

**ADDENDUM TO BIOLOGICAL IMPACT FORM
FOR COMPLIANCE WITH
SAN MATEO COUNTY LCP PROGRAM POLICY 7.5**

PIE RANCH (APN 089-230-210)
SAN MATEO COUNTY, CALIFORNIA

MARCH 2019

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1.0 REPORT SUMMARY

At the request of landowner Jered Lawson of Pie Ranch, Coast Range Biological, LLC and Biosearch Environmental Consulting prepared an addendum to a biotic assessment prepared in 2016 (CRB 2016) for a portion of the Pie Ranch property (APN 089-230-210) located at 2080 Cabrillo Highway, south of Pescadero, in unincorporated San Mateo County, California. The 2016 biotic assessment was conducted to address potential impacts related to parking on the property for two separate events on Pie Ranch: (1) the annual farm dinner, which takes place on the second Saturday in September, and draws approximately 300 people, with parking along Green Oaks Way and adjacent areas between Highway 1 and just above the man-made basin; and (2) the open farm day potluck and barn dance, which occurs on the third Saturday of each month throughout the year, and typically draws 100 to 150 people, with parking along Green Oaks Way. In addition, daily vehicle use occurs along Green Oaks Way for normal Pie Ranch farm and educational operations (including the farm stand along Highway 1), as well as for accessing residences to the east (Jered Lawson, Pie Ranch, pers. comm.).

In 2019, the San Mateo County Planning and Building Department requested an addendum to the 2016 biotic assessment to expand the project site to include additional areas proposed for building and renovation projects to the north, as shown on the Pie Ranch Master Plan, dated September 25, 2017, prepared by Adam Weiss Architecture. The area evaluated for this biotic assessment addendum includes: (1) the 2019 project site, where the proposed building and renovation projects will take place and where biological resource impact determinations are made; and (2) the 2019 “study area,” which includes the project site and adjacent areas extending outward 200-feet, where habitats are mapped and evaluated for the potential presence of special-status biological resources (including special-status plant and wildlife species¹ and sensitive habitats). Potential significant impacts that may occur to these resources as a result of the building and renovation projects are identified and mitigation measures suggested to reduce impacts to less-than-significant levels. The report format follows San Mateo County’s “Biological Impact Form for compliance with Local Coastal Program Policy 7.5.”

One special-status plant species was observed on the study area during the October 2016 and March 1, 2019 field visits: Monterey pine (*Pinus radiata*). The remaining special-status plant species identified for the region during the background literature search are unlikely to inhabit the project site because it is heavily disturbed and consists primarily of Developed/Ruderal habitat that lacks suitable habitat components (e.g., soil type, micro-habitat, plant community) required by special-status species (Appendix A). Portions of the surrounding study area in Central Coast Riparian Scrub, Riparian Woodland, Coyote Brush Scrub, and Freshwater Wetland habitats could provide suitable habitat for some special-status plants known from the region, but these habitats will not be impacted by the project and no additional studies or mitigation measures for special-status plant species (other than Monterey pine) are recommended in this report. A 50-foot buffer is recommended around all Monterey pine populations observed on the study area. A 50-foot buffer around four widely scattered Monterey pine individuals is not necessary to avoid impacts to these individuals since they occur in existing disturbed habitats, but direct and indirect project impacts to these individuals should be avoided by the project.

¹ Special-status species are defined here to include: (1) all plants and animals that are listed under the Federal or State Endangered Species Acts as rare, threatened or endangered; (2) all federal and state candidates for listing; (3) California Department of Fish and Wildlife Species of Special Concern; (4) plants that qualify under the definition of “rare” in the California Environmental Quality Act, section 15380; (5) all plants included in Lists 1 and 2 (and Lists 3 and 4 when they meet the definition of “rare”) in CNPS (2019); and (6) plants and animals considered “rare and endangered” in the San Mateo County Local Coastal Program.

Four special-status wildlife species have been documented on the study area in the California Natural Diversity Database and/or were observed during the October 2016 and/or March 1, 2019 field visits: monarch butterfly (*Danaus plexippus*), California red-legged frog (*Rana draytonii*), Allen's hummingbird (*Selasphorus sasin*), and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*). The study area is located within designated critical habitat for the federally-threatened California red-legged frog. At least ten other special-status wildlife species, though not observed during the reconnaissance field visits, could occur on the study area due to the presence of suitable habitat: California giant salamander (*Dicamptodon ensatus*), Santa Cruz black salamander (*Aneides niger*), western pond turtle (*Emys marmorata*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), white-tailed kite (*Elanus leucurus*), olive-sided flycatcher (*Contopus cooperi*), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), pallid bat (*Antrozous pallidus*), fringed myotis (*Myotis thysanodes*), and long-legged myotis (*Myotis volans*) (Appendix A). The San Francisco garter snake is state and federally-endangered, and also designated as a state "fully-protected" species. In addition, trees, shrubs, and herbaceous vegetation on the study area provide nesting habitat for other native bird species protected under the Migratory Bird Treaty Act and state Fish and Game Code. Mitigation measures for special-status wildlife species are included in Section 5.0 of the report.

Sensitive habitats observed on the study area include Central Coast Riparian Scrub and Riparian Woodland along Green Oaks Creek and a natural sag pond, which meets the San Mateo County Local Coastal Program definition of "Riparian Corridor." No direct impacts to Central Coast Riparian Scrub or Riparian Woodland will occur from the project, and, per the Local Coastal Program, a 30-foot buffer was applied around this habitat, but project ground disturbance could take place within the riparian buffer zone. Freshwater Wetland habitat is present in the natural sag pond as well as a man-made basin. Neither of these habitats will be directly impacted by the project, and per the Local Coastal Program, a 100-foot buffer was applied around the sag pond. No buffers are required around the man-made basin, but a 50-foot buffer was applied since this basin could potentially support special-status wildlife species.

2.0 PROJECT AND PROPERTY DESCRIPTION

The project site is located on Pie Ranch, along Green Oaks Way, east of Highway 1, and northeast of Año Nuevo State Park in southwestern San Mateo County, California (APN 089-230-210) (Figure 1). The 2019 project site is adjacent to and north of the 2016 project site (CRB 2016) (Figure 2). The 2019 project site covers ~2.7-acres and includes areas proposed for construction of two new buildings and renovation of other structures, as shown on the Pie Ranch Master Plan, dated September 25, 2017, prepared by Adam Weiss Architecture. No detailed construction plans showing project ground disturbance were available, and the project site was broadly defined to include the general area of proposed building construction and improvements, and this area is highly generalized. The study area covers ~8.3-acres, overlaps with the study area from the 2016 biotic assessment, and includes the project site and a 200-foot buffer (Figures 1 and 2).

The project site is heavily disturbed by past and current land use, including dirt access roads, existing buildings and storage/parking areas, and agricultural operations (Figure 2). Land uses on the surrounding study area include agricultural land to the north and west, and undeveloped land to the east. The 2016 study area is described in CRB (2016). Outside of the study area, land uses consist primarily of undeveloped, low density residential, or agricultural lands. Photographs of the study area are included in Appendix B.

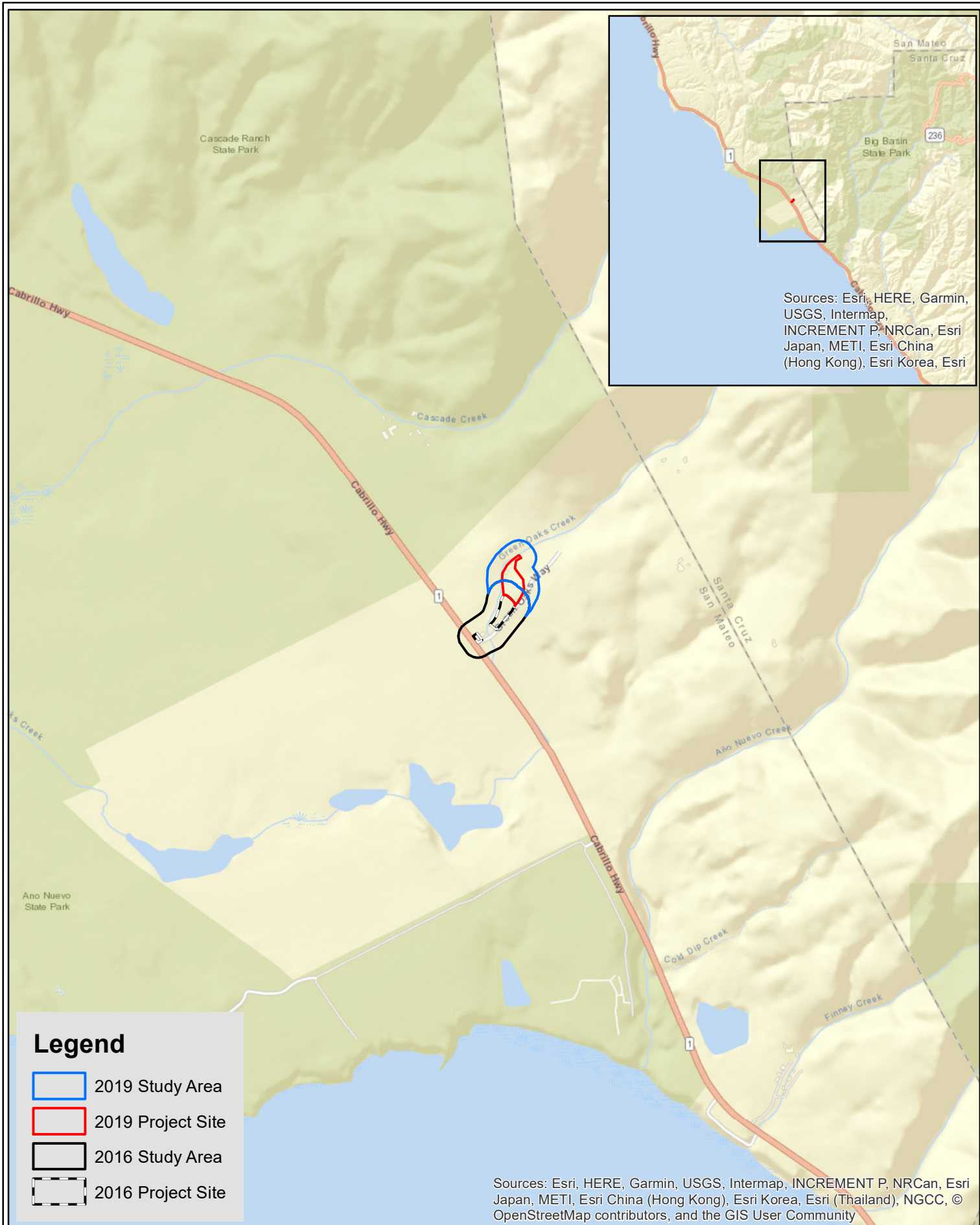
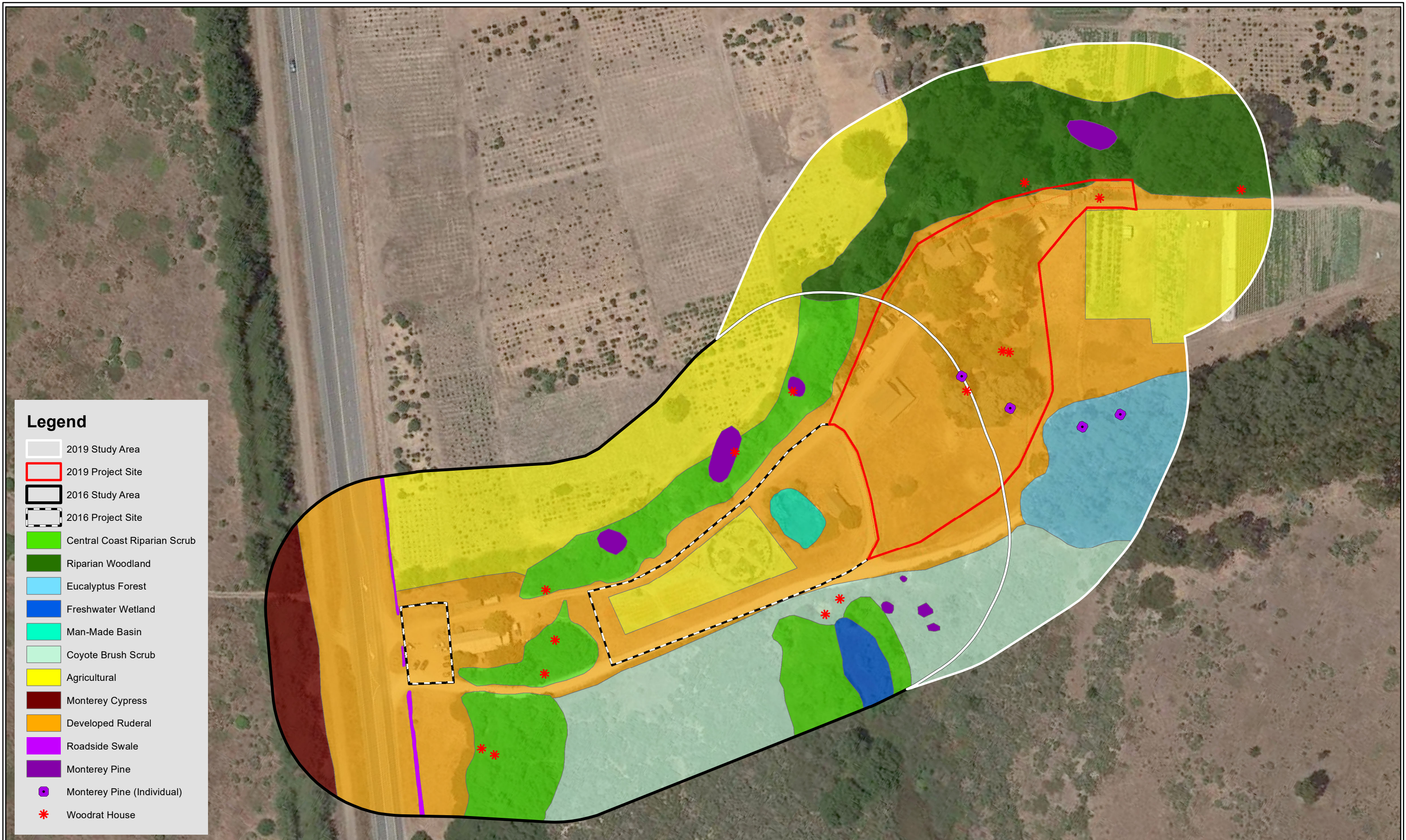


Figure 1. Study area locality map.

Mapscale: 1:20,000
 0 0.125 0.25 0.5
 Miles





2.1 Vegetation

Six habitats are present on the 2019 study area: Central Coast Riparian Scrub, Riparian Woodland, Coyote Brush Scrub, Agricultural, Developed/Ruderal, and Eucalyptus Forest (Figure 2). Two additional habitats—Freshwater Wetland and Monterey Cypress—are present on the 2016 study area (Figure 2) and are described below and in CRB (2016).

Central Coast Riparian Scrub², consisting primarily of the *Salix lasiolepis* Shrubland Alliance³, occurs along Green Oaks Creek, and is dominated by a canopy of arroyo willow (*Salix lasiolepis*⁴), with occasional red willow (*Salix laevigata*), Pacific willow (*Salix lasiandra* var. *lasiandra*), red alder (*Alnus rubra*), coast live oak (*Quercus agrifolia*), Douglas-fir (*Pseudotsuga menziesii*), and Monterey pine (*Pinus radiata*) (Appendix B-1). The understory consists of a dense mixture of native shrubs and herbaceous species, including California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), stinging nettle (*Urtica dioica*), red elderberry (*Sambucus racemosa*), and horsetail (*Equisetum* sp.), along with occasional non-native species such as poison hemlock (*Conium maculatum*), Himalayan blackberry (*Rubus armeniacus*), and garden nasturtium (*Tropaeolum majus*).

Riparian Woodland, consisting primarily of the *Alnus rubra* Forest Alliance, occurs along Green Oaks Creek upstream of Central Coast Riparian Scrub where the canopy becomes taller and more multilayered (Appendix B-2). Riparian Woodland is dominated by a canopy of red alder and willow, as well as occasional Douglas-fir, coast live oak, Monterey pine, and blue gum eucalyptus (*Eucalyptus globulus*). The understory consists of native shrubs and herbaceous species including California blackberry, poison oak, stinging nettle, red elderberry, California figwort (*Scrophularia californica*), and California man-root (*Marah fabacea*), along with occasional invasive non-native species such as poison hemlock and English ivy (*Hedera helix*).

Coyote Brush Scrub, consisting of the *Baccharis pilularis* Shrubland Alliance, is dominated by coyote brush (*Baccharis pilularis*), with California aster (*Symphyotrichum chilense*), California blackberry, poison hemlock, and red elderberry also present. Agricultural habitat consists of actively cultivated areas for vegetables, *Watsonia*, *Amaryllis belladonna*, and other crops (Appendix B-3). Developed/Ruderal habitat consists of developed areas, such as existing buildings and infrastructure, and ruderal areas, including dirt roads, staging areas, and goat pasture (Appendix B-4). Ruderal habitat is dominated by bare ground or non-native grasses and forbs, including ripgut brome (*Bromus diandrus*), wild oats (*Avena* sp.), Italian ryegrass (*Festuca perennis*), summer mustard (*Hirschfeldia incana*), bull thistle (*Cirsium vulgare*), barley (*Hordeum murinum*), wild radish (*Raphanus sativus*), cutleaf plantain (*Plantago coronopus*), rough cat's-ear (*Hypochaeris radicata*), and bristly ox-tongue (*Helminthotheca echioides*). In addition, non-native ornamental and other species from past farming operations are present in Developed/Ruderal habitat, including walnut (*Juglans* sp.), sweet gum (*Liquidambar styraciflua*), and deodar cedar (*Cedrus deodara*).

Eucalyptus Forest, composed of the Eucalyptus Alliance, is dominated by a dense canopy of blue gum eucalyptus, with a disturbed understory consisting of non-native shrubs and herbaceous species such as Bermuda buttercup (*Oxalis pes-caprae*) and French broom (*Genista monspessulana*) (Appendix B-5). Freshwater Wetland occurs in a man-made basin southwest of the 2019 project site and in a sag pond south of the 2019 project site. The Freshwater Wetlands are dominated by wetland-classified plant species, including California tule (*Schoenoplectus californicus*), as well as arroyo willow, red willow, and Pacific willow. Monterey Cypress consists of a planted stand of Monterey cypress (*Hesperocyparis macrocarpa*) in the southwestern portion of the 2016 study area along

² Vegetation nomenclature follows Holland (1986).

³ Alliance nomenclature follows Sawyer et al. (2009).

⁴ Botanical nomenclature follows Baldwin et al. (2012).

Highway 1.

A list of plant species observed on the 2016 and 2019 study areas is included in Appendix C.

2.2 Wildlife

Wildlife expected on the study area include a variety of native species common in western San Mateo County, as well as some species that are tolerant of human disturbance. The Central Coast Riparian Scrub, Riparian Woodland, and adjacent areas could provide a movement corridor for a variety of wildlife, such as mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*). San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) houses were observed in portions of the Central Coast Riparian Scrub, Riparian Woodland, and other habitats supporting a dense understory. Western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), and Santa Cruz garter snake (*Thamnophis atratus atratus*) are expected. A variety of native birds are will use the habitat mosaic including dense Central Coast Riparian Scrub and Riparian Woodland during the breeding season. Birds observed during the site visits included Anna's hummingbird (*Calypte anna*), California towhee (*Pipilo crissalis*), Bewick's wren (*Thryomanes bewickii*) and Steller's jay (*Cyanocitta stelleri*).

Wildlife species observed on the study area are included in Appendix D.

2.3 Topography and Soils

The study area occurs between ~180 and ~220 feet elevation (NGVD) (USGS 1991). The project site and surrounding study area are generally level, sloping gradually to the southwest. Three soil types have been mapped on the study area (NRCS 2019a):

- LmB—Lockwood loam, gently sloping
- SaC2—Santa Lucia loam, sloping, eroded
- SaD2—Santa Lucia loam, moderately steep, eroded

Lockwood loam, gently sloping is a well-drained soil derived from alluvium and generally found on alluvial fans. A typical profile consists of loam from 0 to 26 inches and clay loam from 26 to 60 inches of soil profile. Depth to water table and a restrictive feature is typically >80 inches beneath the surface. Santa Lucia loam, sloping, eroded is a well-drained soil derived from shale and generally found on mountain slopes. A typical profile consists of channery loam from 0 to 14 inches, very channery loam from 14 to 24 inches, and unweathered bedrock from 24 to 28 inches of soil profile. Depth to water table is typically >80 inches and depth to a restrictive feature (lithic bedrock) is typically 24 to 28 inches beneath the surface. Santa Lucia loam, moderately steep, eroded is a well-drained soil derived from shale and generally found on mountain slopes. A typical profile consists of channery loam from 0 to 14 inches, very channery loam from 14 to 24 inches, and unweathered bedrock from 24 to 28 inches of soil profile. Depth to water table is typically >80 inches and depth to a restrictive feature (lithic bedrock) is typically 24 to 28 inches beneath the surface.

None of these soils are listed as hydric soils for San Mateo County (NRCS 2019b).

2.4 Hydrology

The principal hydrologic sources for the study area are direct precipitation, surface and sub-surface runoff from the surrounding watershed, and drainage through Green Oaks Creek (hereafter referred to as “creek”) (USGS 1991). The creek had flowing water during the March 1, 2019 field visit. The creek typically dries up during the dry season (Jered Lawson, pers. comm). Water was observed in the

creek during a previous riparian delineation in September 2011, and was considered perennial in that year (CRB 2011).

The creek drains southwest across the study area and eventually into the Pacific Ocean. The creek is mapped on the USGS (1991) Franklin Point topographic quadrangle, and is mapped as Riverine in the National Wetlands Inventory (NWI) (USFWS 2019a). No other streams are mapped for the study area in the NWI or Franklin Point USGS quad, but the sag pond on the 2016 study area (CRB 2016) is mapped as Freshwater Pond in the NWI.

A man-made basin, apparently excavated decades ago as a detention basin for dairy wastewater, is present in the eastern portion of the 2016 project site (Figure 2). The basin was dry during both the October 2016 and March 1, 2019 field visits. The basin receives runoff from surrounding fields and discharges via a culvert to Green Oaks Creek, and does not support ponded water (Jered Lawson, pers. comm.). A roadside drainage swale is present along Highway 1 within the 2016 biotic assessment study area. The swale is man-made, excavated for roadside drainage, and lacks a defined bed, bank, and Ordinary High Water Mark, but likely conveys water for brief periods during the rainy season and eventually drains into Green Oaks Creek, off of the study area.

3.0 METHODOLOGY

Prior to conducting field studies, a background literature search was conducted to determine which special-status species and sensitive habitats have potential to inhabit the study area region based on documented occurrences and range distribution (Appendix A). The primary sources for this search included the California Natural Diversity Data Base (CNDDB) (CDFW 2019), CNPS Inventory of Rare and Endangered Plants (CNPS 2019), and the U.S. Fish and Wildlife Service list of threatened or endangered species (USFWS 2019b) records for the Franklin Point and surrounding USGS 7.5' quadrangles⁵. In addition, other lists and publications were consulted, including the CDFW Special Animals list (CDFW 2018), Zeiner et al. (1988; 1990a; 1990b), eBird (2019), the NWI (USFWS 2019a), Web Soil Survey (NRCS 2019a), topographic maps (USGS 1991), the San Mateo County Local Coastal Program (LCP), and Baldwin et al. (2012).

Reconnaissance-level field studies for this addendum were conducted on March 1, 2019. The project site and accessible portions of the study area were traversed on foot to document habitat conditions to determine the potential for occurrence of special-status biotic resources (much of the study area was not viewed on foot due to private property constraints; these areas were surveyed using aerial photography and binoculars). The potential for occurrence of special-status species was assessed based on the presence of necessary habitat characteristics, confirmed records from the region, and the biologist's knowledge of the target species. No focused surveys were performed.

3.1 Special-status Species

Potential for occurrence of special-status species was evaluated based on the presence of suitable habitat characteristics. Where habitat is lacking or otherwise degraded or unsuitable for a particular species, no further recommendations are made in this report since the species is unlikely to inhabit the project site or surrounding study area. For species that are present on the study area (based on field observations and/or documentation during the background literature search), or for species which could potentially occur on the study area (based on the presence of suitable habitat), mitigation

⁵ The initial raw species list was refined to remove species that are documented in the general region but are not expected to occur on the study area due to range limitation or extirpation, or occur in habitats obviously lacking from the study area, such as marine habitats. The remaining species were analyzed for their potential to occur on the study area (Appendix A).

measures are recommended to reduce any potential significant project impacts to less-than-significant levels (CEQA Guidelines, Appendix G).

3.2 Sensitive Habitats

Sensitive Habitats are defined in the LCP as “any area in which plant or animal life or their habitats are either rare or especially valuable and any area which meets one of the following criteria: (1) habitats containing or supporting rare and endangered species as defined by the State Fish and Game Commission, (2) all perennial and intermittent streams and their tributaries, (3) coastal tide lands and marshes, (4) coastal and offshore areas containing breeding or nesting sites and coastal areas used by migratory and resident water-associated birds for resting areas and feeding, (5) areas used for scientific study and research concerning fish and wildlife, (6) lakes and ponds and adjacent shore habitat; (7) existing game and wildlife refuges and reserves, and (8) sand dunes. Sensitive habitat areas include, but are not limited to, riparian corridors, wetlands, marine habitats, sand dunes, sea cliffs, and habitats supporting rare, endangered, and unique species.”

Wetlands are defined in the LCP as “an area where the water table is at, near, or above the land surface long enough to bring about the formation of hydric soils or to support the growth of plants which normally are found to grow in water or wet ground. Define wetland as an area where the water table is at, near, or above the land surface long enough to bring about the formation of hydric soils or to support the growth of plants which normally are found to grow in water or wet ground. Such wetlands can include mudflats (barren of vegetation), marshes, and swamps. Such wetlands can be either fresh or saltwater, along streams (riparian), in tidally influenced areas (near the ocean and usually below extreme high water of spring tides), marginal to lakes, ponds, and man-made impoundments. Wetlands do not include areas which in normal rainfall years are permanently submerged (streams, lakes, ponds and impoundments), nor marine or estuarine areas below extreme low water of spring tides, nor vernal wet areas where the soils are not hydric. In San Mateo County, wetlands typically contain the following plants: cordgrass, pickleweed, jaumea, frankenia, marsh mint, tule, bullrush, narrow-leaf cattail, broadleaf cattail, pacific silverweed, salt rush, and bog rush. To qualify, a wetland must contain at least a 50% cover of some combination of these plants, unless it is a mudflat.”

Riparian Corridors are defined in the LCP as the “limit of riparian vegetation (i.e. a line determined by the association of plant and animal species normally found near streams, lakes, and other bodies of fresh water: red alder, jaumea, pickleweed, big leaf maple, narrowleaf cattail, arroyo willow, broadleaf cattail, horsetail, creek dogwood, black cottonwood, and box elder). Such an area must contain at least a 50% cover of some combination of the plants listed.”

Potential sensitive habitats on the project site were mapped in the field with a Trimble GPS unit (sub-meter accuracy) and overlain on a digital orthophoto (dated August 9, 2018) using ArcGIS mapping software. Other habitats were drawn directly onto the orthophoto based on variation in texture, color, and structure. The project site boundary was approximated onto the orthophoto based on the Pie Ranch Master Plan, dated September 25, 2017, prepared by Adam Weiss Architecture, and is highly generalized.

4.0 RESULTS

4.1 Special-status Plants

Forty-four special-status plant species are documented to occur in the study area region based on the

background literature search discussed in Section 3.0. A list of these species, their status, and their typical habitats is presented in Appendix A. A search of the CNDDDB GIS database found one special-status plant species documented on the study area: Monterey pine. Numerous other special-status plants are documented within three miles of the study area (CDFW 2019) (Figure 3). The study area is not located within designated critical habitat for any federally-listed plant species (USFWS 2019c). The field visit occurred outside the typical blooming period of most plant species, and no floristic surveys were conducted.

One special-status plant species was observed on the study area during both the October 2016 and March 1, 2019 field visits: Monterey pine (Figure 2). This species is discussed below. The remaining 43 special-status plant species identified for the region during the background literature search are unlikely to inhabit the project site because it is heavily disturbed and consists primarily of Developed/Ruderal habitat that lacks suitable habitat components (e.g., soil type, micro-habitat, plant community) required by special-status plant species. Portions of the surrounding 2016 and 2019 study areas in Central Coast Riparian Scrub, Riparian Woodland, Coyote Brush Scrub, and Freshwater Wetland habitats could provide suitable habitat for some special-status plants known from the region (Appendix A), but these habitats will not be directly or indirectly impacted by the project and no additional studies or mitigation measures for special-status plant species (other than Monterey pine, discussed below) are recommended.

Monterey Pine

Monterey pine is a perennial evergreen tree in the Pinaceae family. Though widely planted and naturalized, there are only three native stands in California: Año Nuevo, Cambria, and the Monterey Peninsula (CNPS 2019). The species is not listed as threatened or endangered under the state or federal Endangered Species Acts, but has a California Native Plant Society (CNPS) Rare Plant Rank of 1B.1 (plants rare, threatened, and endangered in California and elsewhere/seriously endangered in California). It typically occurs in closed-cone coniferous forest and cismontane woodland between 80-600 feet elevation (CNPS 2019). It has been documented on the study area in the CNDDDB as part of the larger Año Nuevo population (Figure 3; CDFW 2019). During the October 2016 reconnaissance field visits, seven small stands or individual trees were observed on the 2016 study area, primarily along Green Oaks Creek, with additional individuals in the northeastern portion of the study area near the sag pond (Figure 2). During the March 1, 2019 field visit, an additional five small stands or individuals were observed on the 2019 study area⁶ (Figure 2).

According to Section 7.42 of the LCP:

“Prevent any development on or within 50 feet of any rare plant population. When no feasible alternative exists, permit development if: (1) the site or a significant portion thereof is returned to a natural state to allow for the reestablishment of the plant, or (2) a new site is made available for the plant to inhabit.”

A 50-foot buffer was applied around Monterey pine occurrences on the study area as per LCP guidelines (Figure 4). A 50-foot buffer for isolated Monterey pine individuals would not be necessary to protect them from project ground disturbance, with the incorporation of mitigation measures, since these individuals would not likely be directly impacted by project ground disturbance and occur in existing disturbed habitats, and a 50-foot buffer was not applied around these individuals in Figure 4.

⁶ Knobcone pine (*Pinus attenuata*) occurs in the region. Some individuals of pine on the study area lacked cones or other definitive diagnostic characteristics to differentiate between knobcone pine and Monterey pine. All pines observed on the study area were mapped as Monterey pine, but knobcone pine could potentially occur on the study area as well.

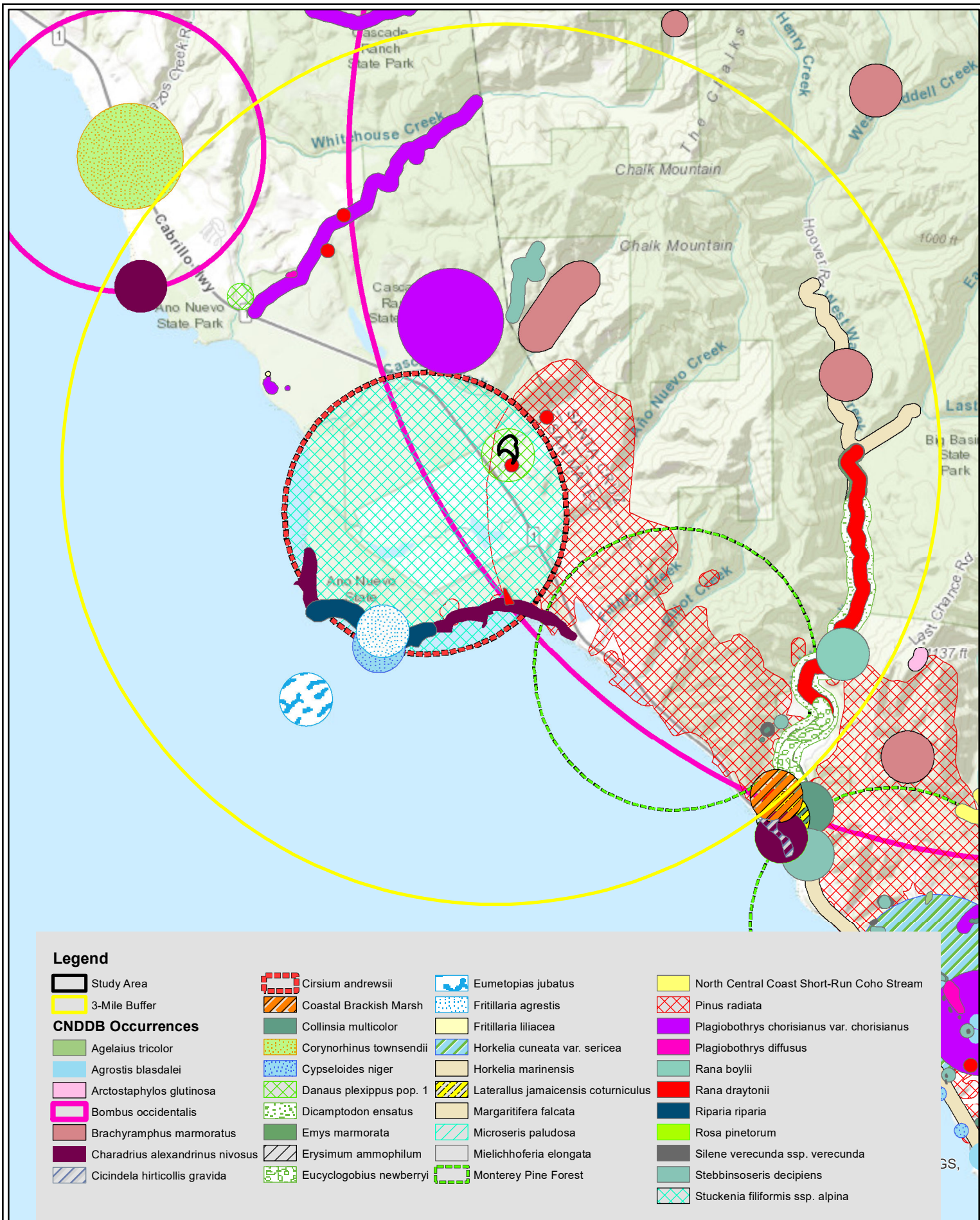
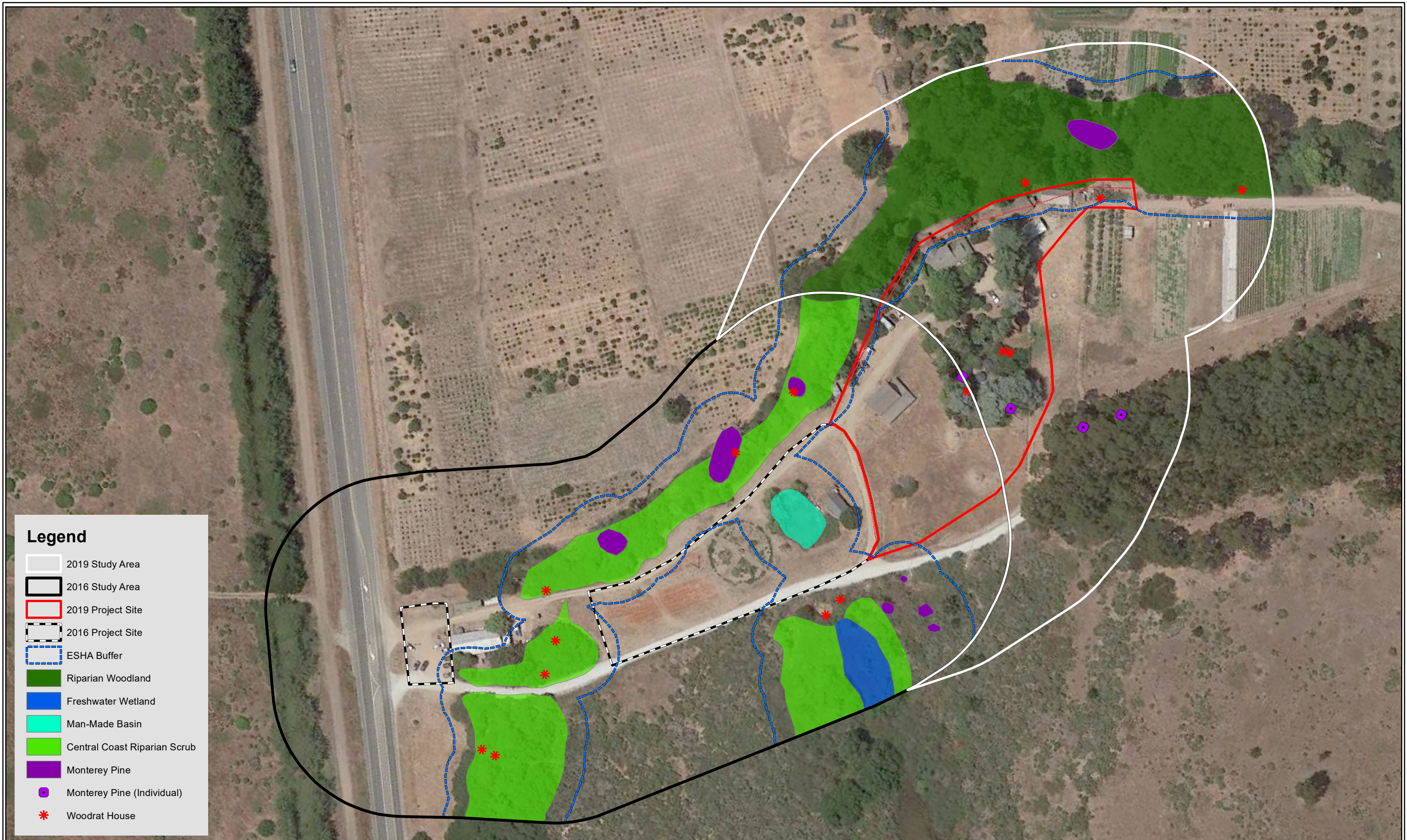


Figure 3. CNDDDB map of special-status species in the study area region.

Data Source: CDFW (2019)

Mapscale: 1:55,000
0 0.25 0.5 1 1.5 2 Miles





However, mitigation measures in Section 5.0 provide recommendations for habitat protection and enhancement around existing trees.

4.2 Special-status Wildlife

Forty-two special-status wildlife species were analyzed for their potential occurrence on the project site and surrounding study area because they: (1) occur in habitats present in the general vicinity of the study area, and (2) have ranges that include western San Mateo County (Appendix A). A search of the CNDDDB GIS database found documented occurrences of two special-status wildlife species on the study area: monarch butterfly (*Danaus plexippus*) and California red-legged frog (*Rana draytonii*) (Figure 3). The study area is located within designated critical habitat for one federally-listed wildlife species: California red-legged frog (USFWS 2019c).

In addition to documented occurrences of monarch butterfly and California red-legged frog on the study area, two additional special-status species were observed during the October 2016 and/or March 1, 2019 field visits: Allen's hummingbird (*Selasphorus sasin*) and San Francisco dusky-footed woodrat (Figure 2; Appendix B-6). At least ten other special-status wildlife species, though not observed during the reconnaissance field visits, could occur on the study area due to the presence of suitable habitat: California giant salamander (*Dicamptodon ensatus*), Santa Cruz black salamander (*Aneides niger*), western pond turtle (*Emys marmorata*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), white-tailed kite (*Elanus leucurus*), olive-sided flycatcher (*Contopus cooperi*), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), pallid bat (*Antrozous pallidus*), fringed myotis (*Myotis thysanodes*), and long-legged myotis (*Myotis volans*) (Appendix A). The San Francisco garter snake is state and federally-endangered, and also designated as a state "fully-protected" species. These species are discussed below. In addition, trees, shrubs, and herbaceous vegetation on the study area provide nesting habitat for other native bird species protected under the Migratory Bird Treaty Act and state Fish and Game Code.

The remaining special-status wildlife species analyzed are considered absent or to have a low potential to inhabit the project site or study area, and it is therefore unlikely they would be adversely impacted by construction (Appendix A). These species are not discussed further.

Monarch Butterfly (*Danaus plexippus*) Federal Status: None; State Status: Roost Sites Sensitive

Monarch butterflies overwinter in two main regions in North America: central Mexico and coastal California. The California coast is a major area of winter aggregation for monarchs residing west of the Rocky Mountains, and monarchs generally begin arriving in mid-October and stay through March (Oberhauser and Solenksy 2004). In California, monarchs roost in ~15 different species of trees during the winter, but three species account for most of the roost sites: blue gum eucalyptus, Monterey pine, and Monterey cypress (Oberhauser and Solenksy 2004). Factors important to monarchs during overwintering include moderate temperatures, access to moisture and nectar, protection from strong winds, and cool temperatures and filtered sunlight at the roost site (CDFW 2016; Oberhauser and Solenksy 2004). The monarch butterfly is not listed (e.g., threatened or endangered) by federal or state regulatory agencies (though it has been petitioned for listing under the federal Endangered Species Act), but its winter roost sites are considered sensitive habitats by CDFW, and adverse impacts to sensitive habitat may be considered significant under CEQA.

A documented monarch butterfly winter roost site is present on the study area (Figure 3), in Monterey pine and Douglas-fir along Green Oaks Creek, as well as Eucalyptus Forest along Green Oaks Way (CDFW 2019). The proposed project is located primarily in Developed/Ruderal habitat, the general location and intensity of land use is not anticipated to change as a result of the project, and with the

incorporation of sensitive habitat buffers and enhancement discussed below, no impacts to monarch butterfly are anticipated from the proposed project and no mitigation measures are recommended.

California Giant Salamander (*Dicamptodon ensatus*), Federal Status: None; State Status: Species of Special Concern

The California giant salamander is an endemic species with a limited range restricted to coastal areas north and south of San Francisco Bay from southern Mendocino County to south Santa Cruz County, including San Mateo County (Thomson et al. 2016). Adults are large (17-30.5 cm) with a copper to brown irregular marbled pattern on a tan to brownish background on the dorsum and a thick tail that is laterally compressed; larvae are light brown with bushy, external gills (Petranka 1998; Thomson et al. 2016). It is a terrestrial species that lives in coastal chaparral, oak woodlands, and coniferous forest and breeds in perennial and some seasonal streams, often in headwaters (Thomson et al. 2016). In appropriate habitat, larvae can sometimes be detected visually or with dip-nets, particularly since they typically over-winter for about 18 months. Most observations of adults have been in proximity to riparian areas but very little information is available regarding upland habitat use and one individual was found in a subterranean tunnel on a ridgeline approximately 0.3-miles from the nearest perennial stream (Allaback, pers. obs.). Adults prey on invertebrates and vertebrates including slender salamanders, mice, shrews and voles.

The California giant salamander inhabits the Santa Cruz Mountains and its drainage basins from the vicinity of Corralitos Creek in Santa Cruz County north through San Mateo County to near Pacifica and east to Woodside (Thomson et al. 2016; CDFW 2019). Adults have been seen at several locations on Midpeninsula Regional Open Space lands in San Mateo County (CDFW 2019). Although adults are more likely to be found in forested areas east of the study area, they may be found in the study area in moist locations in Central Coast Riparian Scrub, Riparian Woodland, and Freshwater Wetland habitats, as well as under man-made woody debris piles in proximity to these areas. Breeding is considered unlikely in Green Oaks Creek, since larvae are typically found in perennial streams. Mitigation measures are included in Section 5.0 to address potential project impacts to the species.

Santa Cruz Black Salamander (*Aneides flavipunctatus niger*), Federal Status: None; State Status: Species of Special Concern

The Santa Cruz black salamander occurs in moist microhabitats in a variety of vegetation communities including deciduous woodlands, coniferous forests, open oak woodlands and meadows. The subspecies *niger* is isolated and occupies a limited range in Santa Cruz, Santa Clara and San Mateo counties. Recent genetic analysis indicates that four separate lineages are present in California, and that the southern disjunct lineage (*niger*) should be considered a separate species (Rissler and Apodaca 2007). The Santa Cruz black salamander is designated as a state Species of Special Concern.

Santa Cruz black salamanders have been found in San Mateo County on lands managed by the Midpeninsula Regional Open Space District (M. Westphal, pers. comm.). In Santa Cruz County, the species is known from U.C. Santa Cruz, Corralitos Creek and a variety of locations in the south portion of the county (C. Lay, C. Steiner, pers. comm.; Allaback and Laabs, pers. obs.). The study area supports suitable habitat for the species in moist areas in Central Coast Riparian Scrub, Riparian Woodland, and Freshwater Wetland habitats, as well as under man-made woody debris piles in proximity to these areas. Mitigation measures are included in Section 5.0 to address potential project impacts to the species.

California Red-legged Frog (*Rana draytonii*), Federal Status: Threatened; State Status: Species of Special Concern

The California red-legged frog (CRLF) is a large (85-138 mm), nocturnal species that historically occupied much of central and southern California. The species requires still or slow-moving water during the breeding season, where it deposits large egg masses, usually attached to submerged or emergent vegetation. Breeding typically occurs between December and April, depending on annual environmental conditions and locality. Eggs require 6 to 12 days before hatching and metamorphosis occurs 3.5 to 7 months after hatching (Stebbins 2003). Following metamorphosis between July and September, juveniles generally do not travel far from aquatic habitats. Movements of individuals generally begin with the first rains of the weather-year, in response to receding water or following the breeding season (Fellers and Kleeman 2007; Allaback et al. 2010). Radio-telemetry data indicates that individuals generally engage in straight-line movements irrespective of riparian corridors and can move up to two miles (Bulger, et al. 2003; Fellers and Kleeman 2007). California red-legged frogs utilize a variety of water sources during the non-breeding season, and females are more likely than males to depart from perennial ponds shortly after depositing eggs (Fellers and Kleeman 2007). They may take refuge in small mammal burrows, leaf litter or other moist areas during periods of inactivity or whenever it is necessary to avoid desiccation (Rathbun et al. 1993; Jennings and Hayes 1994). Occurrence of this frog has shown to be negatively correlated with presence of introduced bullfrogs (Moyle 1973; Hayes and Jennings 1986, 1988; D'Amore et al. 2009), but both species coexist at some locations, particularly along the coast. Genetic studies indicate that the nominal subspecies *draytonii* and *aurora* represent separate lineages and are therefore distinct species (Shaffer, et al. 2004).

The study area is located within designated Critical Habitat for CRLF (USFWS 2019c), and CRLF has been documented in the sag pond on the study area (CDFW 2019). The 1999 record included a report of a calling CRLF, which suggests breeding activity, although the observation does not appear to have been made during the breeding season (CDFW 2019). Most of the project site does not provide upland habitat for CRLF although the species is expected to regularly pass through during dispersal events, and the Central Coast Riparian Scrub and Riparian Woodland provide foraging and sheltering habitat, especially when standing water is present. Mitigation measures are included in Section 5.0 to address potential project impacts to the species.

Western Pond Turtle (*Emys marmorata*), Federal Status: None; State Status: Species of Special Concern

The western pond turtle (WPT) ranges from western Washington to northern Baja California, mostly west of the Sierra Nevada-Cascade crest (Stebbins 2003; Ernst et al. 1994). It inhabits permanent freshwater ponds, lakes, marshes, streams and rivers (Bury and Holland 1993). Pond turtles favor sites with deep pools and with an abundance of basking sites, such as partially submerged logs or rocks, matted emergent vegetation or exposed shorelines. Undercut banks, root masses and boulder piles provide underwater escape cover (Bury and Holland 1993). Western pond turtles can move across terrestrial habitats in response to fluctuating water level, an apparent adaptation to the variable rainfall and unpredictable flows that occur in many coastal California drainage basins (Rathbun et al. 1992). In addition, they can over-winter on land or in water or remain active in the winter, depending on environmental conditions (Rathbun et al. 1993; Jennings and Hayes 1994). Females travel from aquatic sites into open, grassy areas to lay eggs in a shallow nest (Holland 1992; Rathbun et al. 1992). Nests have been reported from up to 500 meters from water bodies (Jenning and Hayes 1994). During dispersal, pond turtles can move up to two kilometers in search of suitable habitat and can tolerate a minimum of seven days without water (Jennings and Hayes 1994).

Although not recorded in the CNDDB, a robust western pond turtle population is present in the

region, including at ponds along Whitehouse Canyon Road located two miles to the northwest and in Waddell Creek, three miles to the southeast (Allaback and Laabs, pers. obs.). Potential aquatic habitat is present in the sag pond, and disturbed grassland provides marginal nesting habitat for known populations in the region. Mitigation measures are included in Section 5.0 to address potential project impacts to the species.

San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*), Federal Status: Endangered; State Status: Endangered, Fully Protected

The San Francisco garter snake (SFGS) is found only on the San Francisco peninsula in San Mateo County and the northern portion of Santa Cruz County (Barry 1978; Brode 1990; USFWS 2006). It is an extremely colorful snake with a bright orange-red head, blue belly, greenish-yellow dorsal stripe and red and black stripes along either side. It grows to a length of three to four feet (Stebbins 2003). It occupies freshwater marshes, ponds, sloughs, and associated riparian corridors, especially where dense shoreline vegetation is present. It also uses a variety of upland habitats including grassland, woodland and coastal scrub in proximity to these aquatic habitats. During the fall and winter, it stays relatively inactive underground in rodent burrows (McGinnis, et al. 1987). A study of SFGS in coastal San Mateo County (Halstead et al. 2011), found SFGS up to ~700 feet from aquatic habitat, with the greatest capture success near wetland and pond margins (Halstead pers. comm). No data is available regarding SFGS dispersal distances, although an adult female, which had likely emerged from a winter hibernacula, was found 450 meters from the nearest pond with a suitable prey base at a site near La Honda in San Mateo County (Allaback et al. 2015). During the spring and summer, it occupies dense vegetation near ponds or marshes and adjacent scrub and open upland habitat for temperature regulation and cover. Females produce between 12 and 24 live young in July or August. Adults feed primarily on larger frogs including red-legged frogs, but may also take fish, salamanders, newts and earthworms. Pacific treefrogs appear to be an important part of the diet of young snakes (Larsen 1994). It is rarely seen but can sometimes be observed near the water's edge, basking on warm days, or when it retreats to water. Much of the range of the SFGS lies within a heavily urbanized area, and alteration and isolation of habitats has been identified as the primary threat to the subspecies (Brode 1990). Agricultural development, overgrazing and illegal collecting have also been implicated in its decline.

There are no documented occurrences of SFGS on the study area, but numerous documented occurrences are present within three miles of the study area⁷, including three occurrences within ~one mile of the study area in the vicinity of Año Nuevo State Park (CDFW 2019). Potential habitat is present on the project site and study area. Individuals may disperse through the project site, and if the nearby sag pond provides breeding habitat for CRLF, a primary prey item, the SFGS is likely to be present. Mitigation measures to address potential impacts to SFGS are included in Section 5.0.

White-tailed Kite (*Elanus leucurus*), Federal Status: BCC, State Status: Fully Protected

The white-tailed kite is a medium-sized raptor that occupies low-elevation grassland, agricultural, wetland, oak woodland and oak savanna habitats (Dunk 1995). The species is distributed throughout the coastal foothills and valleys along the entire length of the state, throughout the Central Valley, and into the foothills of the Sierra Nevada (Dunk 1995). It nests in a wide variety of trees and shrubs, either isolated or part of larger stands. Typically, four eggs are laid in February and March and chicks hatch after 30-32 days. Juveniles often share their parent's home range for at least one season. During the non-breeding season, the species roosts communally. Nearby open areas are required for foraging, and the species will use certain types of agricultural fields. Food habit studies have

⁷ SFGS records are suppressed in the CNDDDB, and are therefore not included in Figure 3.

demonstrated that voles make up a large proportion of its diet, although other small mammals, birds and insects are also eaten (Dunk 1995). The species hunts during the day primarily by hovering and searching for prey. White-tailed kites in California are generally resident, although they may occupy different areas during the non-breeding and breeding seasons. The species underwent a dramatic reduction in numbers due to habitat loss and hunting, and was extirpated throughout much of its range in the early 1900s. Between the 1940s and early 1980s, the population recovered and its range expanded. More recently, population declines have again been noted, possibly as a result of the conversion of agricultural lands to urban uses (Dunk 1995).

Numerous observations are regularly reported but mostly during the winter season (eBird 2019). However, the species was confirmed as a breeder in extreme southwest San Mateo County during surveys conducted from 1991-97 (Sequoia Audubon Society 2001). Suitable nesting and foraging habitat for white-tailed kites is present on the study area, although the level of human activity reduces the likelihood that the species would nest nearby. Mitigation measures to reduce potential project impacts to white-tailed kite to less-than-significant levels are included in Section 5.0.

Allen's Hummingbird (*Selasphorus sasin*), Federal Status: Bird of Conservation Concern, State Status: None

Allen's hummingbird breeds in a narrow band along the coast of California and southern Oregon and winters from Central California south through Baja and Central Mexico. Nesting habitat in the San Francisco Bay region includes mixed evergreen forest, redwood forests, riparian woodland, nonnative eucalyptus and cypress groves, and occasionally live oak woodlands and coastal scrub with scattered trees (Mitchell 2000). In addition to nectar, insects are taken, especially spiders. Allen's hummingbird is an extremely early migrant, and arrives on nesting grounds in January and February (Mitchell 2000). Males engage in a distinct J-shaped flight pattern when courting females. Nests are often clustered and semi-colonial. Females typically produce two broods. The species was recently added to the federal Birds of Conservation Concern primarily due to its restricted breeding range.

Multiple Allen's hummingbirds exhibiting breeding behavior were observed on the study area during the March 1, 2019 field visit. Allen's hummingbird is considered to be a regular and common breeder in coastal San Mateo County (Sequoia Audubon Society 2001; Metropulos 2006). Potential nesting habitat is available for the species in Central Coast Riparian Scrub, Riparian Woodland, and Eucalyptus Forest. Mitigation measures to reduce potential project impacts to Allen's hummingbird to less-than-significant levels are included in Section 5.0.

Olive-sided Flycatcher (*Contopus cooperi*), Federal Status: None, State Status: Species of Special Concern

The olive-sided flycatcher nests throughout much of Canada and the western United States and winters in South America (Altman et al. 2000). It inhabits woodland and forest habitats generally near edges and openings. It prefers coniferous trees but the species also uses Eucalyptus Forest near the coast (Shuford 1993; Widdowson 2008). The species is quite vociferous and is often seen calling from the tops of prominent trees. It feeds on insects, especially bees and wasps, and builds a cup nest well away from the trunk of trees (Widdowson 2008). The species may depend on forest fires and other natural or man-made disturbances to create a habitat mosaic with edges and openings (Widdowson 2008). The olive-sided flycatcher is designated as a Species of Special Concern by CDFW and a Bird of Conservation Concern by USFWS.

Olive-sided flycatcher has been observed at Pie Ranch during the breeding season (eBird 2019). The species was confirmed as a breeder in extreme southwest San Mateo County during surveys

conducted from 1991-97 (Sequoia Audubon Society 2001). Suitable nesting and foraging habitat for olive-sided flycatcher is present on or near the study area. Mitigation measures to reduce potential project impacts to olive-sided flycatcher to less-than-significant levels are included in Section 5.0.

Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*), Federal Status: Bird of Conservation Concern, State Status: Species of Special Concern

The saltmarsh common yellowthroat (= San Francisco common yellowthroat) occurs in fresh and saltwater marshes in the San Francisco Bay Area, and along the coast from Marin through San Mateo Counties (Gardali and Evens 2008). It inhabits salt, brackish and fresh water marshes, as well as riparian corridors and canals with appropriate vegetation. It requires thick, continuous cover down to the water surface for foraging. It nests in emergent vegetation on or near the ground or just above the water (Dunn and Garrett 1997; Gardali and Evens 2008). In the winter, it spreads out into the coastal marshes from San Francisco south to San Diego. The subspecies has declined as wetlands throughout its range have been drained and rivers channelized (Dunn and Garrett 1997). The entire population was estimated at fewer than 200 pairs in the 1970s but in the 1980s, 500 pairs were reported and more recently the estimate ranges from 1000-2000 individuals (Remson 1978; Gardali and Evens 2008).

