always be tailored to specific site conditions. Conservation can be achieved through buffer areas, protective easements and deed restrictions, open space land use designations, and development

restrictions. Restoring habitat areas can have cross-cutting benefits such as increasing biological value, improving coastal water quality, sequestering greenhouse gases, reducing coastal hazard impacts such as flooding and erosion, providing new educational opportunities, and enhancing aesthetics and recreational experiences.

Lot Retirement and Permanent Conservation

As discussed in more detail in Chapter 2. Development, lot retirement and permanent land conservation is a priority in areas such as the North Wavecrest PD and West of Railroad PD where there is undeveloped land in scattered ownerships in ESHA and Potential ESHA. These methods can be very effective for providing additional protections to habitat by presenting opportunity for open space conservation easements, affording additional area for habitat buffers and corridors, preventing impacts from future development, and providing additional area for habitat restoration projects.

Mitigation

Mitigation is required under the Coastal Act for allowable impacts to habitat areas, and can also provide the chance for restoration. For permitted development projects within the Planning Area that will cause unavoidable impacts to habitat areas, on-site mitigation is preferred. There is also opportunity within the city for sites with known habitat value and/or open space conservation easements to act as mitigation banks for off-site development impacts. However, off-site mitigation cannot be used as a basis to approve impacts to ESHA.

Priority Conservation Areas

Priority Conservation Areas (PCAs) are another method for conserving natural resources in the city. The Association of Bay Area Governments (ABAG) established their PCA program in 2007 to identify areas that provide regionally significant natural, scenic, and recreational resources and are in need of protection. In city limits, the California Coastal Trail has been adopted as a PCA. Other areas with highly sensitive biological resources could be afforded additional protection if established as a PCA.

Areas of Conservation Concern

Identifying areas of particular conservation concern can be another effective tool for habitat conservation and restoration projects. Figure 6-4 helps to illustrate areas where a considerable amount of ESHA may occur. Specifically, the coastal bluffs and open fields of North Wavecrest and the area west of Railroad Avenue have a number of biological constraints occurring in the same general area. This contiguous region consists of similar habitat areas, and the two areas taken together can be considered an area of conservation concern.

Other areas of conservation concern may include portions of the Venice Beach PD, Beachwood, and the ESHA surrounding the SAM plant. These areas either contain or are contiguous with sensitive habitat areas with potential to support special status species. Any

development or restoration projects in these areas should consider the biological productivity of the site as a whole, as well as off-site benefits or impacts.

CLIMATE CHANGE & SEA LEVEL RISE

Climate-driven changes in precipitation and sea levels may lead to impacts to Half Moon Bay's sensitive habitat areas, including but not limited to accelerated stream bank and bluff erosion, upstream or inland flooding, seawater intrusion, and overall loss of habitat area. Such potential impacts should be factored into buffer zone requirements, permitted development within habitat areas and their buffer zones, and habitat restoration and creation projects in coordination with the best available science and highest projections of sea level rise and bluff erosion. Creation or preservation of habitat and wildlife corridors, expanded buffer zones to provide room for retreat, and restrictions on non-resource dependent development adjacent to sensitive habitat areas at risk of sea level rise impacts can help assure the continued viability of the City's natural resources. The LUP policies in this chapter address such strategies for protecting the City's sensitive habitat areas and waterways. Chapter 7. Environmental Hazards also addresses climate change and sea level rise impacts in greater detail.

Policies – Biological Resources

The LUP establishes a method for identifying and designating Environmentally Sensitive Habitat Areas (ESHAs) and provides policies to preserve and protect the resources in these areas as consistent with the Coastal Act. ESHAs are categorized into three types: terrestrial, wetlands, and watercourses. As detailed in the policies, only resource-dependent uses and development are permitted in terrestrial ESHA and in areas adjacent to terrestrial ESHA, and such uses must follow performance standards and development restrictions intended to protect the area's environmental quality. As wetlands and watercourses have significantly different biological functions and protections under the Coastal Act, LUP policies address these habitat types distinctly from terrestrial ESHA and include different requirements for permitted uses, performance standards, and buffer requirements as consistent with the Coastal Act and Coastal Commission guidance. Any such allowable development in or adjacent to terrestrial ESHA, wetlands, or watercourses would require detailed biological study to identify resources, confirm buffer zones, and address mitigation, monitoring, and reporting for potential impacts.

For this LUP the ESHA maps are Figures 6-2 and 6-3, which are summarized by Figure 6-4. The ESHA maps are illustrative and for information purposes only; the determination of the presence and precise extent of ESHA and its required buffer zone shall be made via a site-specific biological study as part of proposed development review.

Areas designated as ESHA and adjacent to ESHA after site-specific review are subject to LUP requirements for buffering, mitigation, and development standards intended to protect the ESHA from development impacts such as runoff, sedimentation, erosion, and other disturbances, as well as from sea level rise impacts that may threaten some coastal habitats.

The LUP also includes policies specific to certain types of ESHA and establishes requirements and strategies for conservation, mitigation, and restoration.

Policies - ESHA Designation and Mapping

6-1. ESHA Definition. An Environmentally Sensitive Habitat Area (ESHA) is 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, including the following:

- a. Any habitat area that is rare or especially valuable from a local, regional, or statewide basis.
- b. Areas that contribute to the viability of plant or animal species designated as rare, threatened, or endangered under State or Federal law.
- c. Areas that contribute to the viability of species designated as Fully Protected or Species of Special Concern under State law or regulations.
- d. Areas that contribute to the viability of plant species for which there is compelling evidence of rarity, for example, those designated 1b (Rare or endangered in California and elsewhere) or 2 (rare, threatened or endangered in California but more common elsewhere) by the California Native Plant Society.

In Half Moon Bay, these areas include, but are not limited to terrestrial ESHAs (marine environment, sea cliffs, dunes, coastal terrace prairie, and non-aquatic habitat for special status or unique species), wetlands, and watercourses.

6-2. ESHA Policy Applicability. The ESHA policies of this chapter apply to all categories of ESHA, except where modified by the more habitat-specific policies of the LCP (i.e. Policies 6-19 through 6-21 for the marine environment; Policies 6-22 and 6-23 for sea cliffs; Policies 6-24 through 6-28 for dunes; Policies 6-29 through 6-31 for coastal terrace prairie; Policies 6-32 through 6-35 for non-aquatic habitat for special status or unique species; Policies 6-36 through 6-45 for wetlands, and Policies 6-46 through 6-55 for watercourses).

6-3. ESHA Mapping. Review and update the ESHA maps to incorporate significant new information from completed biological studies. Areas meeting the criteria in Policy 6-1 shall be designated as ESHA on the ESHA habitat map (Figure 6-2), the ESHA special status species map (Figure 6-3), and a summary map (Figure 6-4).

The ESHA maps are not intended to be a static resource, as the resources on the ground are the determining factor. Revisions to the ESHA maps shall be treated as LCP amendments and shall be submitted for certification by the Coastal Commission as warranted by significant changes. Areas qualifying for ESHA designation shall be afforded ESHA protections upon determination, rather than upon map amendment certification.

6-4. Unmapped ESHA. Recognize that the ESHA maps are not an exhaustive compilation of all habitat areas within the Planning Area that meet the definition of ESHA. Any

area not designated on the ESHA maps that meets the ESHA criteria stated in Policy 6-1 is ESHA and shall be accorded all the protection provided for ESHA in the LCP.

- 6-5. Protection of Illegally Degraded ESHA.** Any area mapped as ESHA or otherwise determined to have previously been ESHA shall not be deprived of the LCP's ESHA protections on the basis that, illegally and/or without a permit, habitat has been removed, filled, or degraded, or species that are rare or especially valuable because of their nature or role in an ecosystem have been eliminated.
- 6-6. Reporting Biological Sightings.** Require the reporting and verification of any special status species sightings in the Planning Area identified in biological inventories or studies submitted to the City with the California Natural Diversity Database and with a qualified biologist.

Policies - Biological Evaluations

- 6-7. Preliminary Biological Inventory.** Require that proposals for development within or adjacent to areas with potential to support or contain sensitive plant or animal species, including mapped Potential ESHA and unmapped areas where determined necessary, include a preliminary inventory conducted by a qualified biologist of habitat types and plant and animal species present and likely to be present (e.g. seasonally) on the project site for the development review process. If the preliminary inventory indicates the presence or potential for sensitive species or habitat on the project site, a detailed biological study shall be required pursuant to Policy 6-8.
- 6-8. Biological Study.** For development proposed in and adjacent to ESHA and projects for which the preliminary biological inventory indicates the presence or potential for sensitive species or habitat, require the preparation of a detailed biological study by a City-approved, qualified professional to be submitted prior to development review and prior to any ground disturbance. The report shall assess site conditions typically within 200 feet of the proposed development; identify if site conditions meet the LCP's definition of ESHA; determine if significant direct or cumulative impacts to the ESHA, to the special status species supported by the ESHA, or to on- or off-site biological productivity and ecosystem functionality may occur from the proposed development; and recommend the most feasible avoidance and/or mitigation measures if impacts may occur. At minimum, the study shall also provide and discuss the following if ESHA is present and if applicable to site conditions:
- a. For animals and avian species: Requirements for food, water, nesting or denning sites and requirements for reproduction, predation, dispersal, refugia, and migration;
 - b. For plants: Life histories, and requirements for soils, climate, and geography;
 - c. A map depicting the locations of plants or animals and/or their habitats;
 - d. Recorded observations of special status species from reputable databases such as the California Natural Diversity Database;
 - e. Site topography, drainage patterns, soil permeability, and depth to water table;

- f. Unique site conditions, such as vegetation, natural topography, or built features (e.g. roads, structures) that provide a physical barrier between the proposed development and the ESHA;
- g. The likelihood of increased human activity and disturbance resulting from the project relative to existing development;
- h. An evaluation by a qualified professional of the ESHA's vulnerability to sea level rise impacts (e.g. sensitivity to inundation and seawater intrusion) and ability for adaptation (e.g. inland migration) for projects located within 300 feet of the beach or bluff edge, or where otherwise appropriate based on based available science for inundation projections;
- i. A recommendation of the need to conduct a wetland delineation if site conditions indicate the presence or potential for wetland species or indicators;
- j. Recommended avoidance and/or mitigation measures if the proposed development has potential to impact any on- or off-site sensitive habitat areas or special status species during or post-construction; and
- k. Recommended buffer widths based on the applicable buffer policies in this chapter, site-specific conditions, and sensitivity and resilience of the ESHA to disturbance from the proposed development and from anticipated sea level rise impacts, where applicable. Where a reduced buffer zone is proposed, a recommendation of whether the reduced buffer zone would provide equivalent protection of the biological integrity of the site's sensitive habitats and special status species given the site-specific characteristics of the resource(s) and of the type and intensity of proposed development.

