Biological Resources Assessment

109 ELLIS STREET
PETALUMA, SONOMA COUNTY, CALIFORNIA

Prepared For:
Don De Cristo
Don Joseph De Cristo Family Trust
7356 Country Club Drive
La Jolla, CA 92037

Prepared By:
WRA, Inc.
2169-G East Francisco Boulevard
San Rafael, California 94901

Contact: Doug Spicher
spicher@wra-ca.com

Rhiannon Korhummel
korhummel@wra-ca.com

Date:

December 2018

WRA Project No: 28284

List of Preparers

Doug Spicher- Principal-in-charge
Rhiannon Korhummel- Project Manager/ Lead Biologist
Molly Brewer – Wildlife Biologist
Michael Rochelle- GIS Analysist

This page intentionally left blank

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

On November 27, 2018 WRA, Inc. (WRA) performed a biological resources assessment at 109 Ellis Street, Petaluma, Sonoma County, California. The Study Area is located 0.25 miles northwest of the Petaluma fairgrounds (Figure 1). The Study Area is composed of a single 0.70-acre parcel and adjacent portion of Washington Creek.

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 Study 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 Study Area to support special-status plant and wildlife species were based primarily on the suitability of habitats within the Study Area, the proximity of known occurrences, and an on-site inspection and survey results. This assessment is based on information available at the time of the study and on site conditions that were observed on November 27, 2018.

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), 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 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 CDFW under Sections 1600-1616 of California Fish and Game Code. 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" (NMFS 2007). 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 includes plant communities that fulfill special functions, have special values or have limited distributions. Plant communities considered sensitive are those identified in local or regional plans, policies, or regulations. Sensitive plant communities (vegetation alliances/associations) are also identified by CDFW (CDFW 2018b). Vegetation alliances are ranked 1 through 5 based on NatureServe's (2018) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Additionally, vegetation associations ranked "Y" by CDFW are also considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW 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 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. In addition, CDFW Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, USFWS Birds of Conservation Concern, and CDFW special-status invertebrates are all considered special-status species. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the CEQA. In addition to regulations for special-status species, most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under this legislation, 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 CNPS 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 which are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

3.0 METHODS

On November 27, 2018 the Study Area was traversed on foot to determine (1) plant communities present (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. Additionally, a wetland assessment and delineation of streams and riparian areas was conducted concurrently with this site assessment. All plant and wildlife species encountered were recorded and are listed in Appendix B. Plants were identified using *The Jepson Manual: Vascular Plants of California 2nd Edition* (Baldwin et al. 2012), or Jepson eFlora (Jepson Flora Project (JFP) 2018) to the taxonomic level necessary to determine rarity. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson eFlora (JFP 2018). Because of recent changes in classification for many of the taxa treated by Baldwin et al. and the Jepson eFlora, relevant synonyms are provided in brackets. 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. Special-status species with a potential for occurrence, determined based on field visit and habitat availability, are described in Appendix C. Representative photographs of the Study Area taken during field visits are included in Appendix D.

3.1 Biological Communities

Prior to the site visit, the *Soil Survey of Sonoma County, California* (USDA1972, CSRL 2018) was examined to determine if any unique soil types that could support sensitive plant communities and/or aquatic features were present in the Study Area. In addition, the Cotati United States Geological Survey (USGS) 7.5-minute quadrangle topographic map (USGS 1980), the National Wetlands Inventory (NWI) (USFWS 2018a), and aerial photographs of the Study Area (Google Earth 1993-2018) were also reviewed to identify potential sensitive habitats and areas for further investigation during the site visit. Following the site visit, biological communities present in the Study Area were classified based on existing plant community descriptions described in *A Manual of California Vegetation, Online Edition* (CNPS 2018a). However, if necessary, variants of vegetation alliances/associations that are not described in the literature were described using professional judgement.

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

The Study Area was surveyed to assess if any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFW were present. This assessment does not constitute a routine delineation of Waters of the U.S./State.

Other Sensitive Biological Communities

The Study 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 2018a) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area. All alliances within the Study Area with a ranking of 1 through 3 were considered sensitive biological communities and mapped as well as associations with a ranking of "Y". These communities are described in Section 4.1.2 below.

3.2 Special-Status Species

3.2.1 Literature Review

The potential for special-status species to occur in the Study Area was evaluated by first identifying which special-status species have been documented in the vicinity of the Study 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: Cotati, Inverness, San Geronimo, Novato Glen Ellen, Petaluma River, Point Reyes NE, and Two Rock. 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 Study Area:

- California Natural Diversity Database records (CNDDB) (CDFW 2018)
- USFWS Information for Planning and Consultation Database (USFWS 2018b)
- CNPS Electronic Inventory records (CNPS 2018b)
- Consortium of California Herbaria (CCH 2018)
- *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 2018)

3.2.2 Site Assessment

A site visit was conducted of the Study Area to search for suitable habitats for listed species. Habitat conditions observed at the Study Area were used to evaluate the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each listed species to occur in the Study 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., CNDDB, other reports) on the site recently.