Saltmarsh common yellowthroat is regularly reported from the vicinity of the study area and is considered to be relatively common in appropriate habitat along the San Mateo Coast (Sequoia Audubon Society 2001; eBird 2019). Potential habitat is present at the manmade pond, offsite sag pond, and along the Riparian Woodland. Mitigation measures to reduce potential project impacts to saltmarsh common yellowthroat to less-than-significant levels are included in Section 5.0.

Other Nesting Native Bird Species

Suitable nesting habitat for other, non-listed bird species protected under the MBTA and Fish and Game Code occurs in trees, shrubs, and herbaceous vegetation on the project site and surrounding study area. The MBTA regulates or prohibits taking, killing, and possession of migratory bird species and their nests as listed in Title 50 Code of Federal Regulation (CFR) Section 10.13. Bird species and their nests are also protected under Sections 3515 and 3503 of the state Fish and Game Code. Vegetation removal during the nesting season, or noise and other disturbance during project implementation, could adversely impact nesting bird species on the study area, should they be present, potentially resulting in nest destruction, abandonment, or failure. Mitigation measures to address potential significant impacts to nesting bird species are included in Section 5.0.

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*), Federal Status: None; State Status: Species of Special Concern.

The San Francisco dusky-footed woodrat (SFDW) occurs from San Francisco Bay south through the Santa Cruz Mountains to Elkhorn Slough and inland to the Diablo Range (Hall 1981). The species is most common in riparian, oak woodland and scrub habitats (Carraway and Verts 1991). It typically constructs houses, which are often referred to as nests or middens, out of sticks and other debris. They are constructed on the ground, in rocky outcrops or in trees and are often found in concentrations along riparian corridors. The species can also live in hollows in logs or trees and colonize man-made structures that provide appropriate protection from predators. Houses are often reused by successive generations and some can grow to be six feet or more in height, while others are well-hidden and easily overlooked. Houses are used for rearing young, protection from predators, resting, food storage, thermal protection and social interaction (Carraway and Verts 1991).

Nine SFDW houses were observed on the 2016 study area, outside of the project site (Figure 2), and an additional six SFDW houses were observed on the 2019 study area, and more are expected in suitable habitat where dense vegetation is present. SFDW houses were observed in Central Coast Riparian Scrub, Riparian Woodland, Coyote Brush Scrub, and Developed/Ruderal habitats supporting a dense understory of shrubs, including California blackberry, poison oak, and stinging nettle. No SFDW houses were observed in areas lacking suitable ground cover but the species has colonized manmade debris piles in various areas. Mitigation measures to address potential significant impacts to SFDW are included in Section 5.0.

Pallid Bat (*Antrozous pallidus*), Federal Status: None; State Status: Species of Special Concern; WBWG

The pallid bat inhabits a variety of arid habitats including grassland, scrub and woodlands (Hermanson and O'Shea 1983). It is a year-round resident in central California, where it is usually associated with oak woodland. Daytime roosts are generally in trees but also occur in rock outcrops and mines. Nocturnal roosts are often under bridges and in rock outcrops. One or two young are born in May or June. Maternal colonies generally number less than 100 individuals. Pallid bats feed on insects and arachnids, which are often taken on the ground. The species is very sensitive to disturbance of roost sites. Pallid bats are not known to migrate, and winter hibernacula are often close to summer roosts. The pallid bat is listed as a Species of Special Concern by CDFW and is designated as a High Priority Species by the Western Bat Working Group.

There are no records of pallid bats in the vicinity of the study area, but this may be due to a lack of survey effort. Potential roosting habitat is present in the Central Coast Riparian Scrub, Riparian Woodland, and other forested areas, as well as in buildings. Mitigation measures to address potential significant impacts to pallid bats are included in Section 5.0.

Western Red Bat (*Lasiurus blossevillei*), Federal Status: None; State Status: Species of Special Concern; WBWG

The western red bat is widely distributed in the western United States, Central America and South America. *Lasiurus blossevillei* formerly was included in *Lasiurus borealis*, but recent genetic work has demonstrated that the two represent distinct species (Morales and Bickham 1995; Baker et al. 2003). The species roosts primarily in the foliage of trees and shrubs and is closely associated with riparian habitats (Shump and Shump 1982). It feeds primarily on insects, which are taken in flight or while foraging on the ground. Breeding occurs in late summer, while fertilization is delayed until the spring (Shump and Shump 1982). It appears that red bats in California do not migrate out of the state, although there may be seasonal movements (Cryan 2003). It winters along the coast and breeds inland. Loss of riparian habitat has been implicated in the decline of this species. The western red bat is listed as a Species of Special Concern by CDFW and is designated as a High Priority Species by the Western Bat Working Group.

There are no records of western red bats in the vicinity but this may be due to a lack of survey effort. Potential winter roosting habitat is present along the Riparian Woodland. Mitigation measures to address potential significant impacts to western red bats are included in Section 5.0.

Fringed Myotis (*Myotis thysanodes*), Federal Status: None; State Status: None; WBWG

The fringed myotis is found throughout much of the western United States and Mexico from sea level up to 7,000 feet in elevation. It inhabits a variety of habitats including desert scrub, oak woodland, and coniferous forest (O'Farrell and Studier 1980). Day roosts include rock crevices and trees, as well

as mines and buildings. Birth of a single young occurs in May or June. Maternity roosts can be large, numbering up to 400 individuals (O'Farrell and Studier 1980). The species feeds primarily on beetles. It is known to migrate but such movements are poorly understood. Although widely distributed, it is uncommon to rare throughout its range. The species is highly sensitive to disturbance by humans. The fringed myotis is listed as a High Priority species by the Western Bat Working Group.

There are no records of fringed myotis in the vicinity but this may be due to a lack of survey effort. Potential roosting habitat is present in the Central Coast Riparian Scrub, Riparian Woodland, and other forested areas. Mitigation measures to address potential significant impacts to fringed myotis are included in Section 5.0.

Long-legged Myotis (*Myotis volans*) Federal Status: None; State Status: None; WBWG

The long-legged myotis is found throughout much of California with the exception of the low desert regions (Warner and Czaplewski 1984; Hoffmeister 1986). It is primarily associated with coniferous forests, although it may be found in riparian and desert habitats as well (Warner and Czaplewski 1984). Day roosts are generally in hollow trees, rock crevices, mines and buildings. A single young is produced each year in June or July. Maternity roosts can be large, numbering in the hundreds. Long-legged myotis hibernate in California, and there are likely seasonal movements between summer and winter roosts. The species feeds primarily on moths, but will also eat beetles, flies and termites (Warner and Czaplewski 1984). Its population status is poorly understood. The long-legged myotis is listed as a High Priority species by the Western Bat Working Group.

There are no records of long-legged myotis in the vicinity but this may be due to a lack of survey effort. Potential roosting habitat is present in the Central Coast Riparian Scrub, Riparian Woodland, and other forested areas, as well as in buildings. Mitigation measures to address potential significant impacts to long-legged myotis are included in Section 5.0.

4.3 Wetland and Riparian Areas

The creek and associated Central Coast Riparian Scrub and Riparian Woodland on the study area meet the LCP definition of "Riparian Corridor" (Figure 2).

According to Section 7.11(a) of the LCP: "*On both sides of riparian corridors, from the 'limit of riparian vegetation', extend buffer zones 50 feet outward for perennial streams and 30 feet outward for intermittent streams.*" The creek had flowing water at the time of the March 1, 2019 field visit. The creek likely dries up most years (CRB 2016), and is considered in this report to be intermittent, and a 30-foot riparian buffer from the 'limit of riparian vegetation' would apply (Figure 4).

Section 7.12 of the LCP Identifies the Permitted Uses in Riparian Buffer Zones: "*Within buffer zones, permit only the following uses: (1) uses permitted in riparian corridors; (2) residential uses on existing legal building sites, set back 20 feet from the limit of riparian vegetation, only if no feasible alternative exists, and only if no other building site on the parcel exists; (3) on parcels designated on the LCP Land Use Plan Map: Agriculture, Open Space, or Timber Production, residential structures or impervious surfaces only if no feasible alternative exists; (4) crop growing and grazing consistent with Policy 7.9; (5) timbering in "streamside corridors" as defined and controlled by State and County regulations for timber harvesting; and (6) no new residential parcels shall be created whose only building site is in the buffer area.*"

Section 7.13 of the LCP identifies Performance Standards in Riparian Buffer Zones: "*Require uses permitted in buffer zones to: (1) minimize removal of vegetation; (2) conform to natural topography*

to minimize erosion potential; (3) make provisions (i.e., catch basins) to keep runoff and sedimentation from exceeding pre-development levels; (4) replant where appropriate with native and noninvasive exotics; (5) prevent discharge of toxic substances, such as fertilizers and pesticides; into the riparian corridor; (6) remove vegetation in or adjacent to man-made agricultural ponds if the life of the pond is endangered; (7) allow dredging in or adjacent to man-made ponds if the San Mateo County Resource Conservation District certified that siltation imperils continued use of the pond for agricultural water storage and supply; and (8) limit the sound emitted from motorized machinery to be kept to less than 45-dBA at any riparian buffer zone boundary except for farm machinery and motorboats.”

A 30-foot riparian buffer was applied around Central Coast Riparian Scrub and Riparian Woodland (included in the Sensitive Habitat Buffer in Figure 4, which includes a 30-foot riparian buffer, a 50-foot buffer around Monterey pine and the man-made basin, and a 100-foot buffer around Freshwater Wetland habitat). If feasible, project ground disturbance should be located outside of the Sensitive Habitat Buffer. Ground disturbance within this buffer could be acceptable if no feasible alternative exists and meets the performance standards outlined in Section 7.13 of the LCP above. Mitigation measures for fencing and habitat enhancement discussed in CRB (2016) and Section 5.0 will provide buffering around sensitive habitats, and a reduced buffer in some areas could occur without impacts to sensitive habitats (Figure 4), but the County would need to make a determination about the conformance of the project with the LCP in relation to riparian buffer zones.

Sag Pond

A sag pond is present south of the 2019 project site, and was mapped as Freshwater Pond in the NWI (USFWS 2019a). The sag pond was delineated based on aerial photograph interpretation and the NWI, but was not visited on foot because it is located off the Pie Ranch property.

According to Section 7.18 of the LCP: *“Buffer zones shall extend a minimum of 100 feet landward from the outermost line of wetland vegetation. This setback may be reduced to no less than 50 feet only where: (1) no alternative development site or design is possible; and (2) adequacy of the alternative setback to protect wetland resources is conclusively demonstrated by a professional biologist to the satisfaction of the County and the State Department of Fish and Game. A larger setback shall be required as necessary to maintain the functional capacity of the wetland ecosystem.”*

According to Section 7.19 of the LCP: *“Within buffer zones, permit the following uses only: (1) uses allowed within wetlands (Policy 7.16) and (2) public trails, scenic overlooks, and agricultural uses that produce no impact on the adjacent wetlands.”*

A 100-foot buffer was included around the sag pond (incorporated into the Sensitive Habitat Buffer in Figure 4). The buffer zone extends onto a portion of the project site along Green Oaks Way, and this area is already disturbed by an existing, well-used dirt road and fence between the road and sag pond. Due to the existing disturbed nature of this area (Green Oaks Way) and the wetland buffer, no adverse wetland impacts are anticipated from the 2019 project site.

Man-Made Basin

A man-made basin, apparently excavated decades ago as a detention basin for dairy wastewater, is present on the 2016 project site and south of the 2019 project site (Figure 2). The basin contains riparian and wetland vegetation, including arroyo willow and California tule. The basin was dry during both the October 2016 and March 1, 2019 field visits. The basin receives runoff from

surrounding fields and discharges via a culvert to Green Oaks Creek, and does not support ponded water (Jered Lawson, pers. comm.). Vegetation in the basin meets the LCP wetland and riparian definition.

According to Section 7.11 (c) of the LCP: “Along lakes, ponds, and other wet areas, extend buffer zone 100 feet from the high water point except for man-made ponds and reservoirs used for agricultural purposes for which no buffer zone is designated.” Since the basin is a man-made feature used in the past for agricultural purposes, a 100-foot buffer would not be required, but a 50-foot buffer (incorporated into the Sensitive Habitat Buffer in Figure 4) was applied because the pond could potentially support CRLF, SFGS, and other special-status wildlife species, and the buffer allows for a movement corridor between the sag pond, the man-made basin, and Green Oaks Creek.

5.0 POTENTIAL BIOLOGICAL IMPACTS AND PROPOSED MITIGATION MEASURES

The project site covers ~2.7-acres and includes areas proposed for construction of two new buildings and renovation of other structures, as shown on the Pie Ranch Master Plan, dated September 25, 2017, prepared by Adam Weiss Architecture. No detailed construction plans showing project ground disturbance were available, and the project site was broadly defined to include the general area of proposed building construction and improvements. As detailed project construction plans are developed (such as the precise location and timing of ground disturbance, including building envelopes, utility trenching, staging areas, etc.), revisions to the mitigation measure may be warranted.

Potential significant adverse biological impacts that may result from the project, and corresponding mitigation measures to reduce potential impacts to less-than significant-levels, are discussed below. Mitigation measures specific to event parking are discussed in CRB (2016) and are not included in this report.

Potential Significant Impact 1: Monterey pine is present on the study area, both as stands and individuals. The stands of Monterey pine would constitute a sensitive habitat. Ground disturbance associated with project construction could occur in proximity to Monterey pine stands and individuals, potentially resulting in direct or indirect impacts to the species.

Mitigation Measure 1a: A 50-foot buffer shall be applied around all Monterey pine stands. No project ground disturbance shall take place within this buffer.

Mitigation Measure 1b: Prior to project ground disturbance, individuals of Monterey pine embedded within existing Developed/Ruderal and other disturbed habitats shall be identified within 50-feet of project ground disturbance by a qualified botanist. Protective fencing shall be installed around Monterey pine trees, along with a sufficient buffer to prevent direct and indirect impacts to the species sufficient to meet requirements outlined in Section 7.42 of the LCP.

Potential Significant Impact 2: Sensitive habitats, including Central Coast Riparian Scrub, Riparian Woodland, and Freshwater Wetland are present on the study area. These habitats could also support special-status species, including monarch butterfly, CRLF, WPT, SFGS, SFDW, California giant salamander, Santa Cruz black salamander, nesting birds and roosting bats. Project ground disturbance would take place in proximity to these habitats.