Studies shall be made public and subject to review and comments by jurisdictional agencies and the public concurrently.

- 6-9. Citywide Inventory.** Establish a comprehensive archive of biological studies, biological mapping, and other relevant biological information for sites throughout the city to support biological resource protection and to inform future ESHA map amendments.

Policies – General ESHA Protection

- 6-10. Protection and Enhancement of ESHA.** Protect and, where possible, enhance or restore environmentally sensitive habitat areas (ESHAs).
- 6-11. Continued Viability.** Provide for the continued viability of coastal habitats by planning for inland migration and replacement as habitats are lost to sea level rise.
- 6-12. Development Alternatives.** Development shall be sited and designed to avoid impacts to terrestrial ESHA, wetlands, and watercourses. If there is no feasible alternative (e.g. with respect to siting, size, or design) that can eliminate all impacts, the City shall consider whether there are any alternatives to the proposed development that achieve most of the same goals but would have fewer and less significant impacts. If such an alternative exists, the City shall either deny the

proposed development or approve the alternative. Impacts that cannot be avoided shall be fully mitigated.

- 6-13. Pre-Existing Development and ESHA.** Where an area within or adjacent to any pre-existing permitted development or land use is confirmed to meet the definition of ESHA, the pre-existing use may continue provided that the use has not lapsed for more than one year at any point in time and that any changes to the site that constitute new development are sited and designed to avoid new impacts to ESHA and to avoid any increases to existing non-conformities. Implementation of best management practices and avoidance measures is encouraged for qualifying continuing uses.
- 6-14. Resource Management Agencies.** Uses and activities permitted in ESHA may be subject to review and approval by the U.S. Army Corps of Engineers, San Francisco Bay Regional Water Quality Control Board, California Coastal Commission, California Department of Fish and Wildlife, U. S. Fish and Wildlife Service, National Marine Fisheries Service, and other resource management agencies, as applicable. Compliance with any applicable state or federal regulations is required.
- 6-15. Wildlife Corridors.** Preserve, protect, and enhance wildlife corridors, including watercourses, connecting ESHA and open space areas to allow for seasonal migration as well as daily movements for foraging and dispersal.

Policies - Terrestrial ESHA

- 6-16. Permitted Uses in Terrestrial ESHA and Terrestrial ESHA Buffers.** Terrestrial ESHAs (including the marine environment, sea cliffs, dunes, coastal terrace prairie, and non-aquatic habitat for special status or unique species) shall be protected against significant disruption of habitat values. Only uses dependent on the resources within these areas and their buffer zones (i.e. habitat management and restoration, scientific research and educational activities, and low-intensity public access and recreation) shall be allowed there. Development in areas adjacent to terrestrial ESHAs shall be sited and designed to prevent impacts that would significantly degrade the habitat or recreation value of those areas, and shall be compatible with the continuance of those habitat areas. Temporary disruption (e.g. less than six months) for the construction, alteration, repair, and maintenance of existing or newly permitted facilities or structures is allowed if there are no feasible alternatives and the disruption is repaired and restored to at least an equivalent condition within one year.
- 6-17. Terrestrial ESHA Buffer Zones.** Require buffer zones (i.e., areas between terrestrial ESHA and proposed development) of sufficient size to ensure the biological integrity and preservation of the habitat they are designed to protect. Maintain buffers with native vegetation to serve as transitional habitat and provide distance and physical barriers to human intrusion. Terrestrial ESHA (including the marine environment, sea cliffs, dunes, coastal terrace prairie, and non-aquatic habitat for special status or unique species) shall have a minimum buffer width of 100 feet from proposed development. Larger buffers may be required if site-specific evidence indicates that a larger buffer is necessary to maintain biological integrity and to protect the ESHA against impacts of proposed development. Terrestrial ESHA buffers may be reduced

only where the following can be demonstrated through evidence provided by site-specific evaluation pursuant to Policy 6-8, and only as specified below:

- a. Where the only building site is located entirely within the required buffer; no alternative development site, size, or design is feasible; and the proposed development is compatible with the continued viability of the adjacent ESHA: the buffer may be reduced to no less than 20 feet provided that design alternatives that maximize the buffer width are utilized; or
- b. Where the only building site is not located entirely within the required buffer; no alternative building site, size, or design is feasible to accommodate the development entirely outside of the required buffer; no new adverse impacts to the ESHA will occur; and the reduced buffer would provide equivalent protection of the biological integrity of the ESHA given the site-specific characteristics of the resource and of the type and intensity of disturbance, as conclusively demonstrated by a qualified biologist to the satisfaction of the City and all jurisdictional regulatory agencies: the buffer may be reduced to no less than 50 feet.

6-18. Standards in Terrestrial ESHA and Terrestrial ESHA Buffers. Site and design new development permitted in or adjacent to terrestrial ESHA to avoid adverse impacts to ESHA. Methods for avoiding impacts include, but are not limited to utilizing raised boardwalks, installing informative signage and exclusion fencing, and implementing construction best management practices.

Policies - Marine Environment

(Note: Areas in the marine environment may be located below the mean high tide line and subject to Coastal Commission permitting jurisdiction. In such case, the policies below are intended for guidance.)

6-19. Permitted Uses in Marine Environment. The following uses may be permitted in the marine environment:

- a. Resource-dependent uses permitted by Policy 6-16;
- b. Restoration projects, including sand nourishment;
- c. Public beach accessways;
- d. Temporary lifeguard towers/stations;
- e. Coastal dependent recreation activities; and
- f. Shoreline protective devices as permitted by the policies contained in Chapter 7. Environmental Hazards.

6-20. Standards in the Marine Environment. Require any development or structure permitted within the marine environment to adhere to the following standards:

- a. Comply with the terrestrial ESHA standards required by Policy 6-18;
- b. Minimize impacts on coastal access and recreation;
- c. Avoid Western snowy plover nesting and breeding habitat area;

- d. Design so as not to involve any permanent structures and be the minimum size necessary; and
- e. Provide any necessary mitigation.

6-21. Nearshore Habitats. Preserve and, where appropriate and feasible, enhance nearshore shallow fish habitats and shore fishing areas.

Policies - Sea Cliffs/Bluffs

6-22. Permitted Uses in Sea Cliff/Bluff Areas. The following uses may be permitted in sea cliff/bluff habitat areas where nesting and roosting do not exist:

- a. Resource-dependent uses permitted by Policy 6-16;
- b. Public beach accessways;
- c. Shoreline protective devices as permitted by the policies contained in Chapter 7. Environmental Hazards;
- d. Temporary disruption for underground utilities where no feasible alternative exists and where ESHA is fully restored and impacts are mitigated; and
- e. Public intake or outfall lines provided that they would not disturb or degrade adjacent habitat areas and are designed or redeveloped to not need any shoreline protection.

6-23. Standards in Sea Cliff/Bluff Areas. Require development permitted in sea cliff/bluff areas to adhere to the following standards:

- a. Comply with the terrestrial ESHA standards required by Policy 6-18;
- b. Restrict pedestrian traffic to a limited number of well-defined trails to discourage human-caused erosion and avoid seabird nesting and roosting sites;
- c. Avoid removal of stabilizing native vegetation, including *Dudleya* succulents;
- d. Avoid contribution to erosion and instability of the bluff face and improve instability where feasible, such as with revegetation of disturbed areas;
- e. Direct sheet flow from trails away from bluff edges to distribute and percolate inland; and
- f. Post signs informing recreational users not to disturb natural vegetation or nesting and roosting sites.

Policies - Sand Dunes

6-24. Permitted Uses in Dune Habitats. The following uses may be permitted in dune areas:

- a. Resource-dependent uses permitted by Policy 6-16; and
- b. Temporary disruption for underground utilities where no feasible alternative exists and where ESHA is fully restored and impacts are mitigated.

- 6-25. Prohibited Activities in Dune Habitats.** Prohibit any activity which alters the profile of a dune, which results in the disturbance or removal of dune vegetation, or which involves any direct removal or excavation of sand from dunes.
- 6-26. Access in Dune Habitats.** Ensure that access to or across coastal dune habitats does not result in damage or degradation to the habitat by directing pedestrian traffic to well-defined formal pathways and controlling pedestrian access to sensitive areas, posting signs informing recreational users not to disturb the dunes or their natural vegetation, and prohibiting all non-authorized motor vehicles.
- 6-27. Nesting and Roosting Sites.** Protect nesting and roosting areas in sand dune habitats for sensitive birds such as Western snowy plovers by means which may include, but are not limited to, fencing, signage, or seasonal access restrictions.
- 6-28. Standards in Dune Habitats.** Require development permitted in coastal dune habitats to adhere to the following standards:
- Comply with the terrestrial ESHA standards required by Policy 6-18;
 - Revegetate disturbed areas with appropriate stabilizing native species as a condition of permit approval, and
 - Locate development landward of the most seaward stabilized dune.