The site assessment was 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 Study 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 Study Area were recorded and are listed in Appendix B.

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 C. 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 Study 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 B. The assessment of the potential for special-status plant and wildlife species to occur in the Study Area is provided as Appendix C. Photographs of the Study Area are provided as Appendix D.

4.1 Study Area Description

The Study Area consists of a single 0.70-acre parcel and adjacent Open Space associated with Washington Creek immediately northeast of the parcel (Figure 2). The parcel contains five

structures consisting of three residences, a garage, and an old water tower. A single gravel driveway connects the northernmost residence to Ellis Street. The vegetation within the parcel is dominated by non-native grassland and landscaping. The non-native grassland is regularly mowed and the landscape vegetation is regularly maintained through pruning, irrigation and fertilization. The portion of the Study Area outside of the parcel is dominated by non-native grassland as well as Washington Creek and associated riparian vegetation. The vegetation is regularly maintained as indicated by mowed vegetation and trimmed up trees. The Study Area is surrounded by urban development consisting of city streets, single family residences and apartment complexes and the Open Space associated with Washington Creek.

Historically, the Study Area was used for agriculture and the parcel was developed by 1952. The surrounding areas were developed by 1968 (Historical Aerials 2018).

4.2 Biological Communities

Table 1 summarizes the area of each biological community type and aquatic features observed in the Study Area. There are a total of two non-sensitive biological communities which include developed and non-native grassland. There are two sensitive biological communities including perennial stream (Washington Creek) and riparian arroyo willow thicket. Descriptions for each biological community and aquatic features are contained in the following sections and illustrated in Figure 2.

Table 2. Summary of Biological Communities in the Study Area

Community Type	**Area (acres / [linear feet])**
Non-sensitive Biological Communities	
Developed	0.29
Non-native Grassland	0.51
Sensitive Biological Communities	
Perennial Stream	0.04 (114 l.f.)
Arroyo Willow Thicket	0.05

4.2.1 Non-Sensitive Biological Communities

<u>Developed</u>

The developed areas within the Study Area include the existing structures and associated driveway and landscaping. Landscaping plants included cotoneaster (*Cotoneaster* sp.), hawthorn (*Crataegus* sp.), and oleander (*Oleander* sp.). No large trees were observed in the developed portion of the Study Area.

Non-native grassland *(*various vegetation alliances). Rank: None.

Non-native annual grasslands occur on fine-textured soils throughout cismontane California at elevations below 4,000 feet and typically have a dense to sparse cover of annual grasses and is often associated with native and non-native forbs (Holland 1986). Within the Study Area the non-native grassland best fit Italian rye grass grasslands (*Festuca perennis* Herbaceous Semi-Natural Alliance and wild oats grassland (*Avena* spp. Herbaceous Semi-Natural Alliance) (CNPS 2018b). The non-native grassland was dominated by Italian rye grass, wild oats, soft chess (*Bromus hordeaceus*), Bermuda grass (*Cynodon dactylon*), common lippia (*Phyla nodiflora*), willow lettuce (*Lactuca saligna*), and field bindweed (*Convolvulus arvensis*); additional species observed included fennel (*Foeniculum vulgare*), and bristly ox tongue (*Helminthotheca echioides*). One large pine (*Pinus* sp.) was observed within the Open Space between the Project Area and Washington Creek. Some landscape plants were present within the non-native grassland in the areas surrounding the structures, including fig (*Ficus* sp.) and rose (*Rosa* sp.).

4.2.2 Sensitive Biological Communities

Perennial stream

Washington Creek is a perennial stream and was located at the eastern edge of the Study Area. The perennial stream is shown as a USGS blue-line stream on the Petaluma 7.5-minute quadrangle (USGS 1980). The stream was approximately 15-feet wide at ordinary high water mark (OHWM) and had flowing water, approximately 3 feet deep in the deepest pools during the site visit. The thalwag was fine sediment with some vegetation, including mountain bog bulrush (*Scirpus microcarpus*) in the shallower parts and willow (*Salix* spp.) in along the edges. The indicators of OHWM included bed and bank, scour, and wrack deposition.

The width between tops of bank (TOB) of the stream was approximately 50-feet wide. Riparian vegetation consisting of arroyo willow (*Salix lasiolepis*), Pacific willow (*Salix lasiandra*) and narrowleaf willow (*Salix exigua*) was located in a small area on the immediate banks of the stream. The remainder of the vegetation within the TOB was non-native grassland, dominated by wild oats, fennel, and bristly ox-tongue with a small patch of beardless wild rye (*Elymus triticoides*). The vegetation within the TOB was mowed with evidence of tree removal, indicated by cut stumