
Biological Resources Assessment

431 Paula Lane Nature Preserve
PETALUMA, SONOMA COUNTY, CALIFORNIA

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1.0 INTRODUCTION

On August 20 and October 17, 2019, WRA, Inc. (WRA) performed a biological resources assessment at the 431 Paula Lane Nature Preserve located in Petaluma, Sonoma County, California (APNs 019-080-009, -010; Project Area). The Project Area is 11.09 acres and is located approximately 1 mile west of downtown Petaluma (Figure 1).

The purpose of this assessment is to gather information necessary to complete a review of biological resources under the California Environmental Quality Act (CEQA). This report describes the results of the site visit, which assessed the Project Area and immediately adjacent areas for: (1) the potential to support special-status plant and wildlife species; (2) the potential presence of sensitive biological communities such as wetlands or riparian habitats; and (3) the potential presence of other sensitive biological resources protected by local, state, and federal laws and regulations.

A BRA provides general information on the potential presence of sensitive species and habitats. The BRA is not an official protocol-level survey for listed species that may be required for project approval by local, state, or federal agencies. Our determinations regarding the potential of the Project Area to support special-status plant and wildlife species were based primarily on the suitability of habitats within the Project Area, the proximity of known occurrences, and an on-site inspection. This assessment is based on information available at the time of the study and on-site conditions that were observed on August 20 and October 17, 2019.

2.0 REGULATORY BACKGROUND

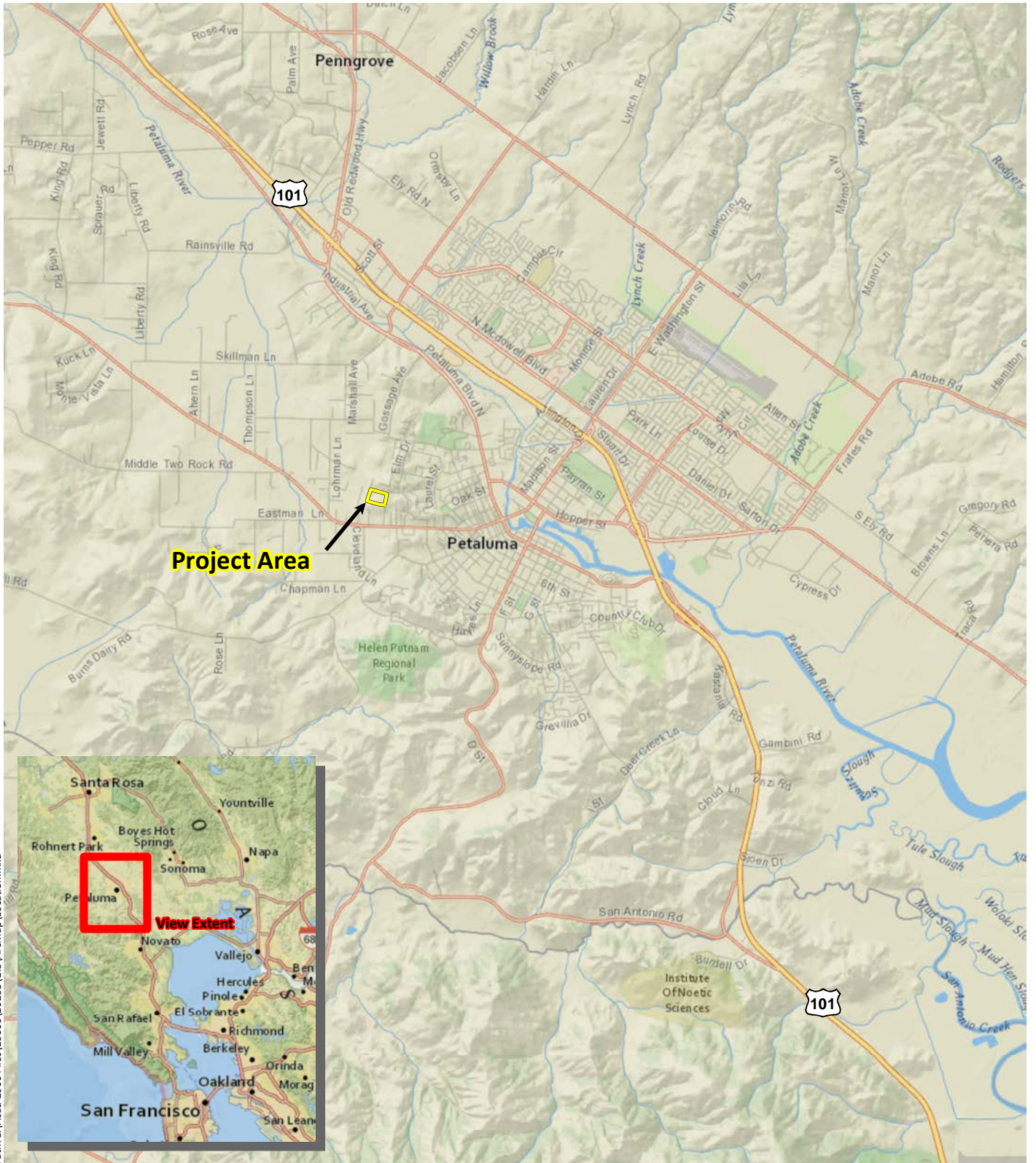
The following sections explain the regulatory context of this Biological Resources Assessment, including applicable laws and regulations that informed field investigations.

2.1 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. These habitats are protected under federal regulations such as the CWA; state regulations such as the Porter-Cologne Act, Section 1600-1616 of the California Fish and Game Code (CFGC), and CEQA; or local ordinances or policies such as city or county tree ordinances, Special Habitat Management Areas, and General Plan Elements.

2.1.1 Waters of the United States

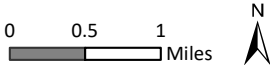
The Corps regulates “Waters of the United States” under Section 404 of the CWA. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in



Sources: National Geographic, WRA | Prepared By: mrochelle, 9/19/2019

Figure 1. Project Area Location

431 Paula Lane Nature Preserve
 Petaluma, California



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commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “other waters” and are often characterized by an ordinary high water mark (OHWM), and herein referred to as non-wetland waters. Non-wetland waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S. generally requires an individual or nationwide permit from the Corps under Section 404 of the CWA.

2.1.2 Waters of the State

The term “Waters of the State” is defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These aquatic resources have high resource value, are vulnerable to filling, and may not be systematically protected by other programs. RWQCB jurisdiction includes wetlands and waters that may not be regulated by the Corps under Section 404, such as isolated wetlands.

Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit or fall under other federal jurisdiction and have the potential to impact Waters of the State are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

2.1.3 Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by California Department of Fish and Wildlife (CDFW) under Sections 1600-1616 of CFGC. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream”, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term “stream” can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). “Riparian” is defined as “on, or pertaining to, the banks of a stream.” Riparian vegetation is defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

2.1.4 Essential Fish Habitat

Essential Fish Habitat (EFH) is regulated through the National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA). Protection of EFH is mandated through changes implemented in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to protect the loss of habitat necessary to maintain sustainable fisheries in the United States. The Magnuson-Stevens Act defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" [16 USC 1802(10)]. NMFS further defines essential fish habitat as areas that contain habitat essential to the long-term survival and health of our nation's fisheries. EFH can include the water column, certain bottom types such as sandy or rocky bottoms, vegetation such as eelgrass or kelp, or structurally complex coral or oyster reefs. Under regulatory guidelines issued by NMFS, any federal agency that authorizes, funds, or undertakes action that may affect EFH is required to consult with NMFS (50 CFR 600.920).

2.1.5 Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified by the CDFW in local or regional plans, policies, or regulations. The CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDDB; CDFW 2019a). Sensitive plant communities are also identified by CDFW (2018) and CNPS (2019a). Vegetation alliances are ranked 1 through 5 by CNDDDB based on NatureServe's (2017) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or United States Fish and Wildlife Service (USFWS) must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

2.1.6 Relevant Local Policies, Ordinances, and Regulations

City of Petaluma Tree Ordinance

The City of Petaluma recognizes the aesthetic, environmental, and economic benefits that mature trees provide to the citizens of the City. Chapter 17, "Tree Preservation," of the Petaluma City Code (Tree Ordinance) regulates the protection of certain trees on public and private properties within the City limits. The Tree Ordinance defines a "protected tree" as California native oaks (*Quercus* spp.) 4 inches diameter or greater measured at 4.5 above grade ("diameter at breast height" or DBH), California buckeye (*Aesculus californica*) 6 inches DBH or greater, California bay (*Umbellularia californica*) 12 inches DBH or greater, coast redwood (*Sequoia sempervirens*) 18 inches DBH or greater, heritage trees as approved by Council resolution per Title 8 of the Petaluma Municipal Code, significant groves or stands of trees, trees located in riparian corridors, any tree required to be planted or preserved as mitigation or condition of approval for a discretionary development project, or trees in the public right-of-way. A permit is generally required for the removal of any protected tree. Conditions of approval may include tree replacement plantings or the payment of in-lieu fees.

2.2 Special-Status Species

Plant and Wildlife Species

Special-status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed species and species proposed for listing. The federal Bald and Golden Eagle Protection Act also provides broad protections to both eagle species that in some regards are similar to those provided by ESA. In addition, CDFW Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, are considered special-status species. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the CEQA. Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a “High Priority” or “Medium Priority” species for conservation by the WBWG are typically considered special-status and also considered under CEQA. In addition to regulations for special-status species, most native birds in the United States (including non-status species) are protected the CFGC, i.e., sections 3503, 3503.5 and 3513, and guidance for protection is provided by the Migratory Bird Treaty Act (MBTA) of 1918. Under CFGC , destroying active nests, eggs, and young is illegal.

Plant species included within the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (Inventory) with California Rare Plant Rank (Rank) of 1 and 2 are also considered special-status plant species and must be considered under CEQA. Very few Rank 3 or Rank 4 plant species meet the definitions of Section 1901 Chapter 10 of the Native Plant Protection Act or Sections 2062 and 2067 of the CDFW Code that outlines CESA. However, CNPS and CDFW strongly recommend that these species be fully considered during the preparation of environmental documentation relating to CEQA. This may be particularly appropriate for the type locality of a Rank 4 plant, for populations at the periphery of a species range or in areas where the taxon is especially uncommon or has sustained heavy losses, or from populations exhibiting unusual morphology or occurring on unusual substrates. A description of the CNPS Ranks is provided below in Table 1.

Table 1. Description of California Rare Plant Ranks and Threat Codes

California Rare Plant Ranks (formerly known as CNPS Lists)	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - A review list
Rank 4	Plants of limited distribution - A watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

Critical Habitat

Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but that are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

3.0 METHODS

On August 20 and October 17, 2019, the Project Area was traversed on foot to determine: (1) plant communities present within the Project Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded and are listed in Appendix A. Plants were identified using *The Jepson Manual: Vascular Plants of California 2nd Edition* (Baldwin et al. 2012) and Jepson Flora Project (eFlora 2019) to the taxonomic level necessary to determine rarity. Plant nomenclature follows the Jepson Flora Project (2019), except where noted. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities.

3.1 Biological Communities

Prior to the site visit, the *Soil Survey of Sonoma County, California* (USDA1972, CSRL 2019) was examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present in the Project Area. In addition, WRA biologists reviewed the Cotati United States Geological Survey (USGS) 7.5-minute quadrangle topographic map (USGS 1980), the National Wetlands Inventory (NWI) (USFWS 2019a), and aerial photographs of the Project Area (Google Earth 2019) to identify potential sensitive habitats and areas for further investigation during the site visit. Following the site visit, biological communities present in the Project Area were classified based on existing plant community descriptions described in *A Manual of California Vegetation, Online Edition* (CNPS 2019a). Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations (see Section 2.1, above).

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations, and ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.4.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below. Sensitive biological communities are identified and described in Section 4.4.1 below.

Wetlands and Non-Wetland Waters

A formal wetland delineation was conducted during the site visit; indicators of wetlands such as hydrophytic vegetation (i.e., plant communities dominated by wetland species), evidence of inundation or flowing water, hydric or saturated soils and seepage, and topographic depressions/swales were investigated. WRA biologists took sample point data following the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008) in areas which expressed wetland indicators, to determine the extent of aquatic resources. Methods to determine presence of hydric soils, followed *Field Indicators of Hydric Soils in the U.S.* (USDA 2010).

If streams potentially jurisdictional under the CWA and/or the CFGC are noted on a site, they are delineated using a mix of surveyed topography data, high resolution aerial photographs, and a sub-meter GPS unit. The ordinary high water mark would be used to determine the extent of potential Section 404 jurisdiction, while the top-of-bank would be used to determine the extent of CFGC Section 1602 and 401. Streams with associated woody vegetation were assessed to determine if these areas would be considered riparian habitat by the CDFW following *A Field Guide to Lake and Streambed Alteration Agreements, Section 1600-1607, California Fish and Game Code* (CDFG 1994).

Other Sensitive Biological Communities

The Project Area was evaluated for the presence of other sensitive biological communities, including riparian areas or other sensitive plant communities recognized by CDFW. Prior to the site visit, aerial photographs, local soil maps, and *A Manual of California Vegetation, Online Edition* (CNPS 2019a) were reviewed to assess the potential for sensitive biological communities to occur in the Project Area. All alliances within the Project Area with a ranking of 1 through 3 in the *Natural Communities List* (CDFW 2018) were considered sensitive biological communities and mapped. These communities are described in Section 4.1.2 below. The City of Petaluma does not identify sensitive biological communities.

3.2 Special-Status Species

3.2.1 Literature Review

The potential for special-status species to occur in the Project Area was evaluated by first identifying which special-status species have been documented in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of listed species focused on the Petaluma 7.5-minute USGS quadrangle and eight surrounding quadrangles including Two Rock, Cotati, Glen Ellen, Point Reyes NE, Petaluma River, Inverness, San Geronimo, and Novato. In addition to the literature cited in Section 3.1, WRA also reviewed the following sources to identify which listed plant and wildlife species have been documented to occur in the greater vicinity of the Project Area:

- CNDDDB records (CDFW 2019a)
- USFWS Information for Conservation and Planning Database (USFWS 2019b)
- CNPS Electronic Inventory records (CNPS 2019a)
- Consortium of California Herbaria (CCH 2019)
- *A Flora of Sonoma County* (Best et al. 1996)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Thompson et al. 2016)
- California Bird Species of Special Concern (Shuford et. al. 2008)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- The Sonoma County Breeding Bird Atlas (Burridge 1995)
- Western Bat Working Group Species Accounts (WBWG 2019)

3.2.2 Site Assessment

A site visit was conducted of the Project Area to search for suitable habitats for listed species. Habitat conditions observed at the Project Area were used to evaluate the potential for presence of listed species based on these searches and the professional expertise of the investigating biologists. The potential for each listed species to occur in the Project Area was then evaluated according to the following criteria:

- **No Potential:** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- **Unlikely:** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

- **Moderate Potential:** Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential:** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present:** Species is observed on the site or has been recorded (i.e., CNDDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity to determine its potential to occur in the Project Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species. All species observed in the Project Area were recorded and are listed in Appendix A.