Policies - Coastal Terrace Prairie

- 6-29. Permitted Uses in Coastal Terrace Prairie.** Permit only the resource-dependent uses permitted by Policy 6-16 in coastal terrace prairie habitat areas.
- 6-30. Standards in Coastal Terrace Prairie.** Require development permitted in coastal terrace prairie habitats to adhere to the following standards:
- Comply with the terrestrial ESHA standards required by Policy 6-18;
 - Site and design development to minimize impacts to and allow landward expansion of the coastal prairie habitat;
 - Protect habitat for special status and unique species (e.g. nesting and roosting areas) by means which may include but are not limited to fencing, signage, or seasonal access restrictions; and
 - Restore and revegetate on-site or adjacent coastal terrace prairie habitat with an optimized plant species composition to mitigate for any development impacts.
- 6-31. Coastal Terrace Prairie Management and Restoration.** Where management plans and restoration projects are proposed for areas containing coastal terrace prairie, require analysis and implementation of methods to improve the coastal prairie habitat system for special status and unique species and to account for migration due to rising sea level or erosion.

Policies - Non-Aquatic Habitat for Special Status and Unique Species

- 6-32. Special Status Species.** Define special status species as species that are listed or are proposed for listing as rare, threatened, endangered, or of special concern by the federal and/or state government. Maintain a list of special status species with

potential to be found in the Planning Area and develop guidelines for their protection and management. In the event that a special status species with potential to occur in the Planning Area is delisted, consider designation of the species as a unique species.

- 6-33. Unique Species.** Define unique species as an organism or group of organisms that has scientific or historic value, few indigenous habitats, some characteristic(s) that draw attention or are locally uncommon, or that are common only locally or are of limited range. Locally designate unique species and create guidelines for the protection and management of unique species.

Unique species identified in the LCP include winter raptor populations on the Half Moon Bay bluffs. Guidelines for the protection and management of unique species may include specifications for buffers, habitat mitigation ratios, and others.

- 6-34. Permitted Uses in Non-Aquatic Habitat for Special Status and Unique Species.** Where a non-aquatic habitat area may support special status or unique species, determine if the habitat is considered ESHA based on site-specific information provided by the biological study required by Policy 6-8. Where an ESHA determination is made, permitted uses shall be limited to the resource-dependent uses allowed in terrestrial ESHA in Policy 6-16.
- 6-35. Standards in Non-Aquatic Habitat for Special Status and Unique Species.** Regardless of an ESHA determination, require proposed development to avoid impacts to special status and unique species through methods such as pre-construction surveys, construction and/or tree removal timing restrictions, and exclusionary fencing.

Policies - Wetlands

- 6-36. Wetlands Definition.** Wetlands shall be defined according to the single-parameter definition in Section 30121 of the Coastal Act and Section 13577(b) of the Coastal Commission's Regulations. Wetlands shall include 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. Wetlands may also include land 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.
- 6-37. Wetland Delineation.** Require a survey, data forms, and analysis with the delineation of all wetland areas when a preliminary biological inventory or biological study indicates the presence or potential for wetland species or indicators. Wetland delineations should typically be conducted during the rainy season and must be conducted in accordance with Policy 6-36. Wetlands Definition, the definitions of wetland boundaries contained in section 13577(b) of the California Code of Regulations, and applicable guidance from the California Coastal Commission.
- 6-38. Wetland Condition.** The condition of a wetland does not affect its regulatory status as a defined wetland pursuant to the Coastal Act. Thus, poorly functioning or

degraded areas that meet the definition of wetlands are subject to the LCP's wetland protection policies, including if illegally removed per Policy 6-5.

- 6-39. Wetland Protection.** Protect and, where feasible, restore the biological productivity and the quality of wetlands for both on- and off-site benefits.
- 6-40. Permitted Uses in Wetlands.** Permit the diking, filling, or dredging of wetlands only where there is no feasible, less environmentally damaging alternative and where feasible mitigation measures will be implemented to minimize adverse environmental effects, and only for the following uses:
- a. Education and research activities;
 - b. Public trails;
 - c. Habitat restoration and fish and wildlife management activities; and
 - d. Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers, maintenance of existing intake and outfall lines, and emergency repairs.

Other uses specified in Section 30233 of the Coastal Act may only be allowed pursuant to an LCP amendment.

- 6-41. Wetland Buffer Zones.** Wetland buffer zones for proposed development shall extend a minimum of 100 feet landward from the edge of the delineated wetland. A larger buffer may be required based on site-specific evidence that a larger buffer is necessary to protect the functional capacity of the wetland ecosystem or to protect any sensitive species from the impacts of proposed development. A wetland buffer may be reduced to less than 100 feet only where the following can be demonstrated through evidence provided by site-specific evaluation pursuant to Policy 6-8, and only as specified below:
- a. Where the only building site is located entirely within the required buffer; no alternative development site, size, or design is feasible; and the proposed development is compatible with the continued viability of the adjacent wetland, including protection of any sensitive species: the buffer may be reduced to no less than 20 feet provided that design alternatives that maximize the buffer width are utilized; or
 - b. Where the only building site is not located entirely within the required buffer; no alternative development site, size, or design is feasible to accommodate the development entirely outside the required buffer; no new adverse impacts to the wetland will occur; and the reduced buffer would provide equivalent protection of wetland resources, as conclusively demonstrated by a professional biologist to the satisfaction of the City and all jurisdictional regulatory agencies: the buffer may be reduced to no less than 50 feet.
- 6-42. Permitted Uses within Wetland Buffer Zones.** Within wetland buffer zones, permit only the following uses:
- a. Uses allowed within wetlands pursuant to Policy 6-40;
 - b. Public scenic overlooks;

- c. Existing agricultural uses;
 - d. New agricultural uses, provided that they prevent impacts on the adjacent wetlands and protect the function of the buffer;
 - e. Temporary disruption (e.g. less than six months) for the construction, alteration, repair and maintenance of existing or newly permitted facilities or structures if there are no feasible alternatives and the disruption is repaired and restored to at least an equivalent condition; and
 - f. Native landscaping.
- 6-43. Standards in Wetlands and Wetland Buffer Zones.** Require that development permitted in wetlands and wetland buffer zones minimizes adverse impacts during and after construction. Specifically, require that:
- a. All construction which alters wetland vegetation is required to replace the vegetation including “no action” in order to allow for natural reestablishment and pursuant to applicable mitigation requirements;
 - b. All construction takes place during daylight hours;
 - c. All paths are elevated (e.g. boardwalks) so as not to impede movement of water, not to compact soil, and otherwise not to disturb wetland plants and animals;
 - d. All outdoor lighting is prohibited within wetlands, minimized in the wetland buffer zone, and down-cast and directed away from any wetland so as to not affect wildlife;
 - e. Noise from motorized machinery is kept to less than 45-dBA at the wetland boundary, except for farm machinery;
 - f. No herbicides are used in wetlands and wetland buffer zones unless there are no feasible alternatives and as specifically approved by the County Agricultural Commissioner and all jurisdictional regulatory agencies; and
 - g. Any permit for development includes necessary mitigation, monitoring, reporting and maintenance programs.
- 6-44. Sediment Restoration.** Require that any restoration projects facilitate the delivery of clean, dredged sediment for areas where existing wetlands are or may become sediment-limited due to sea level rise.
- 6-45. Man-Made Ponds and Impoundments.** No buffer is required for man-made agricultural ponds and impoundments actively used within the last five years or for man-made non-agricultural ponds and impoundments actively used within the last one year where such features are part of allowed development or operation or were constructed prior to enactment of the Coastal Act. Implementation of best management practices and avoidance measures for any biological resources are encouraged for the continued use, repair, and maintenance of active ponds and impoundments. Development proposed within or adjacent to non-active ponds and impoundments may require a preliminary biological inventory per Policy 6-7 or a biological study per Policy 6-8 and be subject to ESHA protection and buffer requirements as applicable.

Policies - Watercourses

6-46. Riparian Corridors Definition. Riparian corridors are defined on the ground by an association of native, and in some cases non-native, plant and animal species within or adjacent to a watercourse that contribute to the function or distinction of the riparian habitat. Boundaries of riparian corridors are determined by the limit of riparian vegetation or top of bank, or other confining topography, whichever is greater. The limit of riparian vegetation is determined by the drip line of riparian canopy trees or the limit of riparian shrubs or herbaceous vegetation.

6-47. Permitted Uses in Riparian Corridors. Permit only the following uses within riparian corridors:

- a. Education and research activities;
- b. Consumptive uses as provided for in the Fish and Game Code and Title 14 of the California Administrative Code;
- c. Habitat restoration and fish and wildlife management activities; and
- d. Necessary water supply projects.

Where no feasible alternative exists, permit the following uses:

- e. Stream-dependent aquaculture, provided that any non-stream-dependent facilities are located outside of the corridor;
- f. Flood, sedimentation, or erosion control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development;
- g. Bridges providing an important public transportation or resource-dependent function where supports do not significantly impact the riparian corridor or its resources, such as free-span designs;
- h. Pipelines and stormwater runoff facilities;
- i. Repair, maintenance, or incidental improvement of roadways or road crossings that do not increase the capacity of the roadway;
- j. Existing agricultural uses; and
- k. New agricultural uses, including agricultural irrigation conveyance systems, provided no riparian vegetation is removed and no soil, nutrients, waste, or other material is allowed to enter stream channels.