Mitigation Measure 2a: No-disturbance buffers shall be included around sensitive habitats (Figure 4). If feasible, all project ground disturbance shall take place outside of these buffers. Where the

buffer zone consists of disturbed areas from past and ongoing disturbance (including buildings, storage, and parking areas along Green Oaks Creek), the buffer could be reduced if approved by San Mateo County, conforms to Section 7.12 and other relevant portions of the LCP, and includes habitat enhancement measures, including invasive plant removal and native vegetation planting to screen existing and proposed development from the riparian corridor. Removing invasive plant species, debris, and other disturbance from the buffer zone, coupled with native plantings, could result in improved habitat conditions compared to existing conditions.

Mitigation Measure 2b: Erosion control measures and other Best Management Practices (BMP's) shall be installed on the project site, as appropriate, to ensure that sediment, debris, and material from event parking does not enter Green Oaks Creek, as per Performance Standards in Riparian Buffer Zones described in Section 7.13 of the LCP.

Potential Significant Impact 3: The study area supports suitable habitat for the California giant salamander and Santa Cruz black salamander. Project ground disturbance could result in mortality of either species (such as by crushing with equipment), if present.

Mitigation Measure 3: A qualified biologist shall determine if habitat is present within the specific work areas after they are delineated. No adjacent undisturbed habitat shall be disturbed. Both species are often difficult to detect. If habitat is present within a work area, the biologist shall conduct a ground survey that includes flipping woody debris to search for individuals, ideally during the winter and spring. A qualified biologist shall be present during any vegetation removal required to prepare the sites for construction. Vegetation removal shall be performed by hand (chain-saws and weed-trimmers okay). Once the standing vegetation has been removed, the biologist shall flip all remaining woody debris and rocks to search for both species. If either species is found, CDFW shall be contacted for approval to relocate individuals out-of-harm's way to the nearest appropriate habitat.

Potential Significant Impact 4: Two species listed as threatened or endangered under the federal and/or state Endangered Species Acts—CRLF and SFGS—could potentially occur on the study area, and the study area is located within federally-designated Critical Habitat for CRLF. If CRLF are breeding on the study area, it greatly increases the likelihood that CRLF will be dispersing across the area and that SFGS are present, thereby increasing the likelihood of mortality by project ground disturbance. Any unauthorized take of CRLF and/or SFGS from project ground disturbance would violate the federal and/or state Endangered Species Acts.

Mitigation Measure 4a: Prior to the start of construction, a worker education program shall be presented at the project site by a qualified biologist. Associated written material shall be distributed. It shall be the onsite foreman's responsibility to ensure that all construction personnel and subcontractors receive a copy of the education program. The education program shall include a description of SFGS and CRLF and their habitat, the general provisions of the Endangered Species Act, the necessity of adhering to the Act to avoid penalty, and measures implemented to avoid affecting SFGS and CRLF specific to the project and associated work boundaries.

Mitigation Measure 4b: Project ground disturbance shall be minimized to the maximum extent practicable, shall be confined to existing Developed/Ruderal and other disturbed habitats, and shall be clearly delineated on the ground and on project plans prior to the start of construction. All construction personnel, equipment, and vehicle movement shall be confined to designated construction and staging areas.

Mitigation Measure 4c: Due to the proximity of the offsite sag pond, which could be inhabited by both SFGS and CRLF, a qualified biologist shall propose a snake and frog exclusion fence around

project work areas. The fence shall encircle the work areas and be accessed via a snake-proof gate. The fence shall be restricted to the work areas in order to minimize affecting the natural movements of CRLF and SFGS in proximity to the pond, and the fence shall be set back as much as possible from the edge of existing roads so that the possibility of road-kill is not exacerbated. It shall be buried 6 inches and extend at least 4 feet high, and one-way funnels shall be installed at grade to allow any snakes on the inside to escape. A variety of materials may be used, including ErTec mesh fencing, which is specifically designed for this purpose. ErTec will also provide the one-way funnels and installation instructions. Cover-boards (1/2 inch plywood, minimum 2 by 4 feet), shall be placed on the outside edge of the fence at any corner and every 50-feet to provide temporary cover for CRLF, SFGS and other small animals.

A qualified biologist shall supervise the installation of the fence, monitor initial grading and vegetation removal, and shall inspect the fence at least weekly. Repairs and modifications shall be recommended as needed. The fence shall be completed at least 30 days prior to the start of construction in order to allow any individuals that may be inside to escape via the one-way funnels.

Mitigation Measure 4d: Due to the proximity of the sag pond and documented SFGS and CRLF occurrences near the work area, the presence of federally-designated Critical Habitat for CRLF, and the potential for take during construction, the USFWS and CDFW shall be contacted for guidance and concurrence regarding the project and mitigation measures included in this report, and to determine if any additional authorizations are needed. If either SFGS or CRLF is encountered during the project, work must cease, and the USFWS contacted for guidance. Neither species can be handled or relocated without project-specific approval from the USFWS.

Potential Significant Impact 5: Suitable nesting habitat for white-tailed kite, Allen's hummingbird, olive-sided flycatcher, saltmarsh common yellowthroat, and other native bird species protected under the MBTA and CDFW Code is present in trees, shrubs, and herbaceous vegetation on the study area. Vegetation removal, or noise and disturbance during construction, could result in direct or indirect disturbance to nesting bird species, if present, potentially resulting in nest destruction or abandonment.

Mitigation Measure 5: If feasible, project construction shall take place outside of the February 1 to August 31 breeding bird season. If the project is conducted during the breeding bird season, a qualified biologist shall conduct a preconstruction breeding bird survey throughout areas of suitable habitat up to 300 feet from the project site within 15 days prior to the onset of any construction activity. If bird nests are observed, buffer zones shall be established around all active nests to protect nesting adults and their young from construction disturbance. Buffer zone distances, which depend to some degree on the species and shall be established in consultation with CDFW, are typically at least 50-feet around native passerines, 100-feet around special-status passerines, and 300 to 1,000-feet or more around raptors, depending on the species. Work within the buffer zone shall be postponed until all the young are fledged, as determined by a qualified biologist.

Potential Significant Impact 6: SFDW houses were observed on the study area, including on or adjacent to the project site. Woodrats could colonize additional areas in proximity to or within the project disturbance envelope, and ground disturbance associated with the project could adversely impact SFDW houses by crushing or removal.

Mitigation Measure 6: Within 30 days prior to project construction, a qualified biologist shall inspect the project disturbance envelope and adjacent areas within 50-feet for SFDW houses. An exclusion zone shall be erected around SFDW houses, using flagging or a temporary fence that does not inhibit

the natural movements of wildlife (such as steel T-posts and a single strand of yellow rope or similar materials). Efforts will be made to avoid impacting woodrat houses, even if avoidance is by only a few feet. If SFDW houses can't be avoided, CDFW shall be contacted for approval to relocate individuals by live-trapping and building a nearby artificial structure as a release site. Approval to relocate must be acquired from CDFW.

Potential Significant Impact 7: Potential roosting habitat for pallid bat, western red bat, fringed myotis, long-legged myotis, and potentially other bat species, is present in mature trees throughout Central Coast Riparian Scrub, Riparian Woodland, and other forested areas, as well as within buildings on and adjacent to the project site. If special-status bat species are roosting in the vicinity, they could be directly (by removal of roosting trees) or indirectly (by noise and other disturbance associated with project construction) impacted by project construction.

Mitigation Measure 7: Within 30 days prior to project construction, a qualified bat biologist shall inspect the project disturbance envelope and areas within 50-feet for bat roosts. If no potential roost sites are found, no additional mitigation is necessary. If special-status bat roosts are found, the biologist shall develop measures (in consultation with CDFW) to avoid impacts to roosts.

The conclusions of this biotic assessment reflect conditions observed at the time of the field visit and the biologist's interpretation of those conditions. Government regulatory agencies make the final determination regarding biological resource issues on the project site, and this report should be sent to the appropriate agencies for review. This report does not constitute an authorization to conduct the project.

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Appendix A. Special-status species documented to occur in the study area region

List compiled from searches of the CNDDDB (CDFW 2019), CNPS (2019), and USFWS (2019b) records for the Franklin Point, San Gregorio, La Honda, Mindego Hill, Pigeon Point, Big Basin, Año Nuevo, and Davenport 7.5' USGS quadrangles, CDFW Special Animals List (2018), and other publications (e.g., Zeiner et al. 1988, 1990a).

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
PLANTS			
<i>Agrostis blasdalei</i> Blasdale's bent grass	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, 5-150 m. Blooms May-July.	No suitable habitat on project site or study area. Not expected to occur.
<i>Amsinckia lunaris</i> bent-flowered fiddleneck	1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland, 3-500 m. Blooms March-June.	No suitable habitat on project site or study area. Not expected to occur.
<i>Arctostaphylos andersonii</i> Santa Cruz manzanita	1B.2	Broadleafed upland forest, chaparral, North Coast coniferous forest (openings, edges), 60-730 m. Blooms November-May.	No <i>Arctostaphylos</i> observed on the study area. Not expected to occur.
<i>Arctostaphylos glutinosa</i> Schreiber's manzanita	1B.2	Closed-cone coniferous forest, chaparral (diatomaceous shale), 170-685 m. Blooms November-April.	No <i>Arctostaphylos</i> observed on the study area. Not expected to occur.
<i>Arctostaphylos ohloneana</i> Ohlone manzanita	1B.1	Closed-cone coniferous forest, coastal scrub (siliceous shale), 450-530 m. Blooms February-March.	No <i>Arctostaphylos</i> observed on the study area. Not expected to occur.
<i>Arctostaphylos regismontana</i> Kings Mountain manzanita	1B.2	Broadleafed upland forest, chaparral, North Coast coniferous forest, 305-730 m. Blooms January-April.	No <i>Arctostaphylos</i> observed on the study area. Not expected to occur.
<i>Arctostaphylos silvicola</i> Bonny Doon manzanita	1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest (inland marine sands), 120-600 m. Blooms January-March.	No <i>Arctostaphylos</i> observed on the study area. Not expected to occur.
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i> coastal marsh milk-vetch	1B.2	Coastal dunes (mesic), coastal scrub, marshes and swamps (coastal salt, streamsides), 0-30 m. Blooms April-October.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>California macrophylla</i> round-leaved filaree	1B.1	Cismontane woodland, valley and foothill grassland (heavy clay), 15-1,200 m. Blooms March-May.	No suitable habitat on project site or study area. Not expected to occur.
<i>Calyptridium parryi</i> var. <i>hesseae</i> Santa Cruz Mountains pussypaws	1B.1	Chaparral, cismontane woodland (sandy or gravelly, openings), 305-1,530 m. Blooms May-August.	No suitable habitat on project site or study area. Out of elevational range. Not expected to occur.
<i>Chorizanthe pungens</i> var. <i>hartwegiana</i> Ben Lomond spineflower	FE, 1B.1	Lower montane coniferous forest (maritime ponderosa pine sandhills), 90-610. Blooms April-July	No suitable habitat on project site or study area. Not expected to occur.
<i>Cirsium andrewsii</i> Franciscan thistle	1B.2	Broadleafed upland forest, coastal bluff scrub, coastal prairie (sometimes serpentinite seeps), 0-150	No suitable habitat on project site. Potential suitable habitat in Coyote Brush Scrub on

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
		m. Blooms March-July.	surrounding study area, but no project impacts anticipated. Unverified historic occurrence at Año Nuevo (CDFW 2019).
<i>Collinsia multicolor</i> San Francisco collinsia	1B.2	Closed-cone coniferous forest, coastal scrub (sometimes serpentinite), 30-250 m. Blooms March-May.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Dirca occidentalis</i> western leatherwood	1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, North Coast coniferous forest, riparian forest and woodland. Usually on brushy slopes, mesic sites in mixed evergreen and foothill woodland communities, 25-425 m. Deciduous shrub, blooms January-April.	Suitable habitat present in Central Coast Riparian Scrub, but species not observed and no project impacts to this habitat anticipated.
<i>Eriophyllum latilobum</i> San Mateo woolly sunflower	FE, SE, 1B.1	Cismontane woodland (often serpentinite, on roadcuts), 45-150 m. Blooms May-June.	No suitable habitat on project site or study area. Not expected to occur.
<i>Erysimum amophilum</i> sand-loving wallflower	1B.2	Chaparral (maritime), coastal dunes, coastal scrub (sandy, openings), 0-60 m. Blooms February-June.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Erysimum teretifolium</i> Santa Cruz wallflower	FE, SE, 1B.1	Chaparral, lower montane coniferous forest (inland marine sands), 120-610 m. Blooms March-July.	No suitable habitat on project site or study area. Not expected to occur.
<i>Fissidens pauperculus</i> minute pocket moss	1B.2	North Coast coniferous forest (damp coastal soil), 10-1,024 m.	No suitable habitat on project site or study area. Not expected to occur.
<i>Fritillaria agrestis</i> stinkbells	4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland (clay, sometimes serpentinite), 10-1,555 m. Blooms March-June.	No suitable habitat on project site or study area. Not expected to occur.
<i>Fritillaria liliacea</i> fragrant fritillary	1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland (often serpentinite), 3-410 m. Blooms February-April.	No suitable habitat on project site or study area. Not expected to occur.
<i>Hesperexax sparsiflora</i> var. <i>brevifolia</i> short-leaved exax	1B.2	Coastal bluff scrub (sandy), coastal dunes, coastal prairie, 0-215 m. Blooms March-June.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i> Santa Cruz cypress	FE, SE, 1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest (sandstone or granitic), 280-800 m.	No suitable habitat on project site or study area. Not observed. Out of elevational range. Not expected to occur.
<i>Hesperocyparis abramsiana</i> var. <i>butanoensis</i> Butano Ridge cypress	FT, SE, 1B.2	Closed-cone coniferous forest, chaparral, lower montane coniferous forest (sandstone), 400-490 m.	No suitable habitat on project site or study area. Not observed. Out of elevational range. Not expected to occur.
<i>Horkelia cuneata</i> subsp. <i>sericea</i>	1B.1	Closed-cone coniferous forest, chaparral, coastal	No suitable habitat on project site. Potential

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
Kellogg's horkelia		dunes, old sand hills, coastal scrub (sandy or gravelly openings), 10-200 m. Blooms April-September.	marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Horkelia marinensis</i> Point Reyes horkelia	1B.2	Coastal dunes, coastal prairie, coastal scrub (sandy), 5-350 m. Blooms May-September.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Lasthenia californica</i> ssp. <i>macrantha</i> perennial goldfields	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, 5-520 m. Blooms January-November.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Legenere limosa</i> legenere	1B.1	Vernal pools, 1-880 m. Blooms April-June.	No suitable habitat on project site or study area. Not expected to occur.
<i>Leptosiphon rosaceus</i> rose linanthus	1B.1	Coastal bluff scrub, 0-100 m. Blooms April-July.	No suitable habitat on project site or study area. Not expected to occur.
<i>Limnanthes douglasii</i> subsp. <i>sulphurea</i> Point Reyes meadowfoam	SE, 1B.2	Coastal prairie, meadows and seeps, marshes and swamps (freshwater), vernal pools, 1-140 m. Blooms March-May.	No suitable habitat on project site. Potential marginal habitat in Freshwater Wetland, but no project impacts anticipated.
<i>Malacothamnus arcuatus</i> arcuate bush mallow	1B.2	Chaparral, cismontane woodland, 15-355 m. Blooms April-September.	No suitable habitat on project site or study area. Not expected to occur.
<i>Microseris paludosa</i> marsh microseris	1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland (mesic), 5-300 m. Blooms April-June.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Monolopia gracilens</i> woodland woollythreads	1B.2	Broadleafed upland forest and chaparral openings, cismontane woodland, North Coast coniferous forest openings, valley and foothill grassland (serpentine), 100-1,200 m. Blooms March-July.	No suitable habitat on project site or study area. Not expected to occur.
<i>Pedicularis dudleyi</i> Dudley's lousewort	SR, 1B.2	Maritime chaparral, cismontane woodland, north coast coniferous forest, valley and foothill grassland, 60-900 m. Blooms April-June.	No suitable habitat on project site or study area. Not expected to occur.
<i>Penstemon rattanii</i> var. <i>kleei</i> Santa Cruz Mountains beardtongue	1B.2	Chaparral, lower montane coniferous forest, North Coast coniferous forest, 400-1,100 m. Blooms May-June.	No suitable habitat on project site or study area. Not expected to occur. Out of elevational range.
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	FE, SE, 1B.1	Cismontane woodland, coastal scrub, valley and foothill grassland (often serpentinite), 35-620 m. Blooms March-May.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Pinus radiata</i> Monterey pine	1B.1	Closed-cone coniferous forest, cismontane woodland, 25-185 m.	Present (study area). Observed as individuals or small stands on study area.
<i>Piperia candida</i> white-flowered rein orchid	1B.2	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest (sometimes serpentinite), 30-1,310 m. Blooms March-September.	No suitable habitat on project site or study area. Not expected to occur.

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i> Choris' popcorn-flower	1B.2	Chaparral, coastal prairie, coastal scrub (mesic), 15-100 m. Blooms March-June.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Plagiobothrys diffusus</i> San Francisco popcorn-flower	SE, 1B.1	Coastal prairie, valley and foothill grassland, 60-360 m. Blooms March-June.	No suitable habitat on project site or study area. Not expected to occur.
<i>Senecio aphanactis</i> chaparral ragwort	2B.2	Chaparral, cismontane woodland, coastal scrub (sometimes alkaline), 15-800 m. Blooms January-May.	No suitable habitat on project site or study area. Not expected to occur.
<i>Silene verecunda</i> subsp. <i>verecunda</i> San Francisco campion	1B.2	Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland (sandy), 30-645 m. Blooms March-June (sometimes into August).	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Stebbinsoseris decipiens</i> Santa Cruz microseris	1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland (open areas, sometimes serpentinite), 10-500 m. Blooms April-May.	No suitable habitat on project site. Potential marginal habitat in Coyote Brush Scrub on study area, but no project impacts anticipated.
<i>Stuckenia filiformis</i> subsp. <i>alpina</i> slender-leaved pondweed	2.2	Marshes and swamps (assorted shallow freshwater), 300-2150 m. Blooms May-July.	Potential marginal habitat in Freshwater Wetland, but no project impacts anticipated. Documented occurrence at Año Nuevo (CDFW 2019).
<i>Trifolium buckwestiorum</i> Santa Cruz clover	1B.1	Broadleafed upland forest, cismontane woodland, coastal prairie (gravelly, margins), 105-610 m. Blooms April-October.	No suitable habitat on project site or study area. Not expected to occur.
WILDLIFE			
Invertebrates			
<i>Danaus plexippus</i> monarch butterfly	Winter roosts sensitive (CDFW)	Winter roost sites extend along the coast from northern Mendocino to Baja. Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Present (study area). Documented winter roost site along Green Oaks Creek in Monterey pine and Douglas-fir, and along Green Oaks Way in Eucalyptus Forest (CDFW 2019).
<i>Trimerotropis infantilis</i> Zayante band-winged grasshopper	FE	Isolated sandstone deposits in the Santa Cruz Mountains (Zayante Sand Hills ecosystem). Mostly on sand parkland habitat but also in areas with well-developed ground cover and sparse chaparral with grass.	No suitable habitat on the project site or study area. Not expected to occur.
Fishes			
<i>Eucyclogobius newberryi</i> tidewater goby	FE, SSC	Inhabits brackish water habitats along the California coast from San Diego to the Smith River. Found in shallow lagoons and lower stream reaches with fairly still, but not stagnant, water and high oxygen levels.	No suitable aquatic habitat present on the project site or study area. Not documented in Green Oaks Creek in CNDDDB (CDFW 2019). Not expected to occur.
<i>Oncorhynchus kisutch</i>	FE, SE	Requires beds of loose, silt-free, coarse gravel for	No suitable aquatic habitat present on the project

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
coho salmon - central California coast ESU		spawning. Also needs cover, cool, water, and sufficient dissolved oxygen. Federal listing covers populations between Punta Gorda and San Lorenzo River. State listing covers populations south of Punta Gorda.	site or study area. Not documented in Green Oaks Creek in CNDDB (CDFW 2019). Not expected to occur.
<i>Oncorhynchus mykiss irideus</i> steelhead – central California coast DPS	FT	From Russian River south to Soquel Creek and to, but not including, the Pajaro River. Also includes San Francisco and San Pablo Bay Basins.	No suitable aquatic habitat present on the project site or study area. Not documented in Green Oaks Creek in CNDDB (CDFW 2019). Not expected to occur.
<i>Spirinchus thaleichthys</i> longfin smelt	ST	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefers salinities of 15-30 PPT, but can be found in completely freshwater to almost pure seawater.	No suitable estuarine habitat present on the project site or study area. Not documented in Green Oaks Creek in CNDDB (CDFW 2019). Not expected to occur.
Amphibians			
<i>Dicamptodon ensatus</i> California giant salamander	SSC	Known from wet coastal forests near seeps and streams from Mendocino County south to Monterey County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Suitable habitat for adults present on study area in Central Coast Riparian Scrub. Not expected to breed in the reach of Green Oak Creek that passes through the study area.
<i>Aneides niger</i> Santa Cruz black salamander	SSC	Found in coastal grassland, open oak and conifer woodlands, redwood forest, mixed evergreen forest and along riparian corridors.	Suitable habitat present on study area in Central Coast Riparian Scrub, Riparian Woodland, and adjacent areas.
<i>Rana boylei</i> foothill yellow-legged frog	SSC	Breeds in perennial streams with cobble-sized substrate; highly aquatic species.	No suitable habitat present on the project site or study area. Not expected to occur.
<i>Rana draytonii</i> California red-legged frog	FT, SSC	Breeds in semi-permanent and perennial water sources often with dense, shrubby or emergent riparian vegetation including stock ponds and marshes; uses a variety of wetland habitats including streams during the summer months.	Present (study area). Documented in sag pond in southern portion of the study area (CDFW 2019). Potential upland and summer habitat at man-made basin in project site and in the Riparian Woodland along Green Oaks Creek, especially when standing water is present; may also disperse across project site and study area, particularly during the winter and spring.
Reptiles			
<i>Emys marmorata</i> western pond turtle	SSC	Inhabits permanent or nearly permanent bodies of water in many habitat types below 6000 ft. elevation. Typically nests in grassy, open habitat.	Potential aquatic habitat in sag pond within study area; marginal nesting habitat in disturbed grassland onsite.

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
<i>Phrynosoma blainvillii</i> coast (Blainville's) horned lizard	SSC	Sandy soils in chaparral, grasslands and open woodlands. Feeds primarily on native ants.	No suitable habitat at project site due to regular human disturbance.
<i>Thamnophis sirtalis tetrataenia</i> San Francisco garter snake	FE, SE, FP	Vicinity of freshwater marshes, ponds, and slow-moving streams in San Mateo and extreme northern Santa Cruz Counties. Prefers lentic habitat during the spring through fall that supports breeding a frog prey with nearby uplands that consist of a mosaic of grassland, scrub and woodland.	Potential habitat present throughout project site and study area due to sag pond located within study area; numerous records within three miles but locations suppressed.
Birds			
<i>Brachyramphus marmoratus</i> marbled murrelet	FT, SE	Nests in coastal forests from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old growth redwood-dominated forests, often in Douglas-fir, up to six miles inland.	No suitable nesting habitat present on the project site or study area. Species expected to fly-by during breeding season since it is known to nest in nearby old growth and mature conifer groves.
<i>Buteo regalis</i> (wintering) Ferruginous hawk	BCC	Winters in expansive open grasslands; forages primarily on ground squirrels.	No foraging habitat present due to regular human use; may use nearby land during winter months.
<i>Circus cyaneus</i> (nesting) northern harrier	SSC	Nests on ground in grassy vegetation, usually in proximity to a marsh or other water body.	No nesting habitat present; expected during migration and in winter.
<i>Elanus leucurus</i> (nesting) white-tailed kite	BCC, FP	Open grassland, meadows, or marshes, for foraging, close to isolated, dense-topped trees for nesting and perching.	Potential nesting habitat present; known from Pie Ranch during the winter (eBird 2019).
<i>Falco peregrinus anatum</i> American peregrine falcon	FP, BCC	Near wetlands, lakes, rivers, or other water. On cliff banks, dunes, mounds, and human-made structures. Nest consists of a scrape, depression, or ledge in an open site.	No nesting habitat present on project site or study area. May use nearby land for foraging.
<i>Asio flammeus</i> (nesting) short-eared owl	SSC	Nests in emergent wetland vegetation, tall grass, alfalfa fields.	No nesting habitat present on project site or study area.
<i>Asio otus</i> Long-eared owl	SSC	Nests in open woodland and coniferous forests, often near riparian areas.	Not expected; no nesting records in region, may be observed during migration.
<i>Athene cunicularia</i> (nesting and wintering) burrowing owl	SSC BCC	Nests and winters in grasslands and open scrub with suitable burrows.	No suitable habitat present on the project site or study area. Not expected to occur.
<i>Selasphorus sasin</i> Allen's hummingbird	BCC	Nests in narrow coastal belt in woodland and scrub habitats.	Present (study area). Suitable nesting habitat on study area and observed during March 1, 2019 field visit. Known from Pie Ranch (eBird 2019).
<i>Picoides nuttallii</i> Nuttall's woodpecker	BCC	Nests in oak woodland and along riparian corridors.	Regularly observed during the winter (eBird 2019) but not expected to nest onsite. Not recorded as a

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
			breeder in the area during focused studies from 1991-97 (Sequoia Audubon Society 2001)
<i>Contopus cooperi</i> olive-sided flycatcher	SSC BCC	Nests primarily in coniferous forests with open canopy; nests in Eucalyptus forest along coast.	Suitable habitat present on study area; known from Pie Ranch (eBird 2019).
<i>Baeolophus inornatus</i> oak titmouse	BCC	Nests in oak, oak-pine and pinyon-juniper woodland.	Marginal habitat onsite and few records in extreme SW San Mateo County (eBird 2019; Sequoia Audubon Society 2001).
<i>Charadrius alexandrinus nivosus</i> western snowy plover	FT	Sandy beaches backed with dunes, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	No suitable habitat present on the project site or study area. Not expected to occur.
<i>Cypseloides niger</i> black swift	SSC BCC	Nests on cliffs, coastal bluffs, and sea caves.	No suitable habitat present on the project site or study area. Not expected to occur.
<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	BCC, SSC	Fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging; nests in tall grasses, tule patches, and willows.	Suitable habitat present at ponds and Central Coast Riparian Scrub.
<i>Setophaga petechia</i> (nesting) yellow warbler	BCC/SS C	Deciduous riparian woodlands along streams and lakes.	Regular visitor during migration; not expected to nest onsite due to disturbed condition of Riparian Woodland and adjacent human disturbances.
<i>Icteria virens</i> (nesting) Yellow-breasted chat	-/ SSC	Nests in riparian woodlands or riparian scrub thickets	Occasional visitor during migration; not expected to nest onsite.
<i>Ammodramus savannarum</i> grasshopper sparrow	SSC	Nests in short- to mid-height open grasslands.	Not expected due to regular human use; known from nearby areas.
<i>Passerculus sandwichensis alaudinus</i> Bryant's savannah sparrow	SSC	Nests in tidally influenced habitats and moist grasslands.	Not expected due to regular human use; known from nearby areas.
<i>Agelaius tricolor</i> tricolored blackbird	BCC, FT	Nests in freshwater marsh; forages in grasslands and croplands.	Regularly seen in area during the winter but nesting unlikely.
<i>Riparia riparia</i> bank swallow	ST	Colonial nester. Nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine textured/sandy soils near streams, rivers, lakes, or ocean to dig nesting hole.	No suitable nesting habitat present on the project site or study area; may forage onsite. Nesting colony known along coastal bluffs at Año Nuevo State Park
Mammals			
<i>Antrozous pallidus</i> pallid bat	SSC/ WBWG	Roosts in caves, trees and buildings; forages in variety of habitats.	Potential suitable habitat in Central Coast Riparian Scrub, Riparian Woodland, and other forested areas, as well as in buildings.
<i>Corynorhinus townsendii</i>	SSC/	Roosts in caves, buildings, hollow redwoods; forage	Marginal habitat in barns and outbuildings, but