In cases where little information is known about species occurrences and habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with these species and habitats.

Special-status species, if observed during the site visit, were recorded and are discussed below in Section 4.3 and in Appendix B. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. Special-status species for which further protocol-level surveys may be necessary are described in 5.0.

4.0 RESULTS

A general description of the Project Area and the results of the site assessment are provided in the following sections. A list of plant and wildlife species observed is included as Appendix A. The assessment of the potential for special-status plant and wildlife species to occur in the Project Area is provided as Appendix B. Photographs of the Project Area are provided as Appendix C.

4.1 Project Area Description

The Project Area is located approximately 1 mile west of downtown Petaluma. The Project Area is surrounded by rural residential development and is bordered to the north by Sunset Drive and residential development; to the east by Paula Lane, residential development, and annual grassland; to the south by annual grassland, residential development, and Bodega Ave; and to the west by Petersen Lane, residential development, and annual grassland. The Project Area is 11.09 acres and consists primarily of undeveloped annual grassland dominated by wild oats (*Avena barbata*) and velvet grass (*Holcus lanatus*). The Project Area contains approximately 0.77 acres of landscaped and developed land near the eastern perimeter which includes two residences, a driveway, and landscaped vegetation including Monterey pine (*Hesperocyperis macrocarpa*), coast live oak (*Quercus agrifolia*), eucalyptus (*Eucalyptus* sp.), and acacia (*Acacia* sp.). This portion of the Project Area has been developed since at least 1952, while the remainder of the Project Area has been undisturbed (Google Earth 2019, NETR 2019). Project Area elevations range from approximately 150 to 230 feet.

4.2 Biological Communities

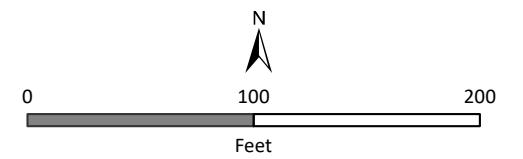
Table 1 summarizes the area of each biological community type and aquatic features observed in the Project Area. There are a total of two non-sensitive biological communities including developed and non-native grassland as well as one sensitive biological community consisting of seasonal wetland. Descriptions for each biological community and aquatic features are contained in the following sections and illustrated in Figure 2.

Figure 2. Biological Communities

Paula Lane Nature Preserve
Sonoma County, California



- Project Area - 11.09 ac.
- Proposed Development - 0.37 ac.
 - 0.05 ac. within Developed
 - 0.32 ac. within Non-Native Annual Grassland
- Non-Sensitive Communities**
- Developed - 0.77 ac.
- Non-Native Annual Grassland - 9.78 ac.
- Sensitive Communities**
- Seasonal Wetland - 0.54 ac.



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Table 2. Summary of Biological Communities in the Project Area

Community Type	Area (acres / [linear feet])
Non-sensitive Biological Communities	
Developed	0.77
Non-native grassland	9.78
Sensitive Biological Communities	
Seasonal wetland	0.54

4.2.1 Non-Sensitive Biological Communities

Developed

The developed areas within the Project Area include the existing residences, associated access features (i.e. driveway and parking lot), infrastructure, and landscaping. A portion of the developed area includes a 4 car parking lot for the public to park while visiting the Preserve.

Non-native grassland

Non-native grassland is dominated by one or more non-native grasses with a characteristic presence of non-native forbs. These grasslands are dominated by non-native annual species, populations of which can shift annually. Non-native grasslands within the Project Area contain elements of several non-native grassland alliances including wild oats grassland (*Avena barbata* Herbaceous Semi-Natural Alliance) and velvet grass meadow (*Holcus lanatus* Herbaceous Semi-Natural Alliance)(CNPS 2019b).

Within the Project Area, non-native grassland is mostly dominated by two non-native grass species including wild oats and velvet grass, with other associated non-native grass species present at lower densities including soft chess (*Bromus hordeaceus*), Italian ryegrass (*Festuca perennis*), ripgut brome (*B. diandrus*), and brome fescue (*F. bromoides*). Native grass and forb species were observed at low densities in the non-native grasslands, likely as a result of repeated disturbance such as mowing or discing. Native grass and forb species observed in this community includes willow herb (*Epilobium brachycarpum*), Spanish lotus (*Acmispon americanus*), cottonbatting plant (*Pseudognaphlium stramineum*), and coastal tarweed (*Madia sativa*). Scattered coast live oak trees and coyote brush (*Baccharis pilularis*) are present within this community. Individual native oak trees within this community may be considered “protected trees” under the Petaluma Tree Ordinance.

4.2.2 Sensitive Biological Communities

Seasonal wetland

Within the Project Area a single seasonal wetland is present in the lowest topographic area, near the northern boundary. Hydrologic sources for the wetland is sheet flow of the surrounding slopes which collects in the swale, forming a perched water table for a portion of the year. Saturation is likely present during the majority of the wet season in a normal rainfall year, while inundation is typically short-lived and shallow. The vegetation is dominated by facultative non-native grasses and facultative upland forbs, with native species not composing dominant species. The most frequently observed species included Italian rye grass, velvet grass, soft brome, and sheep sorrel

(*Rumex acetosella*). Boundaries of the seasonal wetland are mapped primarily based on subtle to distinct changes in topography and a change in vegetation composition. Areas mapped as seasonal wetland contain a prevalence or dominance of facultative wetland vegetation, contain indicators of hydric soils, and wetland hydrology sufficient to meet the requirements as jurisdictional features under Section 404 of the CWA, Section 401 of the CWA, and the Port-Cologne Water Quality Control Act.

4.3 Special-Status Species

4.3.1 Special-Status Plant Species

Based on a review of the resources databases listed in Section 3.2.1, 99 special-status plant species have been documented in the vicinity of the Project Area (Appendix B). Figure 3 depicts known CNDDDB records of special-status plant species within a 5-mile radius of the Project Area. Seven special-status plant species have a moderate potential to occur within the Project Area, and are discussed in detail below. The remaining species documented to occur in the vicinity of the Project Area are unlikely or have no potential to occur due to one or more of the following factors:

- The species has a very limited range of endemism and has never been observed in the vicinity of the Project Area;
- Plant species commonly associated with the special-status species, and which indicate the presence of suitable, intact habitat, are absent from the Project Area;
- Specific edaphic characteristics, such as soil derived from serpentine or volcanics are absent from the Project Area;
- Specific hydrologic characteristics, such as perennial saline, are absent from the Project Area;
- Very unique pH characteristics, such as alkali scalds or sinks are absent from the Project Area;
- Biological communities, such as coniferous forest or chaparral, are absent from the Project Area.

All special-status species with a moderate or high potential are discussed below:

Bent-flowered fiddleneck (*Amsinckia lunaris*). CRPR 1B.2. Moderate Potential. Bent-flowered fiddleneck is an annual forb in the forget-me-not family (Boraginaceae) that blooms from March to June. It typically occurs in open areas within cismontane woodland, valley and foothill grassland, and coastal bluff scrub habitat often underlain by clay substrate at elevations ranging from 10 to 1625 feet (CDFW 2019a, CNPS 2019a). Known associated species include coast live oak, blue oak (*Quercus douglasii*), California juniper (*Juniperus californicus*), buck brush (*Ceanothus cuneatus*), poison oak (*Toxicodendron diversilobum*), miniature lupine (*Lupinus bicolor*), foothill lotus (*Acmispon brachycarpus*), calf lotus (*A. wrangelianus*), fringe pod (*Thysanocarpus curvipes*), q-tips (*Micropus californicus*), cream cups (*Platystemon californicus*), slender tarweed (*Madia gracilis*), common yarrow (*Achillea millefolium*), goldenback fern (*Pentagramma triangularis*), one-sided bluegrass (*Poa secunda*), woolly sunflower (*Eriophyllum lanatum*), and slender wild oat (CDFW 2019a).

Bent-flowered fiddleneck is known from 49 USGS 7.5-minute quadrangles in Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Manteo, Sonoma, Sutter, and Yolo counties (CNPS 2019a). Bent-flowered fiddleneck has a moderate potential to

occur in the Project Area due to its wide range of habitat and documented occurrences, and the presence of known associated species.

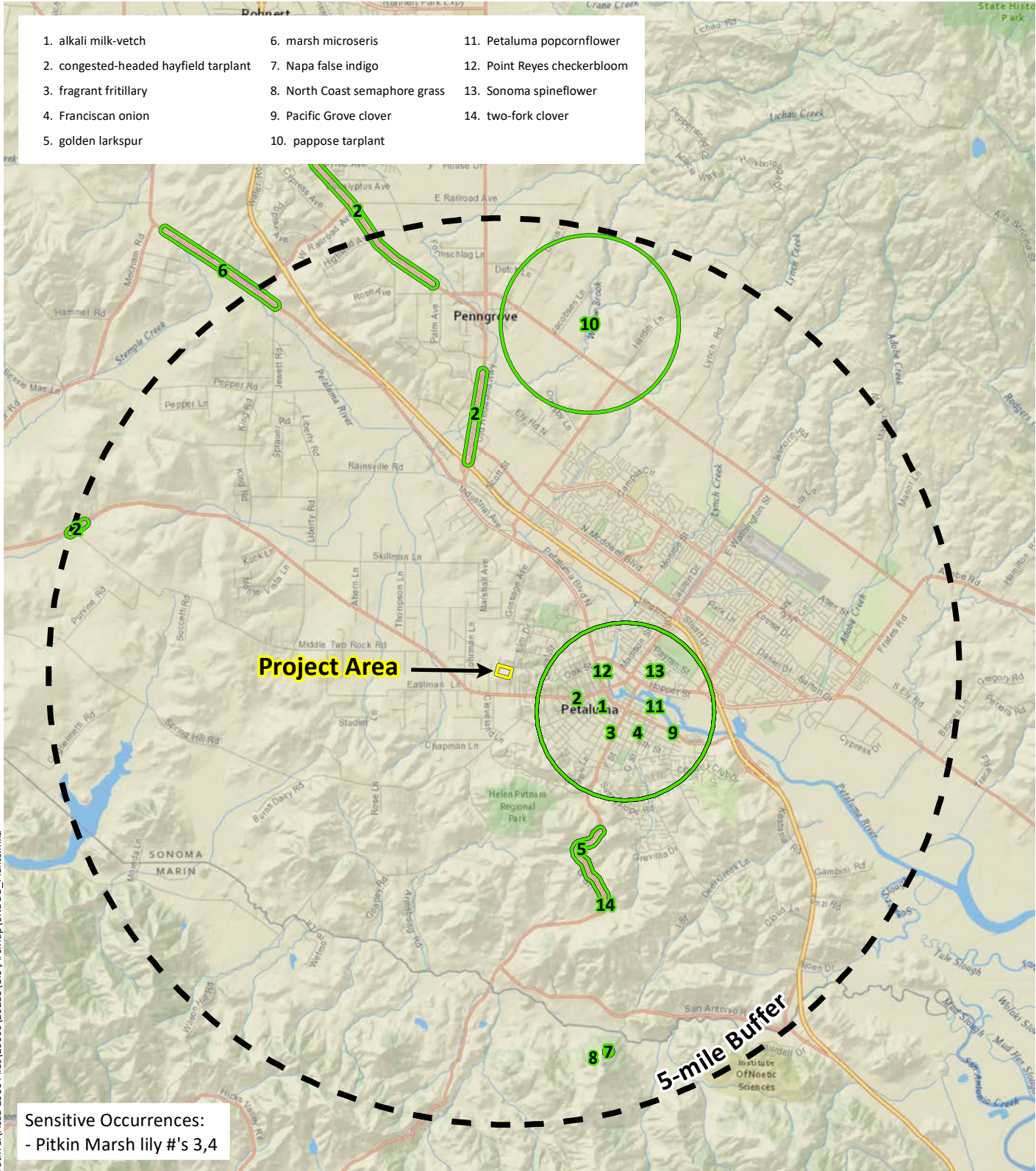
Johnny-nip (*Castilleja ambigua* var. *ambigua*). CRPR 4.2. Moderate Potential. Johnny-nip is an annual hemi-parasitic forb in broomrape family (Orobanchaceae) that blooms from March through August. It typically occurs in coastal bluff scrub, coastal scrub, coastal prairie, marshes and swamps, valley and foothill grassland, and vernal pool habitat at elevations ranging from 0 to 1,415 feet. This species has a wetland indicator status of facultative wetland (FACW) for the Western Mountains, Valleys, and Coast Wetland Plant List (Lichvar 2016). Known associated species include Pacific silverweed (*Potentilla anserina* ssp. *pacifica*), varied lupine (*Lupinus variicolor*), riverbank lupine (*L. rivularis*), silver lupine (*L. albifrons*), California poppy (*Eschscholzia californica*), common yarrow (*Achillea millefolium*), common velvet grass (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), and dwarf checkerbloom (*Sidalcea malviflora* ssp. *malviflora*) (CCH 2019).

Johnny-nip is known from 38 USGS 7.5-minute quadrangles in Alameda, Contra Costa, Del Norte, Humboldt, Mendocino, Marin, Napa, Santa Cruz, San Francisco, San Luis Obispo, San Mateo and Sonoma counties (CNPS 2019a). Johnny-nip has a moderate potential to occur in the Project Area due to the high variability in its habitat and range and presence of documented occurrences within the vicinity of the Project Area.

Pappose tarplant (*Centromadia parryi* ssp. *parryi*). CRPR 1B.2. Moderate Potential (Not Observed). Pappose tarplant is an annual herb in the sunflower family (Asteraceae) that blooms from May to November. It typically occurs in vernal mesic, often alkaline areas in coastal prairie, meadow, seep, coastal salt marsh, and valley and foothill grassland habitat at elevations ranging from 5 to 1380 feet (CDFW 2019a, CNPS 2019a). This species a facultative wetland (FACW) plant (Lichvar 2016). Known associated species include bristly ox-tongue (*Helminthotheca echioides*), wild radish (*Raphanus sativus*), foxtail fescue (*Festuca myuros*), willow leaf dock (*Rumex salicifolius*), toad rush (*Juncus bufonius*), Italian rye grass, Mediterranean barley, salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), perennial pepperweed (*Lepidium latifolium*), yellow star thistle (*Centaurea solstitialis*), alkali mallow (*Malvella leprosa*), and alkali weed (*Cressa truxillensis*) (CDFW 2019a).

Pappose tarplant is known from 24 USGS 7.5-minute quadrangles in Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, Sonoma, and Yolo counties (CNPS 2019a). Pappose tarplant has a moderate potential to occur in the Project Area due to the presence of wetland habitat, and the presence of associated species. The site visit was conducted in August which is within the peak blooming period of this species. The species was not observed and is therefore determined to be absent.

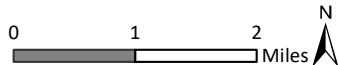
Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*). CRPR 1B.2. Moderate Potential (Not Observed). Hayfield tarplant is an annual herb in the sunflower family (Asteraceae). It is typically found in coastal scrub and in valley and foothill grassland, often in fallowed fields, and it has sometimes been found along roadsides. It occurs at elevations from 65 to 1,837 feet, and it blooms from April to November (CNPS 2019a). Known associated species include English plantain (*Plantago lanceolata*), hairy cats ear (*Hypochaeris radicata*), broadleaf birdsfoot trefoil (*Lotus corniculatus*), big quaking grass (*Briza maxima*), and ripgut brome (CDFW 2019a).



Sources: National Geographic, CNDDB August 2019, WRA | Prepared By: mrochelle, 9/19/2019

Figure 3. Special-Status Plant Species Documented within 5-miles of the Project Area

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Petaluma, California



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This species is known from 33 USGS 7.5-minute quadrangles in Lake, Mendocino, Marin, San Francisco, San Mateo and Sonoma counties (CNPS 2019a). Congested-headed hayfield tarplant has a moderate potential to occur in the Project Area due to the presence of suitable habitat, and the presence of associated species. The site visit was conducted in August which is within the peak blooming period of this species. The species was not observed and is therefore determined to be absent.

Harlequin lotus (*Hosackia gracilis*). CRPR 4. Moderate Potential. Harlequin lotus is a perennial forb in the pea family (Fabaceae) that blooms from March to July. It typically occurs in wetlands or ditches in broadleaf upland forest, coastal scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, meadow and seep, marsh and swamp, North Coast coniferous forest, and valley and foothill grassland habitat at elevations ranging from 0 to 2,275 feet (CNPS 2019a). This species has a wetland indicator status of facultative wetland (FACW) on the National Wetland Plant List (Lichvar 2016). Known associated species include tinker's penny (*Hypericum anagalloides*), blue-eyed grass (*Sisyrinchium bellum*), golden-eyed grass (*S. californicum*), bird's-foot trefoil (*Lotus corniculatus*), common velvet grass (*Holcus lanatus*), California oat grass (*Danthonia californica*), and silver hair grass (*Aira caryophyllea*) (CCH 2019).

Harlequin lotus is known from 16 USGS 7.5-minute quadrangles in Del Norte, Humboldt, Marin, Mendocino, Monterey, San Benito, Santa Cruz, San Francisco, San Luis Obispo, San Mateo, and Sonoma counties (CNPS 2019a). Harlequin lotus has a moderate potential to occur in the seasonal wetland portions of the Project Area due to the presence of associated species, and vernal mesic hydrology.

Marsh microseris (*Microseris paludosa*). CRPR 1B.2. Moderate Potential. Marsh Microseris is a perennial forb in the sunflower family (Asteraceae) that blooms from April through July. It typically occurs in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland habitat at elevations ranging from 15 to 985 feet (CDFW 2019a, CNPS 2019a). Known associated species include coast live oak, coyote brush, English plantain, blue-eyed grass, bracken fern (*Pteridium aquilinum*), rough cat's ear (*Hypochaeris radicata*), common velvet grass, little rattlesnake grass (*Briza minima*), narrow-leaf mule ears (*Wyethia angustifolia*), and Douglas iris (*Iris douglasiana*) (CDFW 2019a).

Marsh microseris is known from 26 USGS 7.5-minute quadrangles in Marin, Mendocino, Monterey, San Benito, Santa Cruz, San Francisco, San Luis Obispo, San Mateo, and Sonoma counties (CNPS 2019a). Marsh microseris has a moderate potential to occur in more mesic areas within grassland in the Project Area due to the presence of suitable habitat.

Petaluma popcornflower (*Plagiobothrys mollis* var. *vestitus*). CRPR 1A. Moderate Potential. Petaluma popcornflower is a perennial forb in the forget-me-not family (Boraginaceae) that blooms from June to July. This presumed extinct species is assumed to have been located in wet areas on the margins of valley and foothill grassland and coastal salt marsh habitat at elevations ranging from 30 to 165 feet (CDFW 2019a, CNPS 2019a). This species is a facultative wetland (FACW) plant (Lichvar et al. 2016). Known associated species are not reported in the literature.

Petaluma popcornflower is known from one USGS 7.5-minute quadrangle in Sonoma County (CNPS 2019a). There is one CNDDDB (CDFW 2019a) record within the greater vicinity of the Project Area, based on one collection by Congdon in Petaluma in 1880, and no CCH (2019) records from Sonoma County, or elsewhere. Petaluma popcornflower has a moderate potential to occur, based on the presence of potentially suitable mesic grassland habitat underlain by sandy soils.

4.3.2 Special-Status Wildlife

Fifty-one special-status species of have been recorded in the vicinity of the Project Area based on a review of CNDDDB (CDFW 2019a) and USFWS (USFWS 2019b) records and other resources. Appendix B summarizes the potential for each of these species to occur in the Project Area. Figure 4 depicts CNDDDB records of special-status wildlife species within a 5-mile radius of the Project Area. Of the 51 special-status species, 48 are considered unlikely, or have no potential, to occur in the Project Area for one or more of the following reasons:

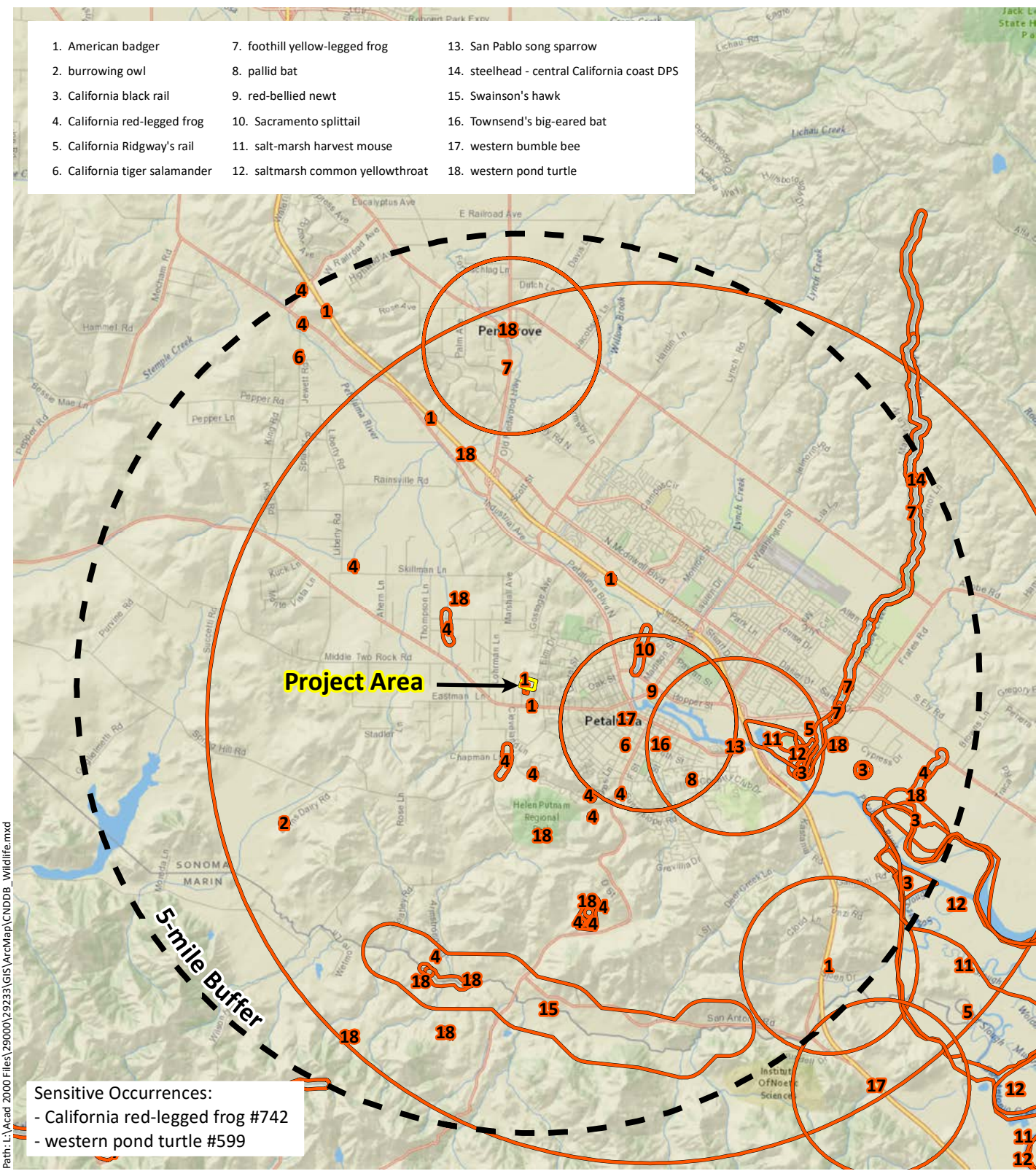
- The Project Area is outside of the known or historical range of the species;
- The Project Area lacks suitable aquatic habitat (e.g., rivers, streams, vernal pools);
- The Project Area lacks suitable foraging habitat (e.g., marshes);
- The Project Area lacks suitable nesting structures (e.g. old growth conifers);
- No mine shafts, caves, or abandoned buildings are present;
- There is a lack of connectivity with suitable occupied habitat.

Evidence of one special-status wildlife species was observed in the Project Area during the site assessment. An additional two special-status wildlife species with a moderate or high potential to occur in the Project Area are discussed below. Measures to reduce avoid or reduce impacts to the following species are described in Section 5.3 of this assessment.

American Badger (*Taxidea taxus*). CDFW Species of Special Concern. Present. American badger occurs throughout California in drier open stages of most scrub, forest, and herbaceous habitats, which provide loose, gravelly soils suitable for burrowing. Badger burrows are constructed mainly in the pursuit of prey, but they are also used for sleeping. Dens may be as far as 10 feet (3 meters) below the surface and contain about 33 feet (10 meters) of tunnels. Badgers use multiple burrows within their home range, and they may not use the same burrow more than once a month. In the summer months they may dig a new burrow each day (Kurta 1995, Long 1999).

In California, the primary prey items for American badger are pocket gophers, ground squirrels, moles, woodrats, kangaroo rats, deer mice, and voles. They also prey on ground nesting birds, such as bank swallows and burrowing owls, lizards, amphibians, carrion, fish, hibernating skunks, insects, including bees and honeycomb, and some plant foods, such as corn and sunflower seeds. Badgers catch most of their food by digging and have been known to cache food (Long 1999). They contribute to natural ecosystems by consuming carrion and controlling populations of rodents, snakes, and insects, and their burrows provide shelter for other species (Long 1999).

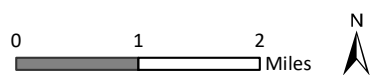
Badgers have very large home ranges depending on the habitat available. In Idaho, the home range of adult males averaged 1.5 square miles, and that of females averaged 1 square miles (Messick and Hornocker 1981). In southeastern British Columbia, where habitat is patchier, male home ranges averaged 43 square miles and those of females averaged 23.6 square miles (Newhouse and Kinley 2000). Population density averages one badger per square mile in prime open country (Long 1973).



Sources: National Geographic, CNDDB August 2019, WRA | Prepared By: mrochelle, 9/19/2019

Figure 4. Special-Status Wildlife Species Documented within 5-miles of the Project Area

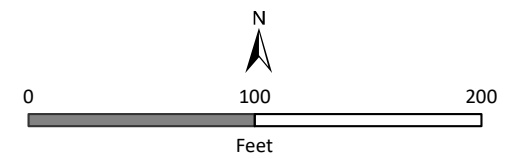
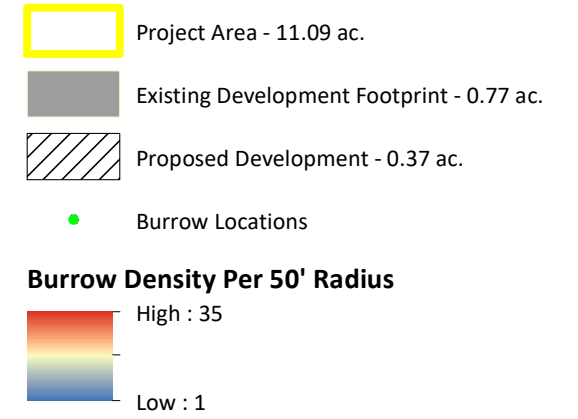
431 Paula Lane Nature Preserve
 Petaluma, California



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Figure 5. Burrow Density

Paula Lane Nature Preserve
Sonoma County, California



Path: L:\Acad 2000 Files\29000\29233\GIS\ArcMap\Burrow Density.mxd

Sources: Sonoma County 2018 Aerial, WRA | Prepared By: mrochelle, 11/11/2019

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Primary threats to this species include changing land uses, loss of prey, fire suppression practices, vehicle strikes, and deliberate mortality by humans. Threats to this species have not been considered substantial enough to trigger federal or state listing as threatened or endangered, but CDFW has categorized them as Species of Special Concern.

Within the Project Area, there is a documented badger occurrence from September 2009 (CDFW 2019). A large number of burrows which appeared to have been excavated by badgers (burrows which were at least 8 inches in diameter, typically with visible claw marks on the sides of the burrow and a new throw pile of soil at more-recently excavated entrances) were observed throughout the Project Area at the time of the site visit. On October 17, 2019, potential badger burrows within the Project Area were mapped (Figure 5). Other mammals (i.e. gray fox, skunk) have been observed in the Project Area and may utilize ground burrows of a similar size. For the purpose of mapping potential badger use and trends across the Project Area, all burrows greater than 8 inches were mapped (including partially excavated burrows, potential foraging holes, latrines, and burrows that did not appear to have recent use). Burrow density was greatest on the slope in the southwestern portion of the Project Area, which is bordered to the south and west by undeveloped grassland; few burrows or signs of foraging were observed within 100 feet of Paula Ln, Sunset Dr, and existing development and landscaping. Badger digging activity has not been shown to correlate with badger population density, and the numerous burrows present in the Project Area may represent only one badger pair (Messick 1987). While badgers may excavate new burrows each year and exact burrow locations may change, Figure 5 shows an overview of use within the Project Area, including foraging activity.

Potential movement corridors for American badger were evaluated via aerial imagery and observations during the site assessment visit, based on presence of large contiguous tracts of open space areas surrounding the Project Area and presence of barriers to dispersal including off-site fencing (without openings at the base), residential and commercial development, and heavily traveled roadways. Badgers have very large home ranges, depending on the habitat available from as little as 1 square miles, up to 43 square miles in areas where habitat is patchier (Messick and Hornocker 1981; Newhouse and Kinley 2000; Quinn 2008); furthermore, these animals have been recorded traveling up to 0.3 miles in a single night (Quinn 2008). Based on the literature and burrow activity observed during the site visit, it is likely the Project Area (11.09 acres or 0.02 square miles) contributes to a much larger home range (0.6 to 0.93 square miles minimum) for at least one American badger pair. Potential movement corridors for badger as well as other native wildlife are further discussed in Section 4.4.4.