6-48. Standards in Riparian Corridors. Require new development permitted in riparian corridors to adhere to the following standards:

- a. Minimize removal of native vegetation;
- b. Minimize land exposure during construction and use temporary vegetation or mulching to protect critical areas;
- c. Minimize erosion, sedimentation, and runoff by appropriately grading and replanting modified areas with native species;

- d. Use only native plant species when replanting, and monitor replanted species and replace as necessary to ensure establishment;
 - e. Provide sufficient passage upstream and downstream for native and anadromous fish as specified by the California Department of Fish and Wildlife and the National Marine Fisheries Service;
 - f. Minimize adverse effects of waste water discharges and entrainment;
 - g. Prevent depletion of groundwater supplies and substantial interference with surface and subsurface water flows;
 - h. Encourage wastewater reclamation;
 - i. Maintain natural vegetation buffer areas that protect riparian habitats;
 - j. Minimize alteration of natural streams;
 - k. Conform with Chapter 7. Environmental Hazards policies for minimizing risks and avoiding contribution to flood and erosion hazards;
 - l. Maintain hydrologic function and sediment transport function of drainages; and
 - m. Provide mitigation and long-term monitoring and reporting for any adverse impacts incurred upstream or downstream as a result of permitted development.
- 6-49. Riparian Corridor Buffers.** Buffer zones shall be required for development proposed along both sides of riparian corridors to provide habitat protection and space for meander belts and vegetation growth. Riparian buffer zones shall apply as follows:
- a. For all perennial watercourses (i.e. Pilarcitos Creek, Frenchmans Creek, Arroyo Leon, and Arroyo Cañada Verde west of Highway 1) and certain intermittent watercourses (i.e. Kehoe Watercourse and Wavecrest Arroyo): buffer zones shall extend a minimum of 50 feet from the outer limit of the riparian vegetation or 100 feet from the top of bank, whichever is greater.
 - b. For all other intermittent and ephemeral watercourses with riparian vegetation (e.g. Roosevelt Creek, the riparian corridor in the northwestern area of Ocean Colony, and Arroyo Cañada Verde east of Highway 1): buffer zones shall extend a minimum of 35 feet from the outer limit of riparian vegetation or the top of bank, whichever is greater.
- 6-50. Riparian Corridor Buffer Adjustments.** A larger riparian corridor buffer may be required based on site-specific evidence that a larger buffer is necessary to maintain and protect the biological integrity of the riparian habitat and functional capacity of the watercourse from the impacts of proposed development. A riparian buffer may be reduced below what is required by Policy 6-49 only where the following can be demonstrated through evidence provided by site-specific evaluation pursuant to Policy 6-8, and only as specified below:
- a. Where the only building site is located entirely within the required buffer; no alternative development site, size, or design is feasible; and the proposed development is compatible with the continued viability of the riparian corridor:

the buffer may be reduced for all riparian corridors to no less than 20 feet from the outer limit of riparian vegetation or from top of bank, whichever is greater, provided that design alternatives that maximize the buffer width are utilized; or

- b. Where the only building site is not located entirely within the required buffer; no alternative development site, size, or design is feasible to accommodate the development entirely outside of the required buffer; no new adverse impacts to the riparian corridor will occur; and the reduced buffer would provide equivalent protection of the biological integrity of the riparian corridor given the site-specific characteristics of the resource and of the type and intensity of disturbance, as conclusively demonstrated by a qualified biologist to the satisfaction of the City and all jurisdictional regulatory agencies:
 - i. The buffer may be reduced to no less than 35 feet from the outer limit of riparian vegetation or 50 feet from the top of bank, whichever is greater, for development proposed adjacent to perennial and intermittent watercourses pursuant to Policy 6-49(a); or
 - ii. The buffer may be reduced to no less than 25 feet from the outer limits of riparian vegetation or from the top of bank, whichever is greater, for development proposed adjacent to all other intermittent and ephemeral watercourses pursuant to Policy 6-49(b).

6-51. Permitted Uses within Riparian Corridor Buffer Zones. Permit only the following uses in riparian corridor buffer zones:

- a. Uses permitted in riparian corridors pursuant to Policy 6-47;
- b. Public scenic overlooks;
- c. Existing agriculture, providing no existing riparian vegetation is removed and no soil is allowed to enter stream channels;
- d. Infrastructure improvements that protect public safety and property and that also restore the hydrological function of the watercourse;
- e. Temporary disruption (e.g. less than six months) for the construction, alteration, repair and maintenance of existing or newly permitted facilities or structures if there are no feasible alternatives and the disruption is repaired and restored to at least an equivalent condition; and
- f. Native landscaping.

6-52. Standards in Riparian Corridor Buffer Zones. Require development permitted in riparian corridor buffer zones to adhere to the following standards:

- a. Observe the standards required by Policy 6-48 for development permitted in riparian corridors where applicable;
- b. Minimize the removal of vegetation;
- c. Conform to natural topography to minimize erosion potential;
- d. Prevent runoff and sedimentation from exceeding pre-development levels;

- e. Replant where appropriate with native and non-invasive vegetation;
 - f. Prevent discharge of toxic substances, such as fertilizers and pesticides, into the riparian corridor;
 - g. Maintain or restore the hydrologic function of the watercourse; and
 - h. Anticipate space for potential meander belts and minimize development in these areas.
- 6-53. Non-Riparian Watercourse Buffers.** Where a watercourse lacks riparian vegetation, the boundary of the watercourse is defined by the top of bank or similar confining topography. Proposed development along a non-riparian watercourse lacking riparian vegetation or other sensitive habitat value as determined by a site-specific study, including man-made drainage ditches (e.g. non-riparian portions of Pullman Watercourse) but excluding active agriculture irrigation ditches, shall provide a minimum 20-foot buffer from the top of bank to provide space for potential meander belts and natural erosion and flooding hazards. The buffer requirements in Policies 6-49 and 6-50 shall apply to proposed development along a watercourse where a site-specific study identifies riparian vegetation or other sensitive habitat value.
- 6-54. Permitted Uses in Non-Riparian Watercourses and Buffers.** Permit only the uses allowed within riparian corridors in non-riparian watercourses. Permit only the following uses in non-riparian watercourse buffer zones:
- a. Uses allowed within riparian corridor buffer zones pursuant to Policy 6-51;
 - b. Green infrastructure improvements; and
 - c. Site access if no feasible alternative exists.
- 6-55. Standards in Non-Riparian Watercourses.** Permitted development in non-riparian watercourses and non-riparian watercourse buffer zones shall adhere to the performance standards required for permitted uses in riparian corridors and riparian corridor buffer zones, respectively.

Policies - Development Standards

- 6-56. Open Space Requirements.** Require a conservation easement, deed restriction, or other comparable mechanism through a condition of approval for proposed development to protect ESHAs, wetlands, watercourses, and their buffer zones.
- 6-57. Land Divisions.** Design land divisions, including lot line adjustments, to preclude new development within and minimize impacts to ESHAs and their buffer areas. Land divisions shall only be permitted if each new parcel being created could be developed (including construction of any necessary access road), without building in ESHA or ESHA buffers, or removing ESHA for fuel modification. Require any new land divisions containing areas of ESHA or ESHA buffer zones to record a deed restriction that protects such areas from non-resource dependent development. Require any new land divisions near ESHA to accommodate migration of ESHA as a result of the impacts of sea level rise.

- 6-58. Public and Recreational Access.** Ensure that public accessways and trails located within or adjacent to ESHA are sited and designed to minimize impacts to ESHA. Measures including, but not limited to, signage, placement of boardwalks, and limited fencing shall be implemented and maintained as necessary to protect ESHA.
- 6-59. Interpretive Signage.** Permit interpretive signage in ESHA that is accessible to the public to provide information about the habitat value and need to protect sensitive resources.
- 6-60. Equestrian Operations.** Require equestrian operations located adjacent to ESHA to implement BMPs as a condition of approval for a coastal development permit or license agreement for such uses to ensure protection of sensitive habitat areas, biological productivity, and coastal water quality.
- 6-61. Animal Crossings.** Require that new structures such as highways, medians, bridges, culverts, and other development are designed to facilitate movement of animals.
- 6-62. Exterior Lighting and ESHA.** Ensure that exterior night lighting is minimized, restricted to low intensity fixtures, shielded, and directed away from ESHA in order to minimize impacts on wildlife. Prohibit high intensity lighting for recreational facilities in ESHA, ESHA buffers, or where night lighting would increase illumination in ESHA. Prohibit the use of lighting directed over marine waters.
- 6-63. Construction and ESHA.** Ensure that construction does not adversely impact sensitive bird or other animal species in on-site or nearby ESHA, wetlands, or watercourses by requiring construction projects to implement best management practices (e.g. pre-construction surveys, construction and/or tree removal timing restrictions, exclusionary fencing), and, as appropriate based on project scope and site conditions, noise and vibration reduction measures and monitoring by a qualified biologist during construction.
- 6-64. Active Nest Monitoring.** Ensure construction and tree removal during nesting seasons (generally from February 1 to August 15) complies with the Migratory Bird Treaty Act, California Fish and Game Code, and other applicable regulations by surveying the project vicinity for active nests, avoiding disturbance if active nests are found by employing exclusion buffers or other methods recommended by a qualified biologist, and monitoring active nests until all young have fledged.
- 6-65. Bird-Safe Building Design.** Require new or renovated buildings to provide bird-safe building design features such as façade treatments, limited use of reflective building surfaces, appropriate locations for landscaping and water treatments, restricted use of guy wires, means to reduce light pollution, and other treatments to reduce bird strikes as accepted by the City.
- 6-66. Invasive Species.** Prohibit the use of invasive plant species for ornamental landscaping in ESHA and ESHA buffers. Develop and maintain an updated list of invasive species.
- 6-67. Invasive Species Removal.** Encourage private landowners and public agencies to remove invasive species, including eucalyptus trees, from their lands and replace

them with native, non-invasive species. Allow such work to occur with an expedited review process where there is de minimis risk to ESHA and public safety.

- 6-68. Chemical Substances.** Prohibit the use of insecticides, herbicides, or any toxic chemical substance within ESHA and ESHA buffer areas where application of such substances would impact the ESHA, except where necessary to protect or enhance the habitat itself, such as eradication of invasive plant species, or habitat restoration. When restoring habitat, ensure that organic material does not adversely alter natural bank and water chemistry.