Species	Status	Typical Habitat	Habitat Assessment of Project Site and Study Area
Townsend's big-eared bat	WBWG	in many habitats. Roosts in the open, hanging from walls and ceilings. Extremely sensitive to human disturbance.	extensive ongoing human disturbance on study area reduces likelihood of occurrence.
<i>Lasiurus blossevillei</i> western red bat	SSC/ WBWG	Roosts in foliage of trees and shrubs in riparian habitats.	Potential suitable habitat in Central Coast Riparian Scrub and Riparian Woodland.
<i>Myotis thysanodes</i> fringed myotis	WBWG	Maternity roosts in bridge crevices, tree cavities and under exfoliating bark.	No habitat in project site; potential suitable habitat along riparian corridor on study area.
<i>Myotis volans</i> long-legged myotis	WBWG	Roosts in trees, rock crevices, mines and buildings; primarily in montane forests.	No habitat in project site; potential suitable habitat along riparian corridor on study area.
<i>Eumops perotis californicus</i> western mastiff bat	SSC/ WBWG	Roosts in significant rock features; found in a variety of habitats including desert scrub, chaparral and oak woodland.	No potential roosting habitat present; not expected.
<i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat	SSC	Riparian, coastal scrub and forest habitats of moderate canopy and moderate to dense understory. Constructs houses of sticks and other material.	Present. At least nine SFDW houses observed in Central Coast Riparian Scrub on the 2016 study area, and six were observed in 2019. More are expected in similar habitat with dense scrub understory.
<i>Taxidea taxus</i> American badger	SSC	Variety of open habitats especially grassland and oak savannah.	Not expected due to regular human disturbance but known from nearby lands.
Key to Status:			
BCC	Federal Bird of Conservation Concern		
FE	Federal Endangered		
FT	Federal Threatened		
SE	State Endangered		
ST	State Threatened		
SCT	State Candidate Threatened		
WBWG	Western Bat Working Group: High Priority Species		
SSC	California Department of Fish and Wildlife Species of Special Concern		
FP	California Department of Fish and Wildlife Fully Protected Species		
1B	CNPS Rare Plant Rank of plants rare, threatened, or endangered in California and elsewhere		
2	CNPS Rare Plant Rank of plants rare, threatened, or endangered in California but more common elsewhere		
4	CNPS Rare Plant Rank of plants of limited distribution; a watch list		
.1/.2/.3	Seriously endangered in California/Fairly endangered in California/ Not very endangered in California		

Appendix B. Study Area Photographs.



Appendix B-1. Central Coast Riparian Scrub along Green Oaks Creek.



Appendix B-2. Riparian Woodland along Green Oaks Creek.



Appendix B-3. Agricultural habitat on the project site.



Appendix B-4. Developed/Ruderal habitat on the project site.



Appendix B-5. Eucalyptus Forest in the northeastern portion of the study area.



Appendix B-6. SFDW house in Riparian Woodland on the study area.

Appendix C. Plant species observed on the 2016 and 2019 study areas, October 4 and 11, 2016 and March 1, 2019.

Scientific Name	Common Name
<i>Acacia melanoxydon</i> *	blackwood acacia
<i>Alnus rubra</i>	red alder
<i>Aloe maculata</i> *	soap aloe
<i>Anagallis arvensis</i> *	scarlet pimpernel
<i>Artemisia californica</i>	California sagebrush
<i>Athyrium filix-femina</i>	lady fern
<i>Avena</i> sp.*	wild oats
<i>Baccharis glutinosa</i>	Douglas' baccharis
<i>Baccharis pilularis</i> subsp. <i>consanguinea</i>	coyote brush
<i>Brassica rapa</i> *	field mustard
<i>Bromus carinatus</i>	California brome
<i>Bromus catharticus</i> *	rescue grass
<i>Bromus diandrus</i> *	ripgut brome
<i>Bromus hordeaceus</i> *	soft chess
<i>Calystegia purpurata</i> subsp. <i>purpurata</i>	climbing morning-glory
<i>Cedrus deodara</i> *	deodar cedar
<i>Cirsium vulgare</i> *	bull thistle
<i>Conium maculatum</i> *	poison hemlock
<i>Convolvulus arvensis</i> *	field bindweed
<i>Cornus</i> sp.	dogwood
<i>Cortaderia jubata</i> *	pampas grass
<i>Cyperus eragrostis</i>	tall flatsedge
<i>Equisetum</i> sp.	horsetail
<i>Erigeron canadensis</i>	horseweed
<i>Erodium moschatum</i> *	whitestem filaree
<i>Eschscholzia californica</i>	California poppy
<i>Eucalyptus globulus</i> *	blue gum eucalyptus
<i>Festuca perennis</i> *	Italian ryegrass
<i>Frangula californica</i>	California coffeeberry
<i>Genista monspessulana</i> *	French broom
<i>Geranium dissectum</i> *	cutleaf geranium
<i>Hedera helix</i> *	English ivy
<i>Helminthotheca echioides</i> *	bristly ox-tongue
<i>Hesperocyparis macrocarpa</i> *	Monterey cypress
<i>Heteromeles arbutifolia</i>	toyon
<i>Hirschfeldia incana</i> *	summer mustard
<i>Hordeum murinum</i> subsp. <i>leporinum</i> *	barley
<i>Hypochaeris radicata</i> *	rough cat's ear
<i>Juglans</i> sp.*	walnut
<i>Juncus patens</i>	spreading rush
<i>Lactuca serriola</i> *	prickly lettuce
<i>Liquidambar styraciflua</i> *	sweet gum
<i>Lobularia maritima</i> *	sweet alyssum
<i>Lotus corniculatus</i> *	bird's-foot trefoil
<i>Magnolia</i> sp.*	magnolia

Scientific Name	Common Name
<i>Malva</i> sp.*	mallow
<i>Marah fabacea</i>	California man-root
<i>Medicago polymorpha</i> *	bur clover
<i>Mentha pulegium</i> *	pennyroyal
<i>Oxalis pes-caprae</i> *	Bermuda buttercup
<i>Oxalis</i> sp.*	buttercup
<i>Persicaria</i> sp.	smartweed
<i>Phalaris aquatica</i> *	Harding grass
<i>Pinus radiata</i>	Monterey pine
<i>Plantago coronopus</i> *	cutleaf plantain
<i>Plantago lanceolata</i> *	English plantain
<i>Poa annua</i> *	annual bluegrass
<i>Polygonum aviculare</i> *	common knotweed
<i>Polypogon monspeliensis</i> *	rabbitsfoot grass
<i>Pseudognaphalium luteoalbum</i> *	annual cudweed
<i>Pseudotsuga menziesii</i>	Douglas-fir
<i>Quercus agrifolia</i>	coast live oak
<i>Raphanus sativus</i> *	wild radish
<i>Rosa</i> sp.*	cultivated rose
<i>Rubus armeniacus</i> *	Himalayan blackberry
<i>Rubus ursinus</i>	California blackberry
<i>Rumex crispus</i> *	curly dock
<i>Rumex salicifolius</i>	willow dock
<i>Salix laevigata</i>	red willow
<i>Salix lasiandra</i> var. <i>lasiandra</i>	Pacific willow
<i>Salix lasiolepis</i>	arroyo willow
<i>Sambucus racemosa</i>	red elderberry
<i>Schinus molle</i> *	Peruvian pepper tree
<i>Schoenoplectus californicus</i>	California tule
<i>Scrophularia californica</i>	California figwort
<i>Senecio vulgaris</i> *	common groundsel
<i>Sequoia sempervirens</i>	coast redwood
<i>Silybum marianum</i> *	milk thistle
<i>Solanum</i> sp.	nightshade
<i>Sonchus asper</i> subsp. <i>asper</i> *	prickly sow thistle
<i>Sonchus oleraceus</i> *	sow thistle
<i>Spergularia</i> sp.*	sand spurrey
<i>Stachys</i> sp.	hedge-nettle
<i>Symphyotrichum chilense</i>	California aster
<i>Toxicodendron diversilobum</i>	poison oak
<i>Tropaeolum majus</i> *	garden nasturtium
<i>Urtica dioica</i>	stinging nettle
<i>Vicia sativa</i> *	vetch
<i>Vinca major</i> *	periwinkle
<i>Washingtonia</i> sp.*	palm
<i>Zantedeschia aethiopica</i> *	calla lily
* = non-native species	

Appendix D. Wildlife species observed or detected by sign on the 2016 and 2019 study areas, October 11, 2016 and March 1, 2019.

Scientific Name	Common Name
<i>Pseudacris sierra</i>	Sierran treefrog
<i>Buteo lineatus</i>	Red-shouldered hawk
<i>Calypte anna</i>	Anna's hummingbird
<i>Selasphorus sasin</i>	Allen's hummingbird
<i>Melanerpes formicivorus</i>	Acorn woodpecker
<i>Melanerpes formicivorus</i>	Black phoebe
<i>Cyanocitta stelleri</i>	Stellar's jay
<i>Corvus corax</i>	Common raven
<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Callipepla californica</i>	California quail
<i>Dendroica townsendi</i>	Townsend's warbler
<i>Dendroica coronata</i>	Yellow-rumped warbler
<i>Thryomanes bewickii</i>	Bewick's wren
<i>Poecile rufescens</i>	Chestnut-backed chickadee
<i>Psaltiriparus minimus</i>	Bushtit
<i>Regulus calendula</i>	Ruby-crowned kinglet
<i>Sitta pygmaea</i>	Pygmy nuthatch
<i>Turdus migratorius</i>	American robin
<i>Sturnus vulgaris</i>	European starling
<i>Pipilo crissalis</i>	California towhee
<i>Zonotrichia leucophrys</i>	White-crowned sparrow
<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow
<i>Melospiza melodia</i>	Song sparrow
<i>Carduelis psaltria</i>	Lesser goldfinch
<i>Sylvilagus bachmani</i>	Brush rabbit
<i>Thomomys bottae</i>	Botta's pocket gopher
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat
<i>Procyon lotor</i>	Raccoon
<i>Lynx rufus</i>	Bobcat
<i>Canis familiaris</i>	Domestic dog

RESUMES OF PRINCIPAL INVESTIGATORS

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EDUCATION

Bachelor of Arts in Biology, University of CA at Santa Cruz
Received Honors and the Chancellor's Undergraduate Award for senior thesis
Certified Wildlife Biologist®, The Wildlife Society, Washington, D.C., 2001

EMPLOYMENT

1990 - Present Environmental Consultant. Co-owner of Biosearch Associates, formerly Biosearch Wildlife Surveys, an environmental consulting firm that performs field studies of sensitive and endangered species, wildlife research, biotic inventories, biological assessments, and designs mitigation and monitoring plans for public and private clients.

1986 - 1990 Field Biologist.

Biosystems Analysis, Inc., Santa Cruz, CA
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1984 Research Assistant. Marine Sciences Department, U.C. Santa Cruz

SUMMARY OF SKILLS AND QUALIFICATIONS

Mr. Allaback has over 25 years of experience as a professional wildlife biologist providing expertise primarily in the field of sensitive and endangered species ecology and management. He has acquired a variety of state and federal permits to study rare and endangered wildlife. He conducts habitat assessments and impact analysis, and designs, implements and monitors single and multi-species mitigation plans. He provides expertise in field identification of birds, larval and adult amphibians, reptiles, small mammals and fur-bearers. He follows current survey protocols to perform wildlife inventories and focused field studies. Standardized methodologies include live-trapping for small mammals, spot-lighting, track and photo station monitoring for large mammals; point counts, strip transects and spot-mapping for birds; night searches and aquatic sampling for amphibians; and pitfall trapping for amphibians and reptiles. He frequently conducts consultations with county, state and federal resource specialists, as well as other knowledgeable biologists and professionals. He has published peer-reviewed research and authored numerous technical reports including biological assessments, mitigation plans and biological resource evaluations for inclusion in Environmental Impact Reports and other documents. Mr. Allaback has performed or assisted with hundreds of field projects in a variety of habitats throughout California.

PROFESSIONAL AFFILIATIONS

The Wildlife Society, Western Field Ornithologists, CA Burrowing Owl Consortium, The Desert Tortoise Council and The Society for the Study of Amphibians and Reptiles.

TOM MAHONY

Principal/Plant Ecologist/Wetland Scientist

EDUCATION

M.S. Natural Resources (thesis focus in Plant Ecology), Humboldt State University, 1999
B.A. Geography (Biology Minor), San Diego State University, 1994
Wetland Delineation Training Course, San Francisco State University, 2000

POSITIONS

Principal/Plant Ecologist, Coast Range Biological, LLC	2006-Present
Senior Biologist/Plant Ecologist, Albion Environmental, Inc.	2002-2006
Plant Ecologist, Wetlands Research Associates, Inc.	2000-2002
GIS Technician, Redwood National Park	1996-1999
GIS/GPS Teaching Associate, Humboldt State University	1997-1999
GIS Technician, U.S. Geological Survey	1995-1996
Resource Ecology Intern, Torrey Pines State Reserve	1994

Tom Mahony received his M.S. degree in Natural Resources with a thesis focus in Plant Ecology from Humboldt State University in 1999. He has spent 23 years working with California vegetation and habitats, specializing in biotic assessments, wetland delineations, special-status plant surveys, vegetation classification/mapping, mitigation planning, and ecological restoration. He is a Certified Professional Wetland Scientist (PWS #2567) and holds a Plant Voucher Collecting Permit (No. 2081(a)-15-056-V) from the California Department of Fish and Wildlife.

Mr. Mahony is trained in wetland delineation procedures required under Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and the California Coastal Act, and has conducted wetland delineations throughout California for both private and public-sector clients. He has written wetland delineation reports and associated permit applications, including those for Corps of Engineers Nationwide Permits, Regional Water Quality Control Board Water Quality Certifications, and California Department of Fish and Wildlife Streambed Alteration Agreements. In addition, Mr. Mahony has expertise in wetland, riparian, and other Environmentally Sensitive Habitat Area delineations, biotic assessments, and buffer zone analyses required by the California Coastal Act. He has advanced training and extensive field experience identifying and mapping hydric soils.

Mr. Mahony has conducted numerous special-status plant surveys and botanical assessments throughout California utilizing methodologies approved by the California Native Plant Society, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service. He has managed mitigation monitoring projects in a wide variety of habitats. He has completed vegetation classifications in northwestern California, southwestern Oregon, and the Sierra Nevada foothills, and has published articles on vegetation classification. Mr. Mahony is trained in ecological analysis using GIS, GPS, and remote sensing techniques, and has developed vegetation prediction models for the National Park Service.