Within the Project Area and surrounding vicinity, existing threats include vehicle strikes on adjacent roadways, as well as threats associated with urbanization that include competition from other urban wildlife such as raccoons, skunks, common raven, and domestic cats.

Loggerhead shrike (*Lanius ludovicianus*), CDFW Species of Special Concern. Moderate Potential. The loggerhead shrike is a year-round resident and winter visitor in lowlands and foothills throughout California. This species is associated with open country with short vegetation and scattered trees, shrubs, fences, utility lines and/or other perches. Although they are songbirds, shrikes are predatory and forage on a variety of invertebrates and small vertebrates. Captured prey items are often impaled for storage purposes on suitable substrates, including thorns or spikes on vegetation, and barbed wire fences. This species nests in trees and large shrubs; nests are usually placed three to ten feet off the ground (Shuford and Gardali 2008). Trees and shrubs within and adjacent to the Project Area provide nesting habitat for this species, and open grassland and fence posts may provide foraging opportunities. Therefore, this species has a moderate potential to occur in the Project Area.

White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. The white-tailed kite is resident in open to semi-open habitats throughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities (Dunk 1995). Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates. The Project Area contains open grassland, and trees and shrubs within or adjacent to the Project Area may provide nesting habitat. This species has recently been observed foraging in the vicinity (eBird 2019).

4.3.3 Listed Wildlife Species Unlikely to Occur in the Project Area

Listed species that are documented to occur in the vicinity of the Project Area, but are unlikely or have no potential to occur in the Project Area include: California tiger salamander and California red-legged frog. These species are discussed below.

California tiger salamander (*Ambystoma californiense*), Federal Threatened, State Threatened. The California tiger salamander is restricted to grasslands and low-elevation foothill regions in California (generally under 1500 feet) where it uses seasonal aquatic habitats for breeding. The salamanders breed in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry), and occupy substantial areas surrounding the breeding pool as adults. California tiger salamanders spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by living underground in burrows (such as those created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands.

The nearest documented occurrence of the species is a historical record from 1856 (Occurrence 1135; CDFW 2019) is described as possibly extirpated and, as with many older occurrence records, this record is of questionable origin and location accuracy. It is assigned as a circular occurrence with a 5-mile accuracy, centered in Petaluma and overlapping the Project Area. However, the description of the record describes the collector as being active within 20 miles of Petaluma and suggests that the specimen may have originated from the Santa Rosa Plain, located northwest of the Project Area (CDFW 2019). This interpretation would keep to the accepted distribution of California tiger salamanders in Sonoma County, as there are no verified occurrences of the species in the lower Petaluma River watershed and no verified records from Petaluma or its immediate surrounds. The nearest population occurrence record that is likely to be extant is located about 4 miles northwest of the Project Area, in the Santa Rosa Plain. Because the habitat onsite is not considered suitable for this species and it is outside the accepted documented range of occurrence, it is unlikely that this species would occur in the Project Area.

California Red-legged Frog (*Rana draytonii*). Federal Threatened Species, CDFW Species of Special Concern. California red-legged frog is dependent on suitable aquatic, aestivation, and upland habitats. During periods of wet weather, starting with the first rainfall in late fall, red-legged frogs disperse away from their aestivation sites to seek suitable breeding habitat. Aquatic breeding habitat is characterized by dense, shrubby, riparian vegetation and deep, still or slow-moving water. Breeding occurs between late November and late April. California red-legged frog aestivates (period of inactivity) during the dry months in small mammal burrows, moist leaf litter, incised stream channels, and large cracks in the bottom of dried ponds. The nearest documented

occurrence of this species is located approximately 0.8 mile south/southwest of the site (CDFW 2019).

No aquatic habitat of suitable depth or vegetative structure for California red-legged frog is present within or adjacent to the Project Area. Due to the absence of suitable aquatic habitat or moist riparian habitat adjacent or near to the Project Area (within 0.5 mile), this species is also unlikely to aestivate in the Project Area. Additionally, the Project Area does not lie on any logical dispersal corridor. Due to the lack of suitable habitat features and the location of the site, it is unlikely that this species would occur within the Project Area.

4.4.4 Wildlife Movement Corridors

Wildlife corridors provide connectivity between habitat areas for common species, enhancing species richness and diversity. Where habitat areas are subject to pressures from development, defined movement corridors and/or contiguous open space areas are of particular importance as they provide cover, water, and food between seasonal breeding and foraging areas.

Annual grassland in the Project Area may serve as a corridor for local wildlife, connecting grassland the south and northwest. Beyond Paula Lane to the east and north, rural residential development becomes increasingly dense and urban, and large open tracts of land are absent. Dense development to the east and north likely precludes wildlife movement in this direction. Adjacent and nearby barriers to dispersal include fencing that abuts pavement (preventing burrowing underneath) and without openings large enough to allow passage, commercial development along Bodega Road, patches of concentrated residential development, and bright night lighting. These barriers reduce the functionality of the Project Area as a corridor other than occasional local movements in this direction. Species likely to use this area include: American badger (*Taxidea taxus*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), mule deer (*Odocoileus hemionus*), and striped skunk (*Mephitis mephitis*).

5.0 POTENTIAL IMPACTS AND AVOIDANCE MEASURES

5.1 Project Description

The City proposes to create an 11.09 acre preserve that will provide habitat preservation for wildlife, public access, and education to community members (Project). The Project will install an interpretive kiosk, wildlife viewing areas, a perimeter trail (approximately 0.11 acre), gardens/agricultural areas (0.25-0.5 acre), and wildlife friendly fencing. The gardens, trails, and kiosk will be in the eastern portion of the preserve adjacent to Paula Lane and existing development (Figure 2). Impervious materials will be limited to 3% of the Project Area, including the existing building envelope. The Project will include the following measures to preserve natural resources and maintain functionality for wildlife:

Wildlife friendly security fencing currently exists around much of the perimeter of the preserve. New fencing around the garden and agricultural area will be designed to exclude wildlife. However, any new fencing in the remainder of the Project Area will be wildlife friendly. Pass-thru fencing shall be installed with a 12-inch (minimum) opening from the ground to the bottom of the fence to allow wildlife to move through the property. No new lighting features will be installed in the preserve. No dogs or other domestic pets will be allowed within the preserve. Signs will be used to inform visitors on the boundary to sensitive habitat. The Project will avoid impacts to

mapped wetlands. Equipment and materials will be staged within existing roads and developed areas. Heavy equipment may be used for trail construction and will stay within close proximity to Paula Lane.

5.2 Significance Threshold Criteria

Pursuant to Appendix G, Section IV of the State CEQA Guidelines, a project would have a significant impact on biological resources if it would:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS;
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or,
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

This report utilizes these thresholds in the analysis of impacts and determination of the significance of those impacts. The assessment of impacts under CEQA is based on the changes caused by the Project relative to the existing conditions in the Project Area. The existing conditions in the Project Area are described above, based on surveys conducted in 2017. In applying CEQA Appendix G, the terms “substantial” and “substantially” are used as the basis for significance determinations in many of the thresholds, but are not defined qualitatively or quantitatively in CEQA or in technical literature. In some cases, such as direct impacts to special-status species listed under the CESA or ESA, the determination of a substantial impact may be relatively straightforward. In other cases, the determination is less clear, and requires application of best professional judgment based on knowledge of site conditions as well as the ecology and physiology of biological resources present in a given area. Determinations of whether or not Project activities will result in a substantial adverse effect to biological resources are discussed in the following sections for sensitive biological communities, special-status plant species, and special-status wildlife species.

5.3 Potentially Significant Impacts

One sensitive biological community is present within the Project Area consisting of a 0.54-acre seasonal wetland. Seven special-status plant species and three special-status wildlife species have potential to occur within the Project Area. Potential impacts to these sensitive resources

associated with the proposed Project are discussed below. Recommended avoidance measures to reduce such impacts are also included.

5.3.1 Biological Communities

The development portions of the proposed project are to be located away from the seasonal wetland, therefore no impacts are expected. It is recommended any project work be conducted more than 50 feet from the edge of the wetland to provide a protective buffer. The edge of wetland should be flagged if project activities are expected to occur within within 50-feet of the wetland.

Several coast live oaks are present within the Project Area which would likely meet the City of Petaluma Tree Ordinance dbh requirements. However, no tree removal is expected to occur as part of project activities and no impacts to protected trees are expected.

5.3.2 Special-status Plant Species

Potential Impact BIO-1: Potential Impacts to Special-status Plant Species

Seven special-status plant species have a moderate potential to occur in the Project Area based on the availability of suitable habitat, the presence of associated plant species, and the proximity to documented occurrences. The timing of the site visit was not sufficient to identify five of these species based on their documented bloom periods. However two species, congested-headed hayfield tarplant and pappose tarplant would have been identifiable during the site visit if present. Neither species was observed, therefore they are determined to be absent from the Project Area.

The remaining five species have blooming periods outside of the time of the site visit in August.

Bent-flowered fiddleneck, marsh microseris, and Petaluma popcornflower are all CRPR 1A or 1B species, meaning that they are considered extinct, rare, threatened or endangered throughout their range in California, and impacts to them must be considered under CEQA. In contrast, Harlequin lotus and johnny-nip all are ranked CRPR 4. According to the CNPS guidelines (CNPS 2019a), few, if any, Rank 4 species are eligible for state listing under CESA; however, impacts may be considered significant under CEQA in special cases. Examples of impacts that may be considered significant under CEQA include:

- Impacts to the type locality of a California Rare Plant Rank 4 plant;
- Impacts to populations at the periphery of a species' range;
- Impacts in areas where the taxon is especially uncommon;
- Impacts in areas where the taxon has sustained heavy losses; or
- Impacts to populations exhibiting unusual morphology or occurring on unusual substrates.

If present in the Project Area, impacts to the aforementioned special-status plant species could be significant under CEQA (criterion A).

Avoidance Measure BIO-1: Potential Impacts to Special-status Plant Species

Protocol-level surveys shall be conducted during the documented bloom period of the species. Two site visits, including one in May and one in June will be sufficient to cover the bloom periods of the five species with potential to occur. Survey timing may fluctuate based on blooming periods of appropriate reference site locations.

If special-status plant surveys result in negative findings, no impacts would occur, and no further avoidance measures or mitigation would be required. If special-status plants are identified in the impact area, the project will be designed to avoid plants, if practicable, and no impacts would result. With the implementation of these measures, the Project will have no impact on special-status plants.

5.3.3 Special-status Wildlife Species

Of the 51 special-status wildlife species known to occur in the greater vicinity of the Project Area, three were determined to have moderate or high potential to occur or are present in the Project Area. Impact avoidance and minimization recommendations are discussed below.

Potential Impact BIO-2: Birds

No special-status birds were observed in the Project Area during the site assessment. Two special-status bird species have a moderate potential to occur in the Project Area and include: white-tailed kite and loggerhead shrike.

None of the bird species listed above are state or federally listed as endangered, threatened or candidates for listing. White-tailed kite is listed as a CDFW Fully Protected Species. Loggerhead shrike is a CDFW Species of Special Concern. These designations requires extra consideration for buffer zones around active nests, but otherwise require protection and surveys to be completed in the same manner as other species listed above. If nesting birds are present during construction, they may be impacted directly or indirectly by operation of equipment, increased noise, and increased human presence. Impacts to special-status birds as well as native nesting birds protected by CFGC will be avoided by implementing the measures below.

Avoidance Measure BIO-2: Bird Avoidance

For the protection of special-status birds, and native nesting birds protected by the CFGC, future Project activities shall occur outside of the nesting season from September 1 – January 31, to the extent feasible.

If project activities are initiated during the nesting season (February 1 – August 31) impacts to nesting birds will be avoided by having a qualified wildlife biologist conduct a nesting bird survey no more than 14 days prior to the start of Project activities. If no active nests are identified during the surveys, no impacts will occur to nesting birds and work will progress without restriction. If active nests are identified, a no-disturbance buffer around the nest shall be implemented to avoid impacts to nesting birds. Buffers will be determined by a qualified biologist, and typically range from 25 feet to 500 feet depending on the species and protection status of that species. Once an active nest is determined to no longer be active, because of young fledging or predation, the buffer around the nest shall be removed and work shall progress without restriction. With the implementation of these measures, the Project will have no impact on nesting birds (including special-status species).

Potential Impact BIO-3: American Badger

The Project includes the installation of trails, benches, and informational kiosks primarily along the eastern portion of the Project Area adjacent to Paula Lane. Indication of use by badger was observed in the undeveloped portion of the Project Area, with the highest concentration of use along the southwestern slope. Burrow density is significantly lower near development along the northern and eastern boundaries of the Project Area. The proposed development lies adjacent

to existing development, approximately 50 feet from the nearest burrow and 100 feet from high burrow concentration areas. The Project will not install new lighting features in the Project Area. The Project Area is surrounded by a wildlife friendly perimeter fence that will allow for wildlife movement through the Project Area. Any new perimeter fencing will be wildlife friendly (pass-thru fencing shall be installed with a 12-inch (minimum) opening from the ground to the bottom of the fence to allow wildlife to move through the property). No dogs or domestic pets will be allowed in the preserve. No chemical rodent or pest control measures will be implemented. Badgers are unlikely to be impacted by an increase in lighting, impediments to movement due to perimeter fencing, or reduced prey base due to chemical pest control and presence of domestic pets, as the Project is designed to avoid these impacts. Fencing may be implemented to exclude wildlife from the garden/ agricultural area. However, installation of a garden and trails are unlikely to impact badgers, as the development footprint is adjacent to existing development and is within a portion of the Project Area that does not show indication of use by badger (Figure 5). The less-than 0.5 acre garden and agricultural area will lie within an area that is currently subject to regular anthropogenic disturbance including pedestrian and vehicular traffic from Paula Lane, Sunset Dr, and adjacent residences. Approximately 10 acres of land within the Project Area (including 0.54 acres of seasonal wetland) will be preserved. Additional measures to avoid impacts to badger are outlined below.

Avoidance Measure BIO-3: American Badger Avoidance

To avoid impacts to American badger, prior to any new construction or grading activities in the potential badger habitat area, the following measures shall be implemented:

- a) Heavy equipment will be operated within the undeveloped portion of the Project Area to the minimum extent feasible. Any equipment will be staged within the existing development footprint.
- b) A qualified biologist shall hold a training session for staff responsible for performing ground disturbing construction activities (e.g. fence installation, garden planting, trail creation). Staff will be trained to recognize American badgers and their habitats. Staff will also be trained to use protective measures to ensure that American badgers are not adversely impacted by ground disturbing construction activities. At least one staff person with up-to-date training in American badger protective measures shall be present at the site during all ground disturbing activities.
- c) Where fencing is proposed in the habitat preservation area, pass-thru fencing shall be installed with a 12-inch (minimum) opening from the ground to the bottom of the fence to allow badgers to move through the property; the 12-inch opening is based on the upper range of badger burrow entrance heights (Reid 2006). The bottom wire should be free from barbs to avoid entanglement. No screening, slats or weatherproofing material on the fence shall be installed in order to avoid the appearance of a visual barrier.
- d) No more than 21 days before the start of ground disturbance activities, a biologist should conduct pre-construction surveys within 50 feet of the development area to determine if American badger dens are present. If American badger dens are determined to be present, the Project will avoid the dens.

With the implementation of these measures, the Project will have no impact on American badger.

5.3.4 Wildlife Movement Corridor

Annual grassland in the Project Area may serve as a corridor for local wildlife, connecting grassland to the south and northwest. Dense development to the east likely precludes wildlife corridors or movement in this direction. The Project will occur in the eastern portion of the Project Area adjacent to existing development. Pass-thru fencing with 12-inch (minimum) opening from the ground to the bottom of the fence currently exists around much of the perimeter of the preserve. Any new fencing will be wildlife friendly. The majority of the Project Area will remain undeveloped and will continue to serve as a corridor for local wildlife. The Project will have no impact on wildlife movement corridors.

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APPENDIX A

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

Appendix A-1. Observed Plant List. List of plant species observed during the August 2019 site visit.

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status (AW 2016) ³
<i>Acacia</i> sp.	-	-	-	-	-	-
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish lotus	native	annual herb	-	-	UPL
<i>Amaranthus albus</i>	Tumbleweed	non-native	annual herb	-	-	FACU
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
<i>Avena fatua</i>	Wildoats	non-native (invasive)	annual grass	-	Moderate	-
<i>Baccharis pilularis</i>	Coyote brush	native	shrub	-	-	-
<i>Briza maxima</i>	Rattlesnake grass	non-native (invasive)	annual grass	-	Limited	-
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i>	Italian thistle	non-native (invasive)	annual herb	-	Moderate	-
<i>Chenopodium album</i>	Lambs quarters	non-native	annual herb	-	-	FACU
<i>Cynosurus echinatus</i>	Dogtail grass	non-native (invasive)	annual grass	-	Moderate	-
<i>Datura</i> sp.	-	-	-	-	-	-
<i>Epilobium brachycarpum</i>	Willow herb	native	annual herb	-	-	-
<i>Erigeron canadensis</i>	Canada horseweed	native	annual herb	-	-	FACU
<i>Erodium brachycarpum</i>	White stemmed filaree	non-native	annual herb	-	-	-
<i>Eucalyptus</i> sp.	-	-	-	-	-	-
<i>Festuca bromoides</i>	Brome fescue	non-native	annual grass	-	-	FACU
<i>Festuca perennis</i>	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
<i>Hesperocyparis macrocarpa</i>	Monterey cypress	native	tree	Rank 1B.2*	-	-
<i>Holcus lanatus</i>	Common velvetgrass	non-native (invasive)	perennial grass	-	Moderate	FAC
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU
<i>Juglans</i> sp.	-	-	-	-	-	-
<i>Juncus bufonius</i>	Common toad rush	native	annual grasslike herb	-	-	FACW
<i>Leontodon saxatilis</i>	Hawkbit	non-native	annual herb	-	-	FACU
<i>Lysimachia arvensis</i>	Scarlet pimpernel	non-native	annual herb	-	-	FAC
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	-	Limited	OBL

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status (AW 2016) ³
<i>Madia sativa</i>	Coastal tarweed	native	annual herb	-	-	-
<i>Malva neglecta</i>	Dwarf mallow	non-native	annual, perennial herb	-	-	-
<i>Polygonum aviculare</i>	Prostrate knotweed	non-native	annual, perennial herb	-	-	FAC
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	non-native	annual herb	-	-	FAC
<i>Pseudognaphalium stramineum</i>	Cottonbatting plant	native	perennial herb	-	-	FAC
<i>Quercus agrifolia</i>	Coast live oak	native	tree	-	-	-
<i>Quercus lobata</i>	Valley oak	native	tree	-	-	FACU
<i>Raphanus sativus</i>	Wild radish	non-native (invasive)	annual, biennial herb	-	Limited	-
<i>Rubus armeniacus</i>	Himalayan blackberry	non-native (invasive)	shrub	-	High	FAC
<i>Rumex acetosella</i>	Sheep sorrel	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Sequoia sempervirens</i>	Coast redwood	native	tree	-	-	-
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-
<i>Sonchus asper ssp. asper</i>	Prickly sow thistle	non-native	annual herb	-	-	FAC
<i>Sonchus oleraceus</i>	Common sow thistle	non-native	annual herb	-	-	UPL
<i>Sorghum halepense</i>	Johnsongrass	non-native	perennial grass	-	-	FACU
<i>Vicia sativa</i>	Spring vetch	non-native	annual herb, vine	-	-	FACU
<i>Vicia villosa</i>	Hairy vetch	non-native	annual herb, vine	-	-	-

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012) and *The Jepson Flora Project (eFlora 2019)*; nomenclature follows *The Jepson Flora Project (eFlora 2019)* unless otherwise noted.

* While this species is ranked as rare, that ranking is for populations within the natural range of the species on the Monterey coast. It is not considered sensitive in the Study Area.

Sp.: "species", intended to indicate that the observer was confident in the identity of the genus but uncertain which species
Cf.: intended to indicate a species appeared to the observer to be specific, but was not identified based on diagnostic characters

¹Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2019a)

FE: Federal Endangered
FT: Federal Threatened
SE: State Endangered
ST: State Threatened
SR: State Rare
Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
Rank 2A: Plants presumed extirpated in California, but more common elsewhere
Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3: Plants about which we need more information – a review list
Rank 4: Plants of limited distribution – a watch list

²Invasive Status: California Invasive Plant Inventory (Cal-IPC 2019)

High: Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate: Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited: Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed: Assessed by Cal-IPC and determined to not be an existing current threat

³Wetland Status: National List of Plant Species that Occur in Wetlands, Arid West Region (Lichvar et al. 2016)

OBL: Almost always a hydrophyte, rarely in uplands
FACW: Usually a hydrophyte, but occasionally found in uplands
FAC: Commonly either a hydrophyte or non-hydrophyte
FACU: Occasionally a hydrophyte, but usually found in uplands
UPL: Rarely a hydrophyte, almost always in uplands
NL: Rarely a hydrophyte, almost always in uplands
NI: No information; not factored during wetland delineation

Appendix A-2. Wildlife species observed during the WRA August 20, 2019 site assessment.

Common Name	Scientific Name
Mammals	
American badger (burrows)	<i>Taxidea taxus</i>
Domestic cat	<i>Felis catus</i>
Mule deer	<i>Odocoileus hemionus</i>
Birds	
American crow	<i>Corvus brachyrhynchos</i>
Anna's hummingbird	<i>Calypte anna</i>
barn swallow	<i>Hirundo rustica</i>
California scrub jay	<i>Aphelocoma californica</i>
California towhee	<i>Melospiza crissalis</i>
chestnut-backed chickadee	<i>Poecile rufescens</i>
Common raven	<i>Corvus corax</i>
mourning dove	<i>Zenaidura macroura</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Turkey vulture	<i>Cathartes aura</i>
western bluebird	<i>Sialia mexicana</i>
Wild turkey	<i>Meleagris gallopavo</i>
Reptiles and Amphibians	
western fence lizard	<i>Sceloporus occidentalis</i>

APPENDIX B

POTENTIAL FOR SPECIAL-STATUS PLANT AND WILDLIFE SPECIES
TO OCCUR IN THE PROJECT AREA

Appendix B. Potential for Special Status Plant and Wildlife Species to Occur in the Project Area. List compiled from the U.S. Fish and Wildlife Service (USFWS) Species Lists (2019), the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (2019) and California Native Plant Society (CNPS) Electronic Inventory (2019) searches of the Cotati, Glen Ellen, Inverness, Novato, Petaluma, Petaluma River, Point Reyes NE, San Geronimo, and Two Rock USGS 7.5' quadrangles and a review of other CDFG lists and publications (Jennings and Hayes 1994, Zeiner *et al.* 1990, Burridge 1995, Shuford and Gardali 2008).

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
Mammals				
American badger <i>Taxidea taxus</i>	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	Present. This species has been documented to occur within the Project Area as recently as 2009 (CDFW 2019). Burrows that showed signs of badger use were observed throughout the Project Area.	A biologist shall conduct preconstruction surveys within 50 feet of the Project Area no more than 21 days prior to the start of ground disturbing activities. If a den is present in the Project Area and can't be avoided, and is determined to be active with young, the den should be avoided until young have matured and dispersed. Mitigation measures for American badger are further detailed in Section 5.3.3.
fringed myotis <i>Myotis thysanodes</i>	WBWG High	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-grass steppes. Buildings, mines and large trees and snags are important day and night roosts.	Unlikely. There are no mines, buildings, large trees, or snags to support roosting by this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
hoary bat <i>Lasiurus cinereus</i>	WBWG Medium	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires standing water to drink.	Unlikely. This species is highly associated with forested habitats in the west, and no such habitat is present within or adjacent to the Project Area. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
long-legged myotis <i>Myotis volans</i>	WBWG High	Primarily found in coniferous forests, but also occurs seasonally in riparian and desert habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	Unlikely. The Project Area does not contain large hollow trees, rock crevices, or buildings to support roosting by this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
pallid bat <i>Antrozous pallidus</i>	SSC, WBWG High	Found in deserts, grasslands, shrublands, woodlands, and forests. Roost sites include old ranch buildings, rocky outcrops and caves within sandstone outcroppings. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Unlikely. The Project Area does not contain rocky outcrops, caves, or buildings to support roosting by this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
Point Reyes mountain beaver <i>Aplodontia rufa phaea</i>	SSC	The Point Reyes mountain beaver is only known to occur in western Marin County, almost entirely within Point Reyes National Seashore. It occurs on cool, moist, slopes in moderately dense coastal scrub. Burrows are typically constructed in dense thickets or in forest openings and feed on coyote brush, sword fern, cow parsnip, black berries, poison oak, California nettle, and thistle.	No Potential. The Project Area is outside the known range of this subspecies and coastal scrub habitat is not present.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE, SE, CFP	Endemic to emergent salt and brackish wetlands of the San Francisco Bay Estuary. Pickleweed marshes are primary habitat; also occurs in various other wetland communities with dense vegetation. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	No Potential. No pickleweed or saltmarsh habitat found within Project Area. The nearest documented occurrence is approximately 3 miles from the Project Area in association with Petaluma River Marsh (CDFW 2019).	No further actions are recommended.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	SSC	Forest habitats of moderate canopy and moderate to dense understory. Also in chaparral habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	Unlikely. The Project Area is primarily open grassland and does not contain forest habitat or chaparral with suitable canopy or coverage to support this species.	No further actions are recommended.
silver-haired bat <i>Lasionycteris noctivagans</i>	WBWG Medium	Primarily a forest dweller, feeding over streams, ponds, and open brushy areas. Summer habitats include a variety of forest and woodland types, both coastal and montane. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.	Unlikely. The Project Area does not contain coniferous forest. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SSC, WBWG High	This species is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.	Unlikely. There are no buildings, caves or mines within the Project Area to provide roosting sites for this species. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
western red bat <i>Lasiurus blossevillii</i>	SSC, WBWG High	Primarily a forest dweller, feeding over streams, ponds, and open brushy areas. Summer habitats include a variety of forest and woodland types, both coastal and montane. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.	Unlikely. Typical willow-cottonwood-alder riparian roosting habitat is not present within the Project Area. This species may occasionally forage or migrate through the Project Area.	No further actions are recommended.
Birds				
bald eagle <i>Haliaeetus leucocephalus</i>	SE, CFP	Occurs year-round in California, but primarily a winter visitor; breeding population is growing. Nests in large trees in the vicinity of larger lakes, reservoirs and rivers. Wintering habitat somewhat more variable but usually features large concentrations of waterfowl or fish.	Unlikely. The Project Area does not contain trees of suitable structure to support nesting. Additionally, the Project Area is not in close proximity to suitable foraging habitat such as a lake or reservoir.	No further actions are recommended.
bank swallow <i>Riparia riparia</i>	ST	Summer resident in riparian and other lowland habitats near rivers, lakes and the ocean in northern California. Nests colonially in excavated burrows on vertical cliffs and bank cuts (natural and manmade) with fine-textured soils. Historical nesting range in southern and central areas of California has been eliminated by habitat loss. Currently known to breed in Siskiyou, Shasta, and Lassen Cos., portions of the north coast, and along Sacramento River from Shasta Co. south to Yolo Co.	No Potential. No suitable cliff habitat is present in the area and the Project Area is outside of this species' documented range.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
burrowing owl <i>Athene cunicularia</i>	SSC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	Unlikely. The Project Area contains grassland with presence of large burrows which may support wintering by this species. However, burrowing owl is a rare visitor of the Petaluma area with only 1 wintering occurrence within 5-miles of the Project Area from 2005 (CDFW 2019, eBird 2019).	No further actions are recommended.
California black rail <i>Laterallus jamaicensis coturniculus</i>	ST, CFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	No Potential. No suitable nesting or foraging marsh habitat is present within the Project Area.	No further actions are recommended.
California least tern <i>Sternula antillarum browni</i>	FE, SE, CFP	Summer resident along the coast from San Francisco Bay south to northern Baja California; inland breeding also very rarely occurs. Nests colonially on barren or sparsely vegetated areas with sandy or gravelly substrates near water, including beaches, islands, and gravel bars. In San Francisco Bay, has also nested on salt pond margins.	No Potential. The Project Area does not contain beach, gravel bar, or barren areas suitable for nesting by this species. There are no documented occurrences in the vicinity (CDFW 2019).	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
California Ridgway's (clapper) rail <i>Rallus longirostris obsoletus</i>	FE, SE, CFP	Year-round resident in tidal marshes of the San Francisco Bay estuary. Requires tidal sloughs and intertidal mud flats for foraging, and dense marsh vegetation for nesting and cover. Typical habitat features abundant growth of cordgrass and pickleweed. Feeds primarily on mollusks and crustaceans.	No Potential. No suitable nesting or foraging marsh habitat is present within the Project Area.	No further actions are recommended.
golden eagle <i>Aquila chrysaetos</i>	CFP	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	Unlikely. The Project Area is within a greater area of residential development and does not provide the open foraging habitat typical for this species. There are no suitable nest trees or cliff habitat within the Project Area.	No further actions are recommended.
grasshopper sparrow <i>Ammodramus savannarum</i>	SSC	Summer resident. Breeds in open grasslands in lowlands and foothills, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	Unlikely. This species is a rare summer resident in Sonoma County (Shuford and Gardali 2008).	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
loggerhead shrike <i>Lanius ludovicianus</i>	SSC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	Moderate Potential. The Project Area contains open grassland suitable for foraging habitat, with a few dense shrubs which may be suitable for nesting.	Perform ground disturbance and vegetation removal outside of the breeding bird season (Sep 1 – Jan 31). If project activities occur within the breeding bird season (Feb 1 – Aug 31), perform preconstruction breeding bird survey within 14 days start of work. Any active nests will be protected by work windows or exclusion buffers. See section 5.3.3 for further details.
long-eared owl <i>Asio otus</i>	SSC	Occurs year-round in California. Nests in trees in a variety of woodland habitats, including oak and riparian, as well as tree groves. Requires adjacent open land with rodents for foraging, and the presence of old nests of larger birds (hawks, crows, magpies) for breeding.	Unlikely. The Project Area does not contain riparian habitat, tree groves, or oak woodland to support nesting by this species. This species may occasionally forage in or migrate through the Project Area.	No further actions are recommended.
northern harrier <i>Circus cyaneus</i>	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	Unlikely. The Project Area contains grassland, but is within a greater area of residential developments and does not provide suitable open country to support nesting by this species. This species may be occasionally pass through or forage within the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
northern spotted owl <i>Strix occidentalis caurina</i>	FT, ST	Year-round resident in dense, structurally complex forests, primarily those with old-growth conifers. In Marin County, uses both coniferous and mixed (coniferous-hardwood) forests. Nests on platform-like substrates in the forest canopy, including in tree cavities. Preys on mammals.	No Potential. No old-growth fir or redwood forest is present in the vicinity of the Project Area.	No further actions are recommended.
San Francisco [salt marsh] common yellowthroat <i>Geothlypis trichas sinuosa</i>	SCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Unlikely. The Project Area does not support freshwater marsh or riparian forest habitat for this species. Common yellowthroats may be detected during dispersal or migration periods, however no suitable breeding habitat is present.	No further actions are recommended.
San Pablo (Samuels) song sparrow <i>Melospiza melodia samuelis</i>	SSC	Year-round resident of tidal marshes along the north side of San Francisco and San Pablo Bays. Typical habitat is dominated by pickleweed, with gumplant and other shrubs present in the upper zone for nesting. May forage in areas adjacent to marshes.	Unlikely. The Project Area is outside the known range for this species and no salt marsh is present within or adjacent to the Project Area.	No further actions are recommended.
short-eared owl <i>Asio flammeus</i>	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	Unlikely. The Project Area is within a greater area of residential development and does not provide suitable open country habitat to support this species. Short-eared owl has not been observed in the vicinity of the Project Area (eBird 2019).	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
Swainson's hawk <i>Buteo swainsoni</i>	ST	Summer resident in California's Central Valley and limited portions of the southern California interior. Nests in tree groves and isolated trees in riparian and agricultural areas, including near buildings. Forages in grasslands and scrub habitats as well as agricultural fields, especially alfalfa. Preys on arthropods year-round as well as smaller vertebrates during the breeding season.	Unlikely. This species has not been documented breeding in the vicinity of the Project Area (CDFW 2019). This species may occasionally be observed flying over the Project Area, but is not a frequent visitor of the area (eBird 2019).	No further actions are recommended.
tricolored blackbird <i>Agelaius tricolor</i>	ST, SSC	Nearly endemic to California, where it is most numerous in the Central Valley and vicinity. Highly colonial, nesting in dense aggregations over or near freshwater in emergent growth or riparian thickets. Also uses flooded agricultural fields. Abundant insect prey near breeding areas essential.	Unlikely. The Project Area does not contain aquatic emergent vegetation to support breeding by this species. This species may occasionally pass through the Project Area.	No further actions are recommended.
western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT, SSC	Federal listing applies only to the Pacific coastal population. Year-round resident and winter visitor. Occurs on sandy beaches, salt pond levees, and the shores of large alkali lakes. Nests on the ground, requiring sandy, gravelly or friable soils.	No Potential. No suitable nesting or foraging habitat including beaches or levees are present within the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	FT, SE	Summer resident, breeding in dense riparian forests and jungles, typically with early successional vegetation present. Utilizes densely-foliaged deciduous trees and shrubs. Eats mostly caterpillars. Current breeding distribution within California very restricted.	No Potential. The Project Area does not contain any riparian habitat necessary to support this species.	No further actions are recommended.
white-tailed kite <i>Elanus leucurus</i>	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	High Potential. The Project Area contains open grassland suitable for foraging by this species, as well as trees and shrubs in the vicinity which may support nesting. These species has been observed in the vicinity of the Project Area (eBird 2019).	Perform ground disturbance and vegetation removal outside of the breeding bird season (Sep 1 – Jan 31). If project activities occur within the breeding bird season (Feb 1 – Aug 31), perform preconstruction breeding bird survey within 14 days start of work. Any active nests will be protected by work windows or exclusion buffers. See section 5.3.3 for further details.
yellow rail <i>Coturnicops noveboracensis</i>	SSC	Summer resident in eastern Sierra Nevada in Mono County, breeding in shallow freshwater marshes and wet meadows with dense vegetation. Also a rare winter visitor along the coast and other portions of the state. Extremely cryptic.	No Potential. The Project Area does not contain freshwater marsh or wet meadow to support this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
yellow warbler <i>Dendroica petechia brewsteri</i>	SCC	Summer resident throughout much of California. Breeds in riparian vegetation close to water, including streams and wet meadows. Microhabitat used for nesting variable, but dense willow growth is typical. Occurs widely on migration.	Unlikely. The Project Area does not contain riparian or montane habitat. This species may occasionally move through the Project Area, however no suitable breeding habitat is present.	No further actions are recommended.
Reptiles and Amphibians				
California giant salamander <i>Dicamptodon ensatus</i>	SSC	Occurs in the north-central Coast Ranges. Moist coniferous and mixed forests are typical habitat; also uses woodland and chaparral. Adults are terrestrial and fossorial, breeding in cold, permanent or semi-permanent streams. Larvae usually remain aquatic for over a year.	No Potential. The Project Area does not contain moist forest habitat or streams to support this species.	No further actions are recommended.
California red-legged frog <i>Rana aurora draytonii</i>	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Disperses through upland habitats after rains.	Unlikely. There is no suitable aquatic habitat within or adjacent to the Project Area. The nearest CNDDDB occurrence is approximately 1 miles to the south in a tributary to Marin Creek (CDFW 2019). The Project Area is surrounded by roads and residential development and does not lie within a logical dispersal corridor.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
California tiger salamander <i>Ambystoma californiense</i>	FT, ST	Populations in Santa Barbara and Sonoma counties currently listed as endangered. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as aestivation habitat.	Unlikely. The nearest CNDDB occurrence is approximately 4.5 miles to the northwest (CDFW 2019). No aquatic habitat is present within or adjacent to the Project Area, and the Project Area is beyond the known dispersal distance from documented occurrences for this species.	No further actions are recommended.
foothill yellow-legged frog <i>Rana boylei</i>	SC, SSC	Found in or near rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	No Potential. There is not suitable stream habitat within or adjacent to the Project Area. The nearest documented occurrence is over 3 miles to the east in association with Adobe Creek near Highway 166 (CDFW 2019).	No further actions are recommended.
red-bellied newt <i>Taricha rivularis</i>	SSC	Inhabits coastal forests from southern Sonoma County northward, with an isolated population in Santa Clara County. Redwood forest provides typical habitat, though other forest types (e.g., hardwood) are also occupied. Adults are terrestrial and fossorial. Breeding occurs in streams, usually with relatively strong flow.	No Potential. There is no stream habitat within or adjacent to the Project Area to support this species.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
western pond turtle <i>Actinemys marmorata</i>	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	Unlikely. The nearest CNDDDB occurrence is approximately 1 mile to the northwest (CDFW 2019). No aquatic habitat is present within or adjacent to the Project Area, and the Project Area does not lie within a logical dispersal corridor.	No further actions are recommended.
Fishes				
coho salmon - central CA coast ESU <i>Oncorhynchus kisutch</i>	FE, SE	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
Delta smelt <i>Hypomesus transpacificus</i>	FT, SE	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
longfin smelt <i>Spirinchus thaleichthys</i>	FC, ST	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	SSC	Formerly endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay and associated marshes. Occurs in slow-moving river sections and dead-end sloughs. Requires flooded vegetation for spawning and foraging for young. A freshwater species, but tolerant of moderate salinity (10-18 parts per thousand).	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
steelhead - central CA coast ESU <i>Oncorhynchus mykiss</i>	FT	Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for one or more years before migrating downstream to the ocean.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
tidewater goby <i>Eucyclogobius newberryi</i>	FE, SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches; requires fairly still but not stagnant water and high oxygen levels.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
Tomales roach <i>Lavinia symmetricus ssp.</i>	SSC	Habitat generalists. Tolerant of relatively high temperatures and low oxygen levels, however unable to tolerate very saline water.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
Invertebrates				

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
California freshwater shrimp <i>Syncaris pacifica</i>	FE, SE	Endemic to Marin, Napa, and Sonoma counties. Found in low elevation, low gradient (generally less than 1%) perennial streams where riparian cover is moderate to heavy. Shallow pools away from main stream flow. Winters near undercut banks with exposed roots. In the summer uses leafy branches touching water.	No Potential. No aquatic habitat is present within or adjacent to the Project Area.	No further actions are recommended.
crotch bumble bee <i>Bombus crotchii</i>	SC	This species historic range extended across most of California including the Mediterranean region, Pacific Coast, Western Desert, Great valley, and adjacent foothills in southwestern California. Agriculture and urbanization have led to a decline in range and abundance. This species is thought to be extirpated in the northern region of its historic range (including north of the Sacramento Valley and through most of the Bay Area; Xerces 2018).	No Potential. The Project Area is outside of this species documented current range (Xerces 2018).	No further actions are recommended.
Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	FE	Restricted to the fog belt of northern Marin and southernmost Sonoma County, including the Point Reyes peninsula; extirpated from coastal San Mateo County. Occurs in coastal prairie, dunes, and grassland. Larval foodplant is typically <i>Viola adunca</i> . Adult flight season may range from late June to early September.	No Potential. This species is generally found within three miles of the coast. The inland location of the Project Area precludes this species from being found on the site. There are no documented occurrences of this species in the vicinity of the Project Area (CDFW 2019).	No further actions are recommended.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE PROJECT AREA	RECOMMENDATIONS
<p>San Bruno elfin butterfly <i>Callophrys mossii bayensis</i></p>	<p>FE</p>	<p>Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on rocky outcrops and cliffs in coastal scrub habitat on steep, north-facing slopes within the fog belt. Species range is tied to the distribution of the larval host plant, <i>Sedum spathulifolium</i>.</p>	<p>No Potential. The Project Area is outside of this species current distribution.</p>	<p>No further actions are recommended.</p>
<p>western bumble bee <i>Bombus occidentalis</i></p>	<p>SC</p>	<p>Once widespread in the western United States and Canada, populations of this insect have drastically declined in recent decades. Pollinates a variety of wild flowering plants and crops. Nests in the ground, usually in association with small mammal burrows with sunny aspects. Current populations are thought to be restricted to high elevation sights in the Sierras with scattered occurrences on the northern California coast (Xerces, 2018).</p>	<p>No Potential. The Project Area is outside of this species documented current range (Xerces 2018).</p>	<p>No further actions are recommended.</p>