Policies - Mitigation and Restoration

- 6-69. Mitigation.** Require mitigation in the form of habitat creation or substantial restoration for permitted impacts to ESHA and other sensitive resources that cannot be avoided through the implementation of siting and design alternatives. Priority shall be given to on-site mitigation. Off-site mitigation shall only be approved when it is not feasible to fully mitigate impacts on-site. In such case, off-site mitigation within city limits is preferred; followed by mitigation within the coastal zone of unincorporated San Mateo County and finally by other coastal zone areas. Mitigation shall not substitute for implementation of the project alternative that would avoid impacts to ESHA.
- 6-70. Mitigation Ratios.** Assess allowable resource impacts to determine required mitigation ratios on a case-by-case basis. At a minimum, apply the following mitigation ratios:
- 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.

- 6-71. Mitigation, Monitoring, and Reporting Plans.** For projects requiring habitat mitigation, a mitigation, monitoring and reporting plan shall be required as a condition of approval. The mitigation plan shall include information on the proposed location, methods, success criteria, and monitoring for the mitigation. Monitoring and reporting shall generally occur for a period of no less than five years following completion and shall take into account the recommendations of the project biologist. Specific mitigation objectives and performance standards shall be designed to measure the success of the restoration and/or enhancement. Mid-course corrections shall be implemented if necessary. Monitoring reports shall be provided to the City

annually and at the conclusion of the five-year monitoring period that document the success or failure of the mitigation. If performance standards are not met by the end of five years, the monitoring period shall be extended until the standards are met. However, if after ten years, performance standards have still not been met, the applicant shall submit an amendment proposing alternative mitigation measures to meet the same required mitigation ratio(s).

- 6-72. Habitat Restoration, Creation, or Enhancement.** Where a habitat restoration, creation, or enhancement project constitutes development and/or is proposed within ESHA, allow for temporary impacts during restoration in order to reach defined project goals. Ensure that habitat restoration, creation, or enhancement projects are designed to anticipate impacts of sea level rise and adapt to future conditions. Encourage such projects for the purpose of continued viability of biological value, and as a method of sequestering greenhouse gases.
- 6-73. Habitat Restoration Project Permitting.** Streamline permitting processes whenever possible to facilitate the successful completion of restoration projects. Allow for an expedited permit review or establish a waiver process for any habitat improvement projects that constitute development are proposed and no significant adverse impacts to coastal resources (including ESHA, Potential ESHA, and hydrology) will occur, such as the removal of debris, litter, or invasive exotic species and limited fuel modification with non-mechanized and/or non-motorized equipment.
- 6-74. Wetland Sediment Restoration.** Restore natural hydrodynamic systems to help ensure the ability of wetlands to persist, including with accommodations for climate change, such as by ensuring that sediment is available for wetland accretion.

Hydrology and Water Quality

The following section discusses the hydrology and water quality of Half Moon Bay, including as it relates to the larger watershed areas, surface waters (i.e. watercourses), and groundwater. The Planning Area is bound on the east by the Santa Cruz Mountains and on the west by the Pacific Ocean. These major features mediate hydrologic processes within the Planning Area as all surface and subsurface flow is toward the west. Pillar Point, located just north of the Planning Area, extends into the Pacific and establishes the northern boundary of a partially enclosed bay, Half Moon Bay, which forms the Planning Area's western boundary.

WATERSHEDS

The Planning Area is located entirely within the California Interagency Watershed (Calwater) mapped San Mateo Coastal Hydrologic Area (HA). The HA is divided into smaller sub-basins or hydrologic units and the Planning Area overlays portions of three Hydrologic Sub-Areas (HSA) and four Planning Watersheds (PWS), respectively. The four PWS within the Planning Area are Denniston Creek, Pilarcitos Creek, Mills Creek, and Purisima Creek. Fifteen sub-basins have been identified for the Planning Area, as shown in Figure 6-5. Land uses in the sub-basins are characterized by open space in the eastern uplands vegetated with forests,

scrubland, and grasses; Highway 1 and Highway 92, the two major regional transportation routes; pockets of residential neighborhoods; agricultural and floricultural development with some larger greenhouse operations; central commercial uses in downtown Half Moon Bay; and vacant land and open space, including recreational areas, along the coast.

SURFACE WATER RESOURCES

The Planning Area is crossed by a number of surface waters (also referred to as watercourses, creeks, streams, and drainages) that discharge directly or indirectly to the ocean. Surface water features are highly seasonal, especially in the lesser drainages. Surface waters in the region provide a variety of beneficial uses ranging from drinking and irrigation and supply for agricultural uses and livestock grazing to supporting avian, terrestrial, and aquatic wildlife resources, providing recreational opportunities, transporting sediment, mitigating flood disasters by storing water.

Major Watercourses and Drainages

There are five major perennial or near perennial surface waters within the Planning Area; Frenchmans Creek, Pilarcitos Creek, Arroyo Leon Creek, Apanolio Creek, and Arroyo Cañada Verde. Arroyo de en Medio is an intermittent stream outside the Planning Area that typically has consistent flow during the wet season (Figure 6-5). These surface water features are characterized by narrow high gradient erosive headwaters and tributaries originating in the Santa Cruz Mountains transitioning to wider, lower gradient, depositional waters as they approach the ocean. Flows are primarily driven by precipitation and typically follow an annual pattern consistent with winter rains and summer drought. In dry years, summer flows may be limited to shallow subsurface flow with the features appearing to be dry.

Minor Watercourses and Drainages

Several minor natural watercourses and man-made drainages are located throughout the Planning Area (Figure 6-5). These watercourses are typically characterized by intermittent flows resulting primarily from storm events with little or no base flow present for much of the year. Most of these watercourses have limited flow lengths and small localized watershed areas. These watercourses typically drain either directly or through various conveyances (pipes, ditches, culverts) to the larger drainage features described above, are isolated and lack additional surficial connection, or are located in close proximity to the ocean and discharge directly to beach areas.

The minor watercourses and drainages include but are not limited to Roosevelt Creek, Pullman Watercourse, Kehoe Watercourse, Wavecrest Watercourse, Seymour Watercourse, and the Wavecrest Arroyo at the south end of Wavecrest. These features generally may not support as diverse resources and uses as the larger drainages but contribute to flora and fauna habitat, wetlands, groundwater recharge, stormwater conveyance, and local flood management. However, Kehoe Watercourse and the Wavecrest Arroyo are considered ESHAs due to their suitable habitat for and known presence of several special status animal species (Figure 6-2). All of these features are subject to potential erosion and flood hazards, particularly the man-made drainages such as Seymour.

GROUNDWATER RESOURCES

Groundwater is an important element of the hydrology of the region. Groundwater can supply water for drinking, irrigation, and industrial processing and service, and may influence surface water hydrology through inflow or discharge. The Planning Area is almost entirely underlain by the Half Moon Bay Terrace groundwater basin. The basin occupies a total area of approximately 9,150 acres along the California coast from Martins Beach north to Montara, approximately 3,546 acres of which is located within the Planning Area, and supplies limited water for domestic and municipal uses with the most significant withdrawal from the Ocean Colony Partners Balboa well field used to irrigate two golf courses in the area.

The basin is made up of several smaller sub-basins, and four are identified in the Planning Area: El Granada sub-basin, Arroyo de en Medio sub-basin, Frenchmans Creek sub-basin, and Lower Pilarcitos Creek sub-basin. The aquifers of these sub-basins are generally composed of shallow, unconfined and semi-confined, marine terrace and alluvial deposits, underlain by the Purisima formation with overlying fine-grained alluvial deposits. The overlying alluvial deposits can create an impermeable cap over the marine terrace aquifers resulting in confined groundwater conditions. The aquifers are generally bound on the east by bedrock and on the west by the Pacific Ocean. Groundwater flows are from east to west, toward the Pacific Ocean, and can be significant. This outflow to the ocean results in large seasonal changes in groundwater levels as well as a dynamic fresh-salt water interface. Greater withdrawal, less recharge, and/or drought will move this interface inland. Seawater intrusion has not been well investigated in the Planning Area; although the County of San Mateo's Sea Level Rise Vulnerability Assessment (2017) found the SAM Plant to be already subject to seawater intrusion.

Rainfall recharge and subsurface inflow from drainages are the primary contributors to inflow in the Planning Area. Stream recharge has been indicated as the primary contributor to recharge especially in the El Granada, Arroyo de en Medio, and Frenchmans Creek sub-basins. Overall, aquifers in the Planning Area have groundwater surplus during wet years but may have a deficit in dry or prolonged drought periods.

WATER QUALITY

Water quality is a key factor in maintaining the beneficial uses of hydrologic resources. Water quality degradation not only endangers public health and welfare but can have substantial negative effects on flora and fauna including threatened or endangered species. Sources contributing to water quality degradation include erosion from construction or hydromodification (alteration of the natural flow of water through a landscape), pollutants and nutrients present in stormwater runoff, wastewater discharge, sedimentation from excess erosion, thermal modification, and pollutant spills or contamination from historic or active facilities.

Surface Water Quality

Surface waters in the Planning Area are substantially influenced by runoff and the materials transported therein. Urban runoff has been found to contribute significant quantities of total

suspended solids, heavy metals, petroleum hydrocarbons, and other pollutants to the waters of the region.⁴ The impact of these pollutants is variable. Nutrients from fertilizer, agricultural operations, sewerage, and sediments can result in toxic algal blooms and anoxic conditions. Suspended sediments and other solids bind to and transport harmful or toxic pollutants and nutrients, are harmful to freshwater fish, and can cause sedimentation, facilitating further habitat degradation and hydromodification. Metals (cadmium, copper, lead, and zinc), petroleum hydrocarbons, and other toxic contaminants (pesticides, herbicides) washed off from impervious surfaces and developed areas may produce toxic responses in aquatic life or human health risks. Pathogens (total coliform and *Escherichia coli* [*E. coli*]) from fecal waste, wastewater, and septic systems can cause disease and other health concerns.⁵

Sampling has indicated high fecal coliform counts for Pilarcitos Creek and several beaches in the northern portion of the Planning Area, which has led to the San Mateo County Department of Environmental Health posting warnings for potential health hazards.⁶ Venice Beach and Pillar Point Harbor are both listed on the SWRCB 303(d) list as impaired by coliform bacteria. Total Maximum Daily Loads (TMDL) are being prepared for these beaches in accordance with the federal Clean Water Act. To date, though much speculation has been made, the primary sources for fecal pollution in the area are unclear and additional study is needed.

In addition to fecal pollution, high levels of zinc and copper (2003-2005) and nutrients (2005) have been recorded in the lower watershed area of Pilarcitos Creek. It is speculated that the elevated trace metals may be attributed to the BFI Ox Mountain Sanitary Landfill located just east of the Planning Area, though additional study is required to confirm sources.⁷

Surface water quality monitoring and pollutant reduction will continue to be addressed through local, state, and federal programs such as the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP). Surface water contamination from anthropogenic sources will continue to be regulated through federal, state, and local authorities with clean-up typically enacted by the party responsible or liable for the source.

The National Pollutant Discharge Elimination System (NPDES) permit program was established by the Clean Water Act in 1972 and addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. The City of Half Moon Bay operates under the County of San Mateo's NPDES permit. In order to more closely regulate larger-scale projects for their stormwater runoff impacts and treatment, municipalities regulated by NPDES permits must adhere to Provision C.3, the goal of which is to include appropriate source control, site design, and stormwater treatment measures primarily

⁴ California Regional Water Quality Control Board (RWQCB), 2013, San Francisco Bay Region, Water Quality Control Plan (Basin Plan), July 2013.

⁵ Phillip William and Associates (PWA), 2008, Pilarcitos Integrated Watershed Management Plan, October 24, 2008.

⁶ San Mateo Resource Conservation District (SMRCD), 2007. Identification of Sources of Fecal Pollution Impacting Pillar Point Harbor, Pillar Point Harbor Project Description, October 29, 2007.

⁷ Phillip William and Associates (PWA), 2008, Pilarcitos Integrated Watershed Management Plan, October 24, 2008.

through low impact development (LID) techniques for C.3 regulated projects. C.3 regulated projects fall into three categories:

1. New or redeveloped special land use categories (auto service facilities, retail gasoline outlets, restaurants, or uncovered parking lots) that create and/or replace 10,000 square feet or more of impervious surface;
2. New development or redevelopment projects that create or replace 5,000 square feet or more of impervious surface for commercial, industrial, residential, mixed-use, and public projects; and
3. Road and trail projects that create 10,000 square feet or more of newly constructed contiguous impervious surface.

As supported in policy below, the City uses these categories to identify projects of particular water quality concern and require implementation of on-site LID source control, site design, and stormwater treatment. The City's Green Infrastructure Plan addresses preferred methods and priority locations for green infrastructure improvements to take place. Similar to low impact development techniques, green infrastructure is designed to mimic natural processes to reduce and treat stormwater in order to prevent water quality impacts from urban runoff pollution. Examples include rain gardens, bioswales, permeable pavements, de-channelization, and street landscaping. These types of improvements may be incorporated into C.3 regulated projects to address runoff treatment or may be used to replace existing traditional hard infrastructure (e.g. pipes, culverts).

Groundwater Quality

Groundwater quality in the region is variable depending on well location, depth, and development (age and use of well). Typically, groundwater in the region is considered to be of good quality with mineral, chemical, and physical constituents meeting domestic water quality standards.⁸ However, groundwater along the coast and within the Planning Area is consistently hard and studies have shown the potential for elevated levels of total dissolved solids, iron, and manganese.⁹ Due to the proximity to the ocean, seawater intrusion is a potential concern especially if groundwater withdrawals increase or recharging sources are diminished; rising sea levels may also contribute to this risk.

Groundwater can be impacted by a variety of historical or ongoing anthropogenic activities including industrial and agricultural chemical spills, underground and above ground tank and sump leaks, landfill leachate, septic tank failures, and chemical seepage via shallow drainage wells and abandoned wells. Toxic pollutants commonly found in groundwater range from solvents (including volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]), petroleum hydrocarbons, heavy metals, or a combination of these pollutants.¹⁰

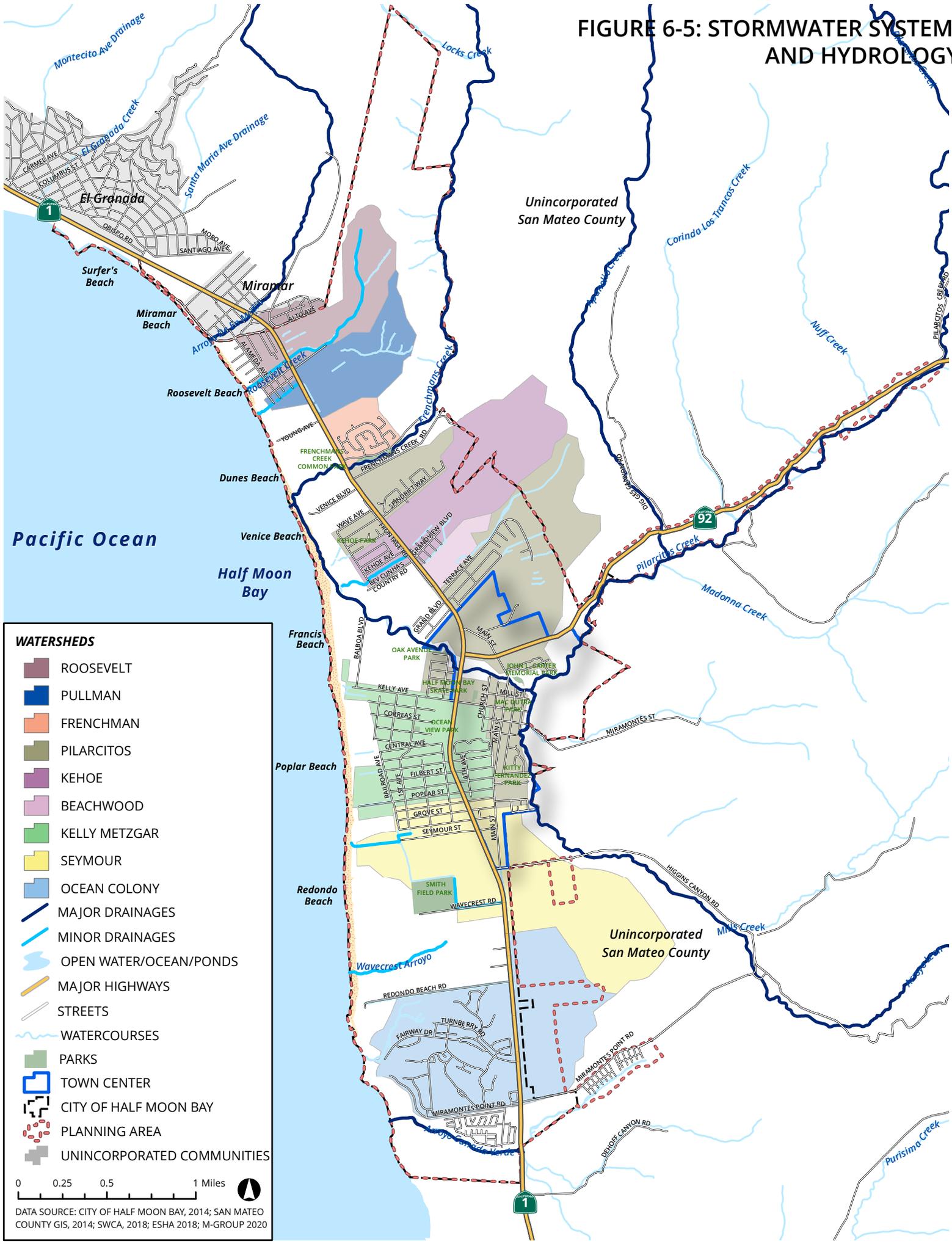
⁸ San Mateo County General Plan, Chapter 1-Vegetative, Water, Fish, and Wildlife Resources and Chapter 15-Natural Hazards, 1985.

⁹ Todd Engineers. 2003. Lower Pilarcitos Creek Groundwater Basin Study. Coastside County Water District, Half Moon Bay, California. June 2003.

¹⁰ California Regional Water Quality Control Board (RWQCB), 2013, San Francisco Bay Region, Water Quality Control Plan (Basin Plan), July 2013.

Contaminant sources that may impact the Planning Area include Ox Mountain Landfill, Half Moon Bay Landfill (closed), and Leaking Underground Storage Tank (LUST) sites. Such hazardous materials sites are addressed further in Chapter 7. Environmental Hazards.

FIGURE 6-5: STORMWATER SYSTEMS AND HYDROLOGY



WATERSHEDS

- ROOSEVELT
- PULLMAN
- FRENCHMAN
- PILARCITOS
- KEHOE
- BEACHWOOD
- KELLY METZGAR
- SEYMOUR
- OCEAN COLONY
- MAJOR DRAINAGES
- MINOR DRAINAGES
- OPEN WATER/OCEAN/PONDS
- MAJOR HIGHWAYS
- STREETS
- WATERCOURSES
- PARKS
- TOWN CENTER
- CITY OF HALF MOON BAY
- PLANNING AREA
- UNINCORPORATED COMMUNITIES

0 0.25 0.5 1 Miles ▲

DATA SOURCE: CITY OF HALF MOON BAY, 2014; SAN MATEO COUNTY GIS, 2014; SWCA, 2018; ESHA 2018; M-GROUP 2020

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HYDROMODIFICATION

Hydromodification is defined as development-induced changes to the natural hydrological processes and runoff characteristics. Increased volumes or rates of stormwater runoff from development can lead to creek channel erosion and sedimentation, flooding, and habitat loss.