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Plants				
pink sand-verbena <i>Abronia umbellata</i> var. <i>breviflora</i>	Rank 1B.1	Coastal dunes. Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Jun-Oct.	No Potential. No coastal dune or coastal strand habitat is present in the Project Area	No additional action is recommended.
Blasdale's bent grass <i>Agrostis blasdalei</i>	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Elevation ranges from 0 to 490 feet (0 to 150 meters). Blooms May-Jul.	No Potential. The Project Area does not contain coastal habitats.	No additional action is recommended.
Franciscan onion <i>Allium peninsulare</i> var. <i>franciscanum</i>	Rank 1B.2	Cismontane woodland, valley and foothill grassland. Elevation ranges from 170 to 1000 feet (52 to 305 meters). Blooms (Apr)May-Jun.	No Potential. Although grassland habitat is present, this species is closely associated with clay soils derived from serpentine or volcanic rock, which are not present in the Project Area.	No additional action is recommended.
Sonoma alopecurus <i>Alopecurus aequalis</i> var. <i>sonomensis</i>	FE, Rank 1B.1	Marshes and swamps (freshwater), riparian scrub. Elevation ranges from 15 to 1200 feet (5 to 365 meters). Blooms May-Jul.	No Potential. No marsh, swamp, or riparian scrub is present in the Project Area.	No additional action is recommended.
Napa false indigo <i>Amorpha californica</i> var. <i>napensis</i>	Rank 1B.2	Broadleafed upland forest (openings), chaparral, cismontane woodland. Elevation ranges from 390 to 6560 feet (120 to 2000 meters). Blooms Apr-Jul.	No Potential. No upland forest, chaparral, or cismontane woodland habitat is present in the Project Area. Additionally, the Project Area is out of the elevation range of this species.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
bent-flowered fiddleneck <i>Amsinckia lunaris</i>	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 5 to 1640 feet (3 to 500 meters). Blooms Mar-Jun.	Moderate Potential. Valley and foothill grassland is present in the Project Area; however, the nearest documented occurrence of this species is over (8 miles) away (CDFW 2019)	A protocol level rare-plant survey should be conducted in April or May to determine presence.
coast rockcress <i>Arabis blepharophylla</i>	Rank 4.3	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 5 to 3610 feet (3 to 1100 meters). Blooms Feb-May.	No Potential. The Project Area does not contain rocky sites.	No additional action is recommended.
Mt. Tamalpais manzanita <i>Arctostaphylos montana</i> <i>ssp. montana</i>	Rank 1B.3	Chaparral, valley and foothill grassland. Elevation ranges from 520 to 2495 feet (160 to 760 meters). Blooms Feb-Apr.	Unlikely. Although grassland habitat is present, this species is closely associated with rocky serpentine slopes, which are not present in the Project Area	No additional action is recommended.
Marin manzanita <i>Arctostaphylos virgata</i>	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, north coast coniferous forest. Elevation ranges from 195 to 2295 feet (60 to 700 meters). Blooms Jan-Mar.	No Potential. No broadleaf upland forest, closed cone coniferous forest, chaparral, or North Coast coniferous forest is present in the Project Area.	No additional action is recommended.
coastal marsh milk-vetch <i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	Rank 1B.2	Coastal dunes (mesic), coastal scrub, marshes and swamps (coastal salt, streamsides). Elevation ranges from 0 to 100 feet (0 to 30 meters). Blooms (Apr)Jun-Oct.	No Potential. No coastal dune, coastal salt marsh, mesic dune, or stream habitat is present in the Project Area	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
alkali milk-vetch <i>Astragalus tener var. tener</i>	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation ranges from 0 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	No Potential. This species is closely associated with vernal pools and high pH (alkali) substrates. The Project Area is composed of strongly acidic marine sands.	No additional action is recommended.
Sonoma sunshine <i>Blennosperma bakeri</i>	FE, SE, Rank 1B.1	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 30 to 360 feet (10 to 110 meters). Blooms Mar-May.	Unlikely. While valley grasslands with mesic areas are present, the Project Area is outside the limited range of this species	No additional action is recommended.
Bolander's reed grass <i>Calamagrostis bolanderi</i>	Rank 4.2	Bogs and fens, broadleafed upland forest, closed-cone coniferous forest, coastal scrub, meadows and seeps (mesic), marshes and swamps (freshwater), north coast coniferous forest. Elevation ranges from 0 to 1495 feet (0 to 455 meters). Blooms May-Aug.	Unlikely. The Project Area does not contain forest or perennially wet areas.	No additional action is recommended.
Oakland star-tulip <i>Calochortus umbellatus</i>	Rank 4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 325 to 2295 feet (100 to 700 meters). Blooms Mar-May.	Unlikely. While the Project Area contains grassland habitat, this species typically occurs in soils underlain by serpentine or clay soils, which are absent.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
swamp harebell <i>Campanula californica</i>	Rank 1B.2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (freshwater), north coast coniferous forest. Elevation ranges from 0 to 1330 feet (1 to 405 meters). Blooms Jun-Oct.	No Potential. This species is closely associated with wet habitats such as bogs, fens, marshes and swamps. The Project Area is situated on a south-facing slope without sufficient habitat or water resources.	No additional action is recommended.
seaside bittercress <i>Cardamine angulata</i>	Rank 2B.2	Lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 80 to 3000 feet (25 to 915 meters). Blooms (Jan)Mar-Jul.	No Potential. No North Coast coniferous forest, lower montane coniferous forest, or stream bank habitat is present in the Project Area.	No additional action is recommended.
Lyngbye's sedge <i>Carex lyngbyei</i>	Rank 2B.2	Marshes and swamps (brackish or freshwater). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Apr-Aug.	No Potential. This species is closely associated with perennially wet habitats, which are absent from the Project Area.	No additional action is recommended.
Tiburon paintbrush <i>Castilleja affinis var. neglecta</i>	FE, ST, Rank 1B.2	Valley and foothill grassland (serpentine). Elevation ranges from 195 to 1310 feet (60 to 400 meters). Blooms Apr-Jun.	Unlikely. Although grassland habitat is present, this species is closely associated with rocky serpentine slopes, which are not present in the Project Area.	No additional action is recommended.
johnny-nip <i>Castilleja ambigua var. ambigua</i>	Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Elevation ranges from 0 to 1425 feet (0 to 435 meters). Blooms Mar-Aug.	Moderate Potential. The Project Area contains grassland habitat within the known extent of the species.	A protocol-level special status plant survey is recommended in May or June to determine presence.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Humboldt Bay owl's-clover <i>Castilleja ambigua</i> var. <i>humboldtiensis</i>	Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms Apr-Aug.	No Potential. There is no coastal salt marsh, or marsh vegetation present in the Project Area.	No additional action is recommended.
Nicasio ceanothus <i>Ceanothus decornutus</i>	Rank 1B.2	Chaparral (maritime). Elevation ranges from 770 to 950 feet (235 to 290 meters). Blooms Mar-May.	No Potential. The Project Area does not contain maritime chaparral.	No additional action is recommended.
glory brush <i>Ceanothus gloriosus</i> var. <i>exaltatus</i>	Rank 4.3	Chaparral. Elevation ranges from 95 to 2000 feet (30 to 610 meters). Blooms Mar-Jun(Aug).	No Potential. The Project Area does not contain chaparral habitat.	No additional action is recommended.
Point Reyes ceanothus <i>Ceanothus gloriosus</i> var. <i>gloriosus</i>	Rank 4.3	Coastal bluff scrub, closed-cone coniferous forest, coastal dunes, coastal scrub. Elevation ranges from 15 to 1705 feet (5 to 520 meters). Blooms Mar-May.	No Potential. The Project Area does not contain scrub or forest habitat.	No additional action is recommended.
Mt. Vision ceanothus <i>Ceanothus gloriosus</i> var. <i>porrectus</i>	Rank 1B.3	Closed-cone coniferous forest, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 80 to 1000 feet (25 to 305 meters). Blooms Feb-May.	Unlikely. While valley and foothill grassland habitat is present, the Project Area is outside the geographic range of this species.	No additional action is recommended.
Mason's ceanothus <i>Ceanothus masonii</i>	SR, Rank 1B.2	Chaparral (openings, rocky, serpentine). Elevation ranges from 750 to 1640 feet (230 to 500 meters). Blooms Mar-Apr.	No Potential. This species is closely associated with serpentine ridges in chaparral or transition zones which do not exist in the Project Area.	No additional action is recommended.
Sonoma ceanothus <i>Ceanothus sonomensis</i>	Rank 1B.2	Chaparral (sandy, serpentine or volcanic). Elevation ranges from 705 to 2625 feet (215 to 800 meters). Blooms Feb-Apr.	No Potential. This species is closely associated with serpentine or volcanic soils which are not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>	Rank 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic). Elevation ranges from 0 to 1380 feet (0 to 420 meters). Blooms May-Nov.	Moderate Potential. Appropriate habitat is present in the Project Area; however, this species grows preferentially on high pH soils while the Project Area is composed of strongly acidic sands.	The site visit was conducted in late August which is within the peak blooming period of the species. The species was not observed and is determined absent from the Project Area.
Point Reyes bird's-beak <i>Chloropyron maritimum</i> ssp. <i>palustre</i>	Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Jun-Oct.	No Potential. No coastal salt marsh habitat is present in the Project Area.	No additional action is recommended.
soft bird's-beak <i>Chloropyron molle</i> ssp. <i>molle</i>	FE, SR, Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms Jun-Nov.	No Potential. No coastal brackish or salt marsh habitat is present in the Project Area.	No additional action is recommended.
Sonoma spineflower <i>Chorizanthe valida</i>	FE, SE, Rank 1B.1	Coastal prairie (sandy). Elevation ranges from 30 to 1000 feet (10 to 305 meters). Blooms Jun-Aug.	Unlikely. This species is restricted to the Pt. Reyes peninsula, which is outside of the Project Area.	No additional action is recommended.
Bolander's water-hemlock <i>Cicuta maculata</i> var. <i>bolanderi</i>	Rank 2B.1	Marshes and swamps coastal, fresh or brackish water. Elevation ranges from 0 to 655 feet (0 to 200 meters). Blooms Jul-Sep.	No Potential. No coastal freshwater or brackish marsh habitat is present in the Project Area.	No additional action is recommended.
Franciscan thistle <i>Cirsium andrewsii</i>	Rank 1B.2	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 0 to 490 feet (0 to 150 meters). Blooms Mar-Jul.	No Potential. No coastal bluff scrub, broadleaf upland forest, coastal scrub or serpentine seeps are present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Mt. Tamalpais thistle <i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	Rank 1B.2	Broadleafed upland forest, chaparral, meadows and seeps. Elevation ranges from 785 to 2035 feet (240 to 620 meters). Blooms May-Aug.	No Potential. No broadleaf upland forest, chaparral, or serpentine seeps are present in the Project Area.	No additional action is recommended.
Baker's larkspur <i>Delphinium bakeri</i>	FE, SE, Rank 1B.1	Broadleafed upland forest, coastal scrub, valley and foothill grassland. Elevation ranges from 260 to 1000 feet (80 to 305 meters). Blooms Mar-May.	No Potential. This species is closely associated with very shallow rocky soils on north-facing slopes. The Project Area is situated on a deep sandy-loam soils.	No additional action is recommended.
golden larkspur <i>Delphinium luteum</i>	FE, SR, Rank 1B.1	Chaparral, coastal prairie, coastal scrub. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms Mar-May.	No Potential. This species is closely associated with very shallow rocky soils on north-facing slopes. The Project Area is situated on deep sandy-loam soils.	No additional action is recommended.
western leatherwood <i>Dirca occidentalis</i>	Rank 1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. Elevation ranges from 80 to 1395 feet (25 to 425 meters). Blooms Jan-Mar(Apr).	No Potential. No Broadleaf upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland habitat is present in the Project Area	No additional action is recommended.
dwarf downingia <i>Downingia pusilla</i>	Rank 2B.2	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 0 to 1460 feet (1 to 445 meters). Blooms Mar-May.	No Potential. This species is strongly associated with vernal pool margins which are not present in the Project Area.	No additional action is recommended.
small spikerush <i>Eleocharis parvula</i>	Rank 4.3	Marshes and swamps. Elevation ranges from 0 to 9910 feet (1 to 3020 meters). Blooms (Apr)Jun-Aug(Sep).	No Potential. The Project Area does not contain perennial water features.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
California bottle-brush grass <i>Elymus californicus</i>	Rank 4.3	Broadleafed upland forest, cismontane woodland, north coast coniferous forest, riparian woodland. Elevation ranges from 45 to 1540 feet (15 to 470 meters). Blooms May-Aug(Nov).	No Potential. The Project Area does not contain forest habitat.	No additional action is recommended.
Koch's cord moss <i>Entosthodon kochii</i>	Rank 1B.3	Cismontane woodland (soil). Elevation ranges from 590 to 3280 feet (180 to 1000 meters).	No Potential. Although grassland habitat is present, this species is closely associated with areas underlain by serpentine soils which are not present in the Project Area.	No additional action is recommended.
streamside daisy <i>Erigeron biolettii</i>	Rank 3	Broadleafed upland forest, cismontane woodland, north coast coniferous forest. Elevation ranges from 95 to 3610 feet (30 to 1100 meters). Blooms Jun-Oct.	Unlikely. This species is closely associated with forest habitats with shallow rocky soils, which are not present in the Project Area	No additional action is recommended.
Tiburon buckwheat <i>Eriogonum luteolum var. caninum</i>	Rank 1B.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 0 to 2295 feet (0 to 700 meters). Blooms May-Sep.	Unlikely. Although grassland habitat is present, this species is closely associated with areas underlain by serpentine soils which are not present in the Project Area.	No additional action is recommended.
bluff wallflower <i>Erysimum concinnum</i>	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Elevation ranges from 0 to 605 feet (0 to 185 meters). Blooms Feb-Jul.	Unlikely. Although grassland habitat is present, this species is closely associated with coastal areas which are not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Marin checker lily <i>Fritillaria lanceolata</i> var. <i>tristulis</i>	Rank 1B.1	Coastal bluff scrub, coastal prairie, coastal scrub. Elevation ranges from 45 to 490 feet (15 to 150 meters). Blooms Feb-May.	No Potential. This species is closely associated with shallow soils composed of serpentine substrate which are not present in the Project Area.	No additional action is recommended.
fragrant fritillary <i>Fritillaria liliacea</i>	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 5 to 1345 feet (3 to 410 meters). Blooms Feb-Apr.	No Potential. This species is closely associated with clay soils derived from volcanics or serpentine which are not present in the Project Area.	No additional action is recommended.
blue coast gilia <i>Gilia capitata</i> ssp. <i>chamissonis</i>	Rank 1B.1	Coastal dunes, coastal scrub. Elevation ranges from 5 to 655 feet (2 to 200 meters). Blooms Apr-Jul.	No Potential. No coastal dune or coastal scrub habitat is present in the Project Area.	No additional action is recommended.
woolly-headed gilia <i>Gilia capitata</i> ssp. <i>tomentosa</i>	Rank 1B.1	Coastal bluff scrub, valley and foothill grassland. Elevation ranges from 30 to 720 feet (10 to 220 meters). Blooms May-Jul.	No Potential. No coastal bluff or coastal rocky outcrops are present in the project site.	No additional action is recommended.
San Francisco gumplant <i>Grindelia hirsutula</i> var. <i>maritima</i>	Rank 3.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland. Elevation ranges from 45 to 1310 feet (15 to 400 meters). Blooms Jun-Sep.	No Potential. This species is closely associated with coastal habitats with serpentine soils which are not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
congested-headed hayfield tarplant <i>Hemizonia congesta</i> ssp. <i>congesta</i>	Rank 1B.2	Valley and foothill grassland. Elevation ranges from 65 to 1835 feet (20 to 560 meters). Blooms Apr-Nov.	Moderate Potential. While valley and foothill grassland habitat is present in the Project Area, it is associated with vernal pools and other mesic habitats the hydrology of the Project Area is not likely to be sufficient to support this species.	The site visit was conducted in late August which is within the peak blooming period of the species. The species was not observed and is determined absent from the Project Area.
short-leaved evax <i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>	Rank 1B.2	Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation ranges from 0 to 705 feet (0 to 215 meters). Blooms Mar-Jun.	No Potential. This species is closely associated with coastal habitats which are not present in the Project Area.	No additional action is recommended.
Marin western flax <i>Hesperolinon congestum</i>	FT, ST, Rank 1B.1	Chaparral, valley and foothill grassland. Elevation ranges from 15 to 1215 feet (5 to 370 meters). Blooms Apr-Jul.	Unlikely. Although grassland habitat is present, this species is closely associated with areas underlain by serpentine soils which are not present in the Project Area	No additional action is recommended.