Watersheds within the Planning Area have generally been found to contain a low percentage of imperviousness and a high percentage of unmodified creek channels (e.g. not channelized, culverted, concrete lined, or otherwise modified) compared to the Bay Area region.¹¹ Despite these positive metrics, development in the greater Bay Area and Planning Area has resulted in numerous instances of stream incising. Stream channel incising, typically observed as the lowering or widening of the stream channel, is generally the result of excessive erosion, often due to higher flow rates that occur as the result of development encroaching in a stream corridor, straightening of channels, loss of riparian buffers, or increases in area of impervious surface in the watershed. When the streambed is lowered through incising, the ability of high flows to overtop the banks and move into the floodplain decreases, and thus higher volumes and velocities of water within the channel increase the amount of erosion and continue the problem of degradation within the channel. This is a self-sustaining problem, whereby increased incision leads to further streambed degradation. As the bank becomes deeper and steeper, erosion may wear away the sides of the streambed, eventually leading to bank instability and failure. Photo 6-1, which shows the stream channel under Seymour Bridge, illustrates the effects of incising and related streambank erosion.

Although erosion is a natural stream process, this process can become problematic when the hydrogeomorphic balance (e.g. discharge and sediment load) of a system is out of equilibrium, posing serious structural or ecological issues as well as the potential for damaging or endangering infrastructure or human life. Most commonly, excessive stream incising is found to be attributed to alteration in the upstream watershed through landscape change, modification of hydrologic patterns, stream channelization or straightening, and the introduction of greater discharges in relation to sediment loads. The degree and type of erosion/incising that may occur will depend on numerous factors including but not limited to the soils, sediment, and geology present; stream gradient and morphology characteristics; watershed land use and hydrology characteristics; and other anthropogenic stressors or modifications present. Stream incising once initiated is a difficult process to combat and often results in further degradation of the stream channel through further erosion, increased bank undercutting facilitating bank failure and collapse, or other morphological changes.¹² Restoration of an incised stream is possible through means such as channel reconstruction or meander construction along the channel to recreate more natural hydrologic conditions.

¹¹ SMCWPPP, 2002, Characterization of Imperviousness and Creek Channel Modification for Seventeen Watersheds in San Mateo County, January 1, 2002.

¹² California Regional Water Quality Control Board (CRWQCB), 2003, A primer on Stream and River Protection For the Regulator and Program Manager, Technical Reference Circular W.D. 02-#1, San Francisco Bay Region, California Regional Water Quality Control Board, April 2003.



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Photo 6-1: Severe incising and stream bank erosion is evident at Seymour Bridge, where the stream channel has lowered and widened.

It is likely that land use changes within the Planning Area, such as the conversion of undeveloped lands for urban development, agriculture, or other anthropogenic uses, have resulted in the modification of natural hydrologic processes of several of the surface waters present, through increased runoff from impervious surfaces, greater stormwater discharge, or modification of channel geomorphology. Instances of stream channel incision and associated stream bank erosion have been observed within Kehoe Watercourse as evidenced by the undermining and eventual collapse of stream bank vegetation as well as within Seymour Watercourse near Seymour Bridge as evidenced by substantial stream incision,

stream bank erosion, and the undermining of the bridge infrastructure. Observations in the Pilarcitos watershed also found evidence of channel incision in many of the surface waters.¹³

RESTORATION STRATEGIES

In addition to protection of the City's hydrology and water quality, restoration can provide opportunities for watercourse and water quality improvement. Restoration methods can include green infrastructure improvements, groundwater recharge, and habitat restoration, all of which provide cross-cutting benefits to Half Moon Bay's natural resources. Many of the City's watercourses are in need of restoration and green infrastructure improvements, including Roosevelt Creek, Pullman Watercourse, Kehoe Watercourse, Seymour Watercourse, and the multiple small drainages running through the West of Railroad PD.

Groundwater recharge allows aquifers to refresh their storage levels, providing a water source for irrigation and other supply during periods of drought. Groundwater recharge can also act as a barrier to seawater intrusion and can restore groundwater-dependent ecosystems, including river flows. Recharge can occur naturally or artificially; naturally through rainfall and surface water percolating into the ground to an underlying aquifer, and artificially through methods such as recharge ponds and injection wells. As of 2020, Pilarcitos Quarry (Vulcan) had plans for a deep excavation project to create a large water body for storage and release into Pilarcitos Creek in summer months for groundwater recharge.

Habitat restoration, particularly wetland restoration, is another effective method of natural groundwater recharge. Wetlands act as storage areas for stormwater runoff and allow for groundwater recharge. Wetlands would be improved with any restoration projects that provides expanded wetland area. Methods and policies for habitat restoration are discussed in more detail in the Biological Resources section of this chapter and are also supported in the LUP policies below.

Policies – Hydrology and Water Quality

LUP policies seek to protect the quality and hydrological function of Half Moon Bay's coastal waters through development requirements, grading and hydromodification restrictions, stormwater and wastewater management, and restoration support including accommodations for habitat retreat.

The LUP requires development to avoid impacts to coastal waters through siting and design measures. Development must not result in degradation of water quality from non-point source pollutants or increase stormwater runoff discharge rates from the site. Policies call for proposed development to utilize best management practices (BMPs) during construction and post-construction phases to prevent erosion and contaminated runoff, and to decrease stormwater flow rates. Proposed development must also provide drainage plans to manage

¹³ Phillip William and Associates (PWA), 2008, Pilarcitos Integrated Watershed Management Plan, October 24, 2008.

runoff while maintaining or improving existing drainage patterns, and limit land disturbance and grading activities that can lead to sedimentation.

The LUP provides for stormwater infrastructure improvements, incorporating LID strategies and pervious surfaces to ensure stormwater is filtered and flow rates are decreased. The LUP also requires the City to cooperate with the San Mateo County Water Pollution Prevention Program (SMCWPPP) and reduce litter, debris, and contaminants in public places in order to improve water quality. Policies address the need to plan for sea level rise impacts through methods such as retrofitting existing infrastructure and developing strategies for relocation or removal of at-risk infrastructure.

The LUP also prioritizes the preservation of natural hydrological patterns and provides for restoration of wetlands and riparian habitats for ecosystem services such as flood retention, water filtration, and groundwater recharge. Policies discourage alterations to natural watercourses that would adversely impact hydrology.

Policies - General

- 6-75. Protect and Conserve Water Resources.** Protect, conserve, and, where feasible, restore the quality of the City's watersheds and water resources, including fresh water, marine habitats, and groundwater.
- 6-76. Green Infrastructure.** Promote and prioritize the use of Low Impact Development (LID) strategies, Best Management Practices (BMPs), and on-site infiltration to create green infrastructure for treating and reducing stormwater runoff. In and adjacent to ESHA, use resource-dependent green infrastructure projects for natural restoration purposes and provision of buffer areas to allow for natural erosion, evolution of natural drainage flows, and sediment transport balance.
- 6-77. Hydrology and Water Quality Restoration.** Encourage and implement opportunities to restore wetlands, riparian corridors, and other habitats that provide stormwater retention and storage, carbon sequestration, remediation for degraded water quality, and groundwater recharge. Support and prioritize such restoration projects that provide multiple benefits to coastal resources and improve ecosystem functionality and resiliency.
- 6-78. ESHA Protection from Runoff.** In areas in or adjacent to an ESHA, plan, site, and design development to protect the ESHA from any significant disruption of habitat values resulting from the discharge of stormwater or dry-weather runoff flows.
- 6-79. Stormwater Management.** Reduce impacts from erosion and water quality degradation by managing development project runoff stormwater discharge rates and implementing hydromodification management measures. Update storm event standards and precipitation models with best available science on climate change as necessary.
- 6-80. Groundwater Extraction.** Regulate development to limit or prevent extraction and avoid overdraft from aquifers that are potentially vulnerable to seawater intrusion, including as consistent with the private and public well policies of Chapter 3. Public Works. Encourage measures to recharge shallow aquifers that are depleted.

Policies – Development Standards

- 6-81. Siting and Design.** Site and design development to avoid adverse impacts to coastal waters by incorporating measures designed to achieve the following:
- a. Protect, restore, and enhance areas that provide important water quality benefits, areas necessary to maintain riparian and aquatic biota and/or that are susceptible to erosion and sediment loss;
 - b. Limit increases of impervious surfaces, especially impervious surfaces directly connected to the storm drain system;
 - c. Minimize the transport of pollutants from development into runoff and coastal waters;
 - d. Limit land disturbance activities such as clearing and grading, and cut-and-fill to reduce erosion and sediment loss; and
 - e. Preserve, restore, and enhance natural watercourses and vegetation.
- 6-82. Land Division Design.** All land divisions shall be designed such that the location of and grading required for building pads and access roads minimizes erosion and sedimentation. Ensure that new subdivisions are sized and designed to provide adequate space for necessary runoff and drainage controls. Prohibit land divisions that would result in building pads, access roads, or driveways located on slopes over 30 percent, or result in grading on slopes over 30 percent.
- 6-83. Construction Best Management Practices (BMPs).** Require new development proposals to include construction phase erosion control and polluted runoff control plans. These plans shall specify BMPs that will be implemented to minimize erosion and sedimentation, provide adequate sanitary and waste disposal facilities and prevent contamination of runoff by construction chemicals and materials.
- 6-84. Drainage and Runoff Control Plans.** Require new development proposals to include post-construction phase drainage and polluted runoff control plans. Such plans shall:
- a. Specify site design, source control and treatment control BMPs that will be implemented to minimize post-construction polluted runoff, and shall include the monitoring and maintenance plans for these BMPs;
 - b. Ensure that post-construction structural BMPs (or suites of BMPs) are designed to treat, infiltrate, or filter the amount of stormwater runoff produced by all storms up to and including the 10-year 2-hour storm event;
 - c. Ensure dry weather runoff does not exceed the pre-development baseline flow rate to receiving waterbodies;
 - d. Complement and utilize existing drainage patterns and systems where they are in proper functioning condition, conveying drainage from the developed area of the site in a non-erosive manner that avoids downstream cumulative impacts; and
 - e. Restore disturbed or degraded natural drainage systems where feasible, except where there are geologic or public safety concerns.

- 6-85. Developments of Particular Water Quality Concern.** In association with any coastal development permit application, any development with a relatively greater potential for adverse impacts to water quality (e.g. NPDES C.3 Regulated Projects) shall:
- a. Conduct a site characterization and document the expected effectiveness of the proposed BMPs;
 - b. Provide drainage and runoff control plans pursuant to Policy 6-84;
 - c. Use a green infrastructure approach to retain the design storm runoff on-site; and
 - d. Use Treatment Control and Runoff Control BMPs to remove pollutants of concern and minimize adverse post-development changes in the runoff flow regime if any portion of the runoff produced by the design storm cannot be retained on-site.
- 6-86. BMP Maintenance.** Require structural BMPs to be inspected, cleaned, and repaired as necessary to ensure proper functioning for the life of the development. As a condition of permit approval, require ongoing application, maintenance and monitoring as is necessary for effective operation of all BMPs (including site design, source control, and treatment control).
- 6-87. Erosion from Infrastructure.** Ensure that new infrastructure such as roads, bridges, and culverts shall not cause or contribute to watercourse or hillside erosion, or watercourse or wetland siltation and shall include BMPs to minimize impacts to water quality, including construction phase erosion and pollution runoff control plans, and soil stabilization practices. Where space is available, dispersal of sheet flow from roads into vegetated areas or other on-site infiltration practices shall be incorporated into road and bridge design.

Policies - Grading Standards

- 6-88. Grading and Site Plan.** Require all development to be sited and designed so as to minimize grading, alteration of natural landforms, and vegetation clearance in order to prevent soil erosion, stream siltation, reduced water percolation, increased runoff, and adverse impacts on plant and animal life and prevent net increases in baseline flows for any receiving waterbody, except where necessary for habitat restoration projects.
- 6-89. Grading Permit.** Require grading or earthmoving exceeding 50 cubic yards (total including cut and fill) and/or on any portion of a site with a slope greater than 20 percent to apply for a grading permit as a condition of approval for a coastal development permit, with the exception of tilling or other earthmoving customarily related to existing agricultural operations. The City shall have discretion to require a grading permit based on site-specific conditions and unusual circumstances for grading or earthmoving of less than 50 cubic yards. Grading plans shall meet the requirements of the local implementation plan with respect to maximum quantities, maximum cuts and fills, remedial grading, grading for safety purposes, and maximum heights of cut or fill. Any grading proposed in or adjacent to an ESHA shall be minimized and any disruption shall be repaired and restored to at least an equivalent condition.

- 6-90. Seasonal Grading.** Prohibit earthmoving during the rainy season (extending generally from October 15 to April 15) for development that is located within or adjacent to ESHA or that includes grading on slopes greater than 25 percent. In such cases, approved grading shall not be undertaken unless there is sufficient time to complete grading operations before the rainy season. If grading operations are not completed before the rainy season begins, grading shall be halted and temporary erosion control measures shall be put into place to minimize erosion and sedimentation until grading resumes after April 15, unless the City determines that completion of grading would be more protective of resources. Grading during the rainy season may be permitted to remediate hazardous geologic conditions that endanger public health and safety.
- 6-91. Erosion Control Measures.** Ensure that where grading is permitted during the rainy season (extending generally from October 15 to April 15), erosion control measures shall be implemented prior to and concurrent with grading operations. Such measures shall be maintained through final grading and until landscaping and permanent drainage is installed and established.
- 6-92. Landscaping and Revegetation.** Require cut and fill slopes and other areas disturbed by construction activities (including areas disturbed by fuel modification or brush clearance) to be landscaped or revegetated according to site-specific conditions at the completion of grading. Landscape plans shall provide that:
- a. Plantings shall be native, drought-tolerant plant species, and blend with the existing natural vegetation and natural habitats on the site, except as noted below.
 - b. Invasive plant species that tend to supplant native species and natural habitats shall be prohibited.
 - c. Non-invasive ornamental plants and lawn may be permitted in combination with native, drought-tolerant species within the irrigated zone(s) required for fuel modification nearest approved residential structures.
 - d. Any landscaping or revegetation shall be monitored and reported for a period of at least five years following the completion of planting. Performance criteria shall be designed to measure the success of the plantings, including a desired percent coverage of native species within a specified timeframe. Mid-course corrections shall be implemented if necessary. If performance standards are not met by the end of the designated monitoring period, the monitoring period shall be extended until the standards are met.

Policies - Stormwater Management

- 6-93. Stormwater Infrastructure.** Prioritize and support green infrastructure strategies for new and replacement stormwater infrastructure improvements, including restoring natural drainage patterns and upstream retention, reducing flood potential and downstream impacts from higher water levels, and supporting groundwater recharge. Where green infrastructure strategies are not feasible to implement, improve existing hard infrastructure based on site-specific conditions through measures such as widening drainage ditches, improving carrying and storage capacity of tidally-influenced streams, installing larger pipes and culverts, adding

pumps, converting culverts to bridges, creating retention and detention basins, and developing contingency plans for extreme events. Avoid hard infrastructure improvements in natural areas, including bluffs and cliffs, where feasible.

- 6-94. New Stormwater Outfalls.** Prioritize the use of green infrastructure instead of new stormwater outfalls when feasible. Otherwise ensure that new stormwater outfalls are sited and designed to minimize impacts from sea level rise and to coastal resources. Consolidate new and existing outfalls where appropriate.
- 6-95. Stormwater Pollutants.** Continue implementing National Pollutant Discharge Elimination System (NPDES) provisions for long-term reduction of stormwater pollutants, and the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP). Continue implementing the SMCWPPP requirements for water quality design, source control, stormwater treatment, low impact development, hydromodification management, and construction site controls.
- 6-96. Pervious Surface.** Maximize the amount of pervious surfaces in public spaces to allow urban runoff infiltration and groundwater recharge.
- 6-97. Litter, Debris, and Contaminants.** Ensure that public areas, including streets and recreational areas, are routinely cleaned of litter, debris, and contaminant residue. Coordinate with and support efforts by other organizations or volunteer groups to promote clean-ups of beaches and public open spaces. Require the City, property owners, or homeowners associations, as applicable, to sweep parking lots and public and private streets frequently to remove debris and contaminated residue in coordination with garbage collection schedules.

Policies - Wastewater

- 6-98. Wastewater Discharges.** Ensure that any wastewater discharges minimize impacts to the biological productivity and quality of coastal streams, wetlands, and the ocean.
- 6-99. Wastewater Infrastructure Retrofit, Relocation, and Removal.** Retrofit, relocate, or eliminate existing wastewater ocean outfalls and other wastewater infrastructure, including private septic systems, deemed at risk of sea level rise or other impacts where feasible. Alternatives include repair, maintenance, and modifications to outfall lines and redesign of wastewater systems. No new wastewater ocean outfalls are allowed on bluffs, beaches, or in the ocean.

Policies – Hydromodification

- 6-100. Natural Hydrology.** Preserve, or where feasible, restore natural hydrologic conditions such that downstream erosion, natural sedimentation rates, surface flow, and groundwater recharge function near natural equilibrium states.
- 6-101. Alteration of Natural Watercourses.** Prohibit alterations or disturbance of natural watercourses, or human-made or altered drainage courses that have replaced natural watercourses and serve the same function, with the following exceptions:
 - a. Necessary water supply projects;
 - b. Flood, sedimentation, or erosion control projects to protect public safety and existing structures where there is no other feasible alternative; or

c. The improvement of fish and wildlife habitat.

Any alterations permitted for one of these three purposes shall: adhere to the performance standards listed for permitted uses within riparian corridors in Policy 6-47; minimize adverse impacts to coastal resources, including the depletion of groundwater and changes in water flow speed and volume; and include maximum feasible mitigation measures to mitigate unavoidable impacts. Green infrastructure shall be preferred for flood protection, erosion, and sedimentation control over “hard” solutions such as concrete or riprap channels. Any permitted watercourse alterations shall include BMPs for hydromodification activities.

6-102. Hydromodification Impacts. Evaluate potential hydromodification impacts of development proposals including but not limited to grading, dredging, fill, channelization, and dams permitted pursuant to Policy 6-101 in the context of watershed planning, considering potential benefits and/or adverse impacts to the watershed as a whole. Potential adverse impacts of such projects include effects on habitat, downstream erosion and sedimentation, dam maintenance (to remove silt and trash), and interruption of sand supplies to beaches.

6-103. Erosion Protection for Watercourses. Protect watercourses from erosion impacts. Examples include but are not limited to maintaining riparian vegetation where present to slow water flow; avoiding hardening banks and channels which exacerbates erosion up or downstream; restoring the floodplain and establishing a meander belt; and providing green infrastructure drainage facilities to reduce run-off into the City’s various watercourses.

6-104. Watercourse Monitoring. Monitor and assess the condition of watercourses with respect to changes in erosion and sedimentation. In cases where undesirable changes are identified (e.g. the beginning of incising or head cutting conditions, bank retreat, or subsidence), implement restoration measures prior to such conditions becoming irreparable through low impact green infrastructure intervention measures.