water star-grass <i>Heteranthera dubia</i>	Rank 2B.2	Marshes and swamps (alkaline, still or slow-moving water). Elevation ranges from 95 to 4905 feet (30 to 1495 meters). Blooms Jul-Oct.	No Potential. The Project Area does not contain perennial wetlands.	No additional action is recommended.
Point Reyes horkelia <i>Horkelia marinensis</i>	Rank 1B.2	Coastal dunes, coastal prairie, coastal scrub. Elevation ranges from 15 to 2475 feet (5 to 755 meters). Blooms May-Sep.	No Potential. This species is highly restricted to coastal dune habitat which is not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
harlequin lotus <i>Hosackia gracilis</i>	Rank 4.2	Broadleafed upland forest, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal prairie, coastal scrub, meadows and seeps, marshes and swamps, north coast coniferous forest, valley and foothill grassland. Elevation ranges from 0 to 2295 feet (0 to 700 meters). Blooms Mar-Jul.	Moderate Potential. This species occurs in many habitat types within mesic grasslands.	A protocol-level special status plant survey is recommended in April through June to determine presence.
island rock lichen <i>Hypogymnia schizidiata</i>	Rank 1B.3	Closed-cone coniferous forest, chaparral. Elevation ranges from 1180 to 1330 feet (360 to 405 meters).	No Potential. The Project Area does not contain forest or chaparral habitat.	No additional action is recommended.
coast iris <i>Iris longipetala</i>	Rank 4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps. Elevation ranges from 0 to 1970 feet (0 to 600 meters). Blooms Mar-May.	No Potential. The Project Area does not contain perennial wetlands or heavy soils.	No additional action is recommended.
Burke's goldfields <i>Lasthenia burkei</i>	FE, SE, Rank 1B.1	Meadows and seeps (mesic), vernal pools. Elevation ranges from 45 to 1970 feet (15 to 600 meters). Blooms Apr-Jun.	No Potential. This species is highly restricted to vernal pools, meadows, seeps, and swales none of which are present in the Project Area.	No additional action is recommended.
perennial goldfields <i>Lasthenia californica</i> ssp. <i>macrantha</i>	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub. Elevation ranges from 15 to 1705 feet (5 to 520 meters). Blooms Jan-Nov.	No Potential. This species is highly restricted to coastal dune habitat which is not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE, Rank 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1540 feet (0 to 470 meters). Blooms Mar-Jun.	Unlikely. This species is closely associated with vernal wet areas with high pH soils. The Project Area does not contain sufficient hydrology, or appropriately basic soils to support this species.	No additional action is recommended.
beach layia <i>Layia carnosa</i>	FE, SE, Rank 1B.1	Coastal dunes, coastal scrub (sandy). Elevation ranges from 0 to 195 feet (0 to 60 meters). Blooms Mar-Jul.	No Potential. The Project Area does not contain coastal dune or scrub habitat.	No additional action is recommended.
legenere <i>Legenere limosa</i>	Rank 1B.1	Vernal pools. Elevation ranges from 0 to 2885 feet (1 to 880 meters). Blooms Apr-Jun.	No Potential. This species is closely associated with vernal pool habitat which is not present in the Project Area.	No additional action is recommended.
bristly leptosiphon <i>Leptosiphon acicularis</i>	Rank 4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 180 to 4920 feet (55 to 1500 meters). Blooms Apr-Jul.	Unlikely. While the Project Area contains grassland habitat, this species typically occurs in heavier soils than those present.	No additional action is recommended.
Jepson's leptosiphon <i>Leptosiphon jepsonii</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 325 to 1640 feet (100 to 500 meters). Blooms Mar-May.	Unlikely. This species is closely associated with woodland and forest habitat underlain by volcanic or serpentine soils, which is absent.	No additional action is recommended.
woolly-headed lessingia <i>Lessingia hololeuca</i>	Rank 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 45 to 1000 feet (15 to 305 meters). Blooms Jun-Oct.	Unlikely. Though valley and foothill grassland habitat is present in the Project Area, this species is closely associated with clay, serpentine soils, which do not occur in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Tamalpais lessingia <i>Lessingia micradenia</i> var. <i>micradenia</i>	Rank 1B.2	Chaparral, valley and foothill grassland. Elevation ranges from 325 to 1640 feet (100 to 500 meters). Blooms (Jun)Jul-Oct.	Unlikely. This species typically occurs on serpentine soils, which are absent.	No additional action is recommended.
Mason's lilaepsis <i>Lilaepsis masonii</i>	SR, Rank 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub. Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Apr-Nov.	No Potential. This species is closely associated with marshes and other low-elevation wet habitats which are not present in the Project Area.	No additional action is recommended.
coast lily <i>Lilium maritimum</i>	Rank 1B.1	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps (freshwater), north coast coniferous forest. Elevation ranges from 15 to 1560 feet (5 to 475 meters). Blooms May-Aug.	Unlikely. The range of this species is highly restricted to coastal habitats which are not present in the Project Area.	No additional action is recommended.
Pitkin Marsh lily <i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	FE, SE, Rank 1B.1	Cismontane woodland, meadows and seeps, marshes and swamps (freshwater). Elevation ranges from 110 to 215 feet (35 to 65 meters). Blooms Jun-Jul.	Unlikely. This species is closely associated with marshes, seeps, and other wet habitats. There is not sufficient hydrology to support this species in the Project Area	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Sebastopol meadowfoam <i>Limnanthes vincularis</i>	FE, SE, Rank 1B.1	Meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 45 to 1000 feet (15 to 305 meters). Blooms Apr-May.	No Potential. This species is closely associated with vernal pools, swales, meadows, and other wet habitats underlain with heavy clay soils. This Project Area does not contain sufficient hydrology or appropriate soil to support this species.	No additional action is recommended.
Mt. Diablo cottonweed <i>Micropus amphibolus</i>	Rank 3.2	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 145 to 2705 feet (45 to 825 meters). Blooms Mar-May.	Unlikely. Though valley and foothill grassland habitat is present in the Project Area, this species is closely associated with thin, rocky soils, which do not occur in the Project Area.	No additional action is recommended.
marsh microseris <i>Microseris paludosa</i>	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 15 to 1165 feet (5 to 355 meters). Blooms Apr-Jun(Jul).	Moderate Potential. There is appropriate habitat for this species to occur in the Project Area; however the Project Area has high weed cover which severely limits its ability to become established.	A protocol level rare-plant survey should be conducted in May to determine presence.
elongate copper moss <i>Mielichhoferia elongata</i>	Rank 4.3	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, subalpine coniferous forest. Elevation ranges from 0 to 6430 feet (0 to 1960 meters).	No Potential. No large rocks are present within the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
northern curly-leaved monardella <i>Monardella sinuata ssp. nigrescens</i>	Rank 1B.2	Chaparral (scr co.), coastal dunes, coastal scrub, lower montane coniferous forest (scr co., ponderosa pine sandhills). Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms (Apr)May-Jul(Aug-Sep).	No Potential. The Project Area does not contain forest, dune, or chaparral habitat.	No additional action is recommended.
cotula navarretia <i>Navarretia cotulifolia</i>	Rank 4.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 6005 feet (4 to 1830 meters). Blooms May-Jun.	No Potential. The Project Area does not contain adobe soils.	No additional action is recommended.
Baker's navarretia <i>Navarretia leucocephala ssp. bakeri</i>	Rank 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 15 to 5710 feet (5 to 1740 meters). Blooms Apr-Jul.	No Potential. This species is restricted to wet, mesic sites underlain by clay and/or alkaline substrate which does not exist in the Project Area.	No additional action is recommended.
Marin County navarretia <i>Navarretia rosulata</i>	Rank 1B.2	Closed-cone coniferous forest, chaparral. Elevation ranges from 655 to 2085 feet (200 to 635 meters). Blooms May-Jul.	No Potential. This species is closely associated with dry rocky sites underlain with serpentine soils which is not present in the Project Area	No additional action is recommended.
Gairdner's yampah <i>Perideridia gairdneri ssp. gairdneri</i>	Rank 4.2	Broadleafed upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools. Elevation ranges from 0 to 2000 feet (0 to 610 meters). Blooms Jun-Oct.	No Potential. The Project Area does not contain adobe soils.	No additional action is recommended.
North Coast phacelia <i>Phacelia insularis var. continentis</i>	Rank 1B.2	Coastal bluff scrub, coastal dunes. Elevation ranges from 30 to 560 feet (10 to 170 meters). Blooms Mar-May.	No Potential. This species is restricted to coastal dunes and bluffs which are not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Petaluma popcornflower <i>Plagiobothrys mollis</i> var. <i>vestitus</i>	Rank 1A	Marshes and swamps (coastal salt), valley and foothill grassland (mesic). Elevation ranges from 30 to 165 feet (10 to 50 meters). Blooms Jun-Jul.	Moderate Potential. The Project Area contains mesic grassland habitat; however, this species is thought to be extinct.	A protocol-level special status plant survey is recommended in June to determine presence.
North Coast semaphore grass <i>Pleuropogon hooverianus</i>	ST, Rank 1B.1	Broadleafed upland forest, meadows and seeps, north coast coniferous forest. Elevation ranges from 30 to 2200 feet (10 to 671 meters). Blooms Apr-Jun.	No Potential. This species is closely associated with upland forests, meadows, seeps, and other wet habitats. The Project Area does not contain sufficient hydrology to support this species.	No additional action is recommended.
nodding semaphore grass <i>Pleuropogon refractus</i>	Rank 4.2	Lower montane coniferous forest, meadows and seeps, north coast coniferous forest, riparian forest. Elevation ranges from 0 to 5250 feet (0 to 1600 meters). Blooms (Mar)Apr-Aug.	No Potential. The Project Area does not contain forest habitat.	No additional action is recommended.
Marin knotweed <i>Polygonum marinense</i>	Rank 3.1	Marshes and swamps (coastal salt or brackish). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms (Apr)May-Aug(Oct).	No Potential. This species is restricted to salt and brackish coastal marsh habitat which is not present in the Project Area.	No additional action is recommended.
Cunningham Marsh cinquefoil <i>Potentilla uliginosa</i>	Rank 1A	Marshes and swamps. Elevation ranges from 95 to 130 feet (30 to 40 meters). Blooms May-Aug.	No Potential. This species was restricted to marshes, swamps, and wetlands which are not present in the Project Area.	No additional action is recommended.
Tamalpais Oak <i>Quercus parvula</i> var. <i>tamalpaisensis</i>	Rank 1B.3	Lower montane coniferous forest. Elevation ranges from 300 to 2,250 feet. Blooms Mar-Apr.	No Potential. The Project Area does not contain coniferous forest habitat.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Lobb's aquatic buttercup <i>Ranunculus lobbii</i>	Rank 4.2	Cismontane woodland, north coast coniferous forest, valley and foothill grassland, vernal pools. Elevation ranges from 45 to 1540 feet (15 to 470 meters). Blooms Feb-May.	Unlikely. While the Project Area contains mesic grassland habitat, this species is typically associated with heavier soils such as clay which is absent.	No additional action is recommended.
California beaked-rush <i>Rhynchospora californica</i>	Rank 1B.1	Bogs and fens, lower montane coniferous forest, meadows and seeps (seeps), marshes and swamps (freshwater). Elevation ranges from 145 to 3315 feet (45 to 1010 meters). Blooms May-Jul.	No Potential. This species is restricted to bog and fen habitat which is not present in the Project Area.	No additional action is recommended.
round-headed beaked-rush <i>Rhynchospora globularis</i>	Rank 2B.1	Marshes and swamps (freshwater). Elevation ranges from 145 to 195 feet (45 to 60 meters). Blooms Jul-Aug.	No Potential. The Project Area does not contain perennial wetland habitat.	No additional action is recommended.
Victor's gooseberry <i>Ribes victoris</i>	Rank 4.3	Broadleafed upland forest, chaparral. Elevation ranges from 325 to 2460 feet (100 to 750 meters). Blooms Mar-Apr.	No Potential. The Project Area does not contain forest or chaparral habitat.	No additional action is recommended.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	Rank 1B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 0 to 2135 feet (0 to 650 meters). Blooms May-Oct(Nov).	No Potential. The Project Area does not contain perennial water features.	No additional action is recommended.
Point Reyes checkerbloom <i>Sidalcea calycosa ssp. rhizomata</i>	Rank 1B.2	Marshes and swamps (freshwater, near coast). Elevation ranges from 5 to 245 feet (3 to 75 meters). Blooms Apr-Sep.	No Potential. This species is restricted to coastal freshwater marsh habitat which is not present in the Project Area.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Marin checkerbloom <i>Sidalcea hickmanii</i> ssp. <i>viridis</i>	Rank 1B.1	Chaparral (serpentinite). Elevation ranges 150 to 1,290 feet. Blooms May-Jun	No Potential. The Project Area does not contain chaparral habitat.	No additional action is recommended.
Tamalpais jewelflower <i>Streptanthus batrachopus</i>	Rank 1B.3	Closed-cone coniferous forest, chaparral. Elevation ranges from 1000 to 2135 feet (305 to 650 meters). Blooms Apr-Jul.	No Potential. The Project Area does not contain forest or chaparral habitat.	No additional action is recommended.
Mt. Tamalpais bristly jewelflower <i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	Rank 1B.2	Chaparral, valley and foothill grassland. Elevation ranges from 490 to 2625 feet (150 to 800 meters). Blooms May-Jul(Aug).	Unlikely. Though valley and foothill grassland habitat is present in the Project Area, this species is closely associated with serpentine substrates which are not present in the Project Area.	No additional action is recommended.
two-fork clover <i>Trifolium amoenum</i>	FE, Rank 1B.1	Coastal bluff scrub, valley and foothill grassland (sometimes serpentine). Elevation ranges from 15 to 1360 feet (5 to 415 meters). Blooms Apr-Jun.	Unlikely. Though valley and foothill grassland habitat is present in the Project Area, this species is associated with serpentine substrates, and coastal bluffs which are not present in the Project Area.	No additional action is recommended.
Santa Cruz clover <i>Trifolium buckwestiorum</i>	Rank 1B.1	Broadleafed upland forest, cismontane woodland, coastal prairie. Elevation ranges from 340 to 2000 feet (105 to 610 meters). Blooms Apr-Oct.	No Potential. The Project Area does not contain forest or coastal prairie habitat.	No additional action is recommended.
saline clover <i>Trifolium hydrophilum</i>	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	Unlikely. While the Project Area contains mesic grassland habitat, the soils are acidic.	No additional action is recommended.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Pacific Grove clover <i>Trifolium polyodon</i>	SR, Rank 1B.1	Closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland. Elevation ranges from 15 to 1395 feet (5 to 425 meters). Blooms Apr-Jun(Jul).	No Potential. This species is restricted to along small springs and seeps in grassy openings, which are absent in the Project Area.	No additional action is recommended.
San Francisco owl's-clover <i>Triphysaria floribunda</i>	Rank 1B.2	Coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 30 to 525 feet (10 to 160 meters). Blooms Apr-Jun.	Unlikely. The species is restricted to grasslands near the coast or underlain by serpentine.	No additional action is recommended.
coastal triquetrella <i>Triquetrella californica</i>	Rank 1B.2	Coastal bluff scrub, coastal scrub. Elevation ranges from 30 to 330 feet (10 to 100 meters).	No Potential. This species is restricted to grassland and scrub habitat within 100 feet of the coast. The Project Area is outside this species' distribution range.	No additional action is recommended.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
SE	State Endangered
ST	State Threatened
SR	State Rare
CFP	CDFW Fully Protected Species
SSC	CDFW Species of Special Concern
BCC	USFWS Bird of Conservation Concern
SSI	Special Status Invertebrate
WBWG	Western Bat Working Group High or Medium Priority species
RP	Recovery Plan exists for this species
Rank 1A	CRPR 1A: Plants presumed extinct in California
Rank 1B	CRPR 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2	CRPR 2: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	CRPR 3: Plants about which CNPS needs more information (a review list) [<i>not special status</i>]

****Potential for Occurrence:**

No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Present. Species was observed on the site or has been recorded (i.e. CNDDDB, other reports) on the site recently.

APPENDIX C

REPRESENTATIVE PROJECT AREA PHOTOGRAPHS



Photo 1. Photo showing an example of the badger burrows observed in the Study Area.



Photo 2. Photo showing a second example of the badger burrows observed in the Study Area.



Photo 3. Photo showing seasonal wetland in the Study Area.



Photo 4. Photo showing broad extent of seasonal wetland in the Study Area,.



Photo 5. Photo showing the soils observed in the seasonal wetland.



Photo 6. Photo showing the developed portion of the Study Area.



Photo 7. Photo looking south, upslope from the seasonal wetland towards the non-native grassland.



Photo 8. Photo taken at eastern edge of Study Area, looking west towards seasonal wetland in the far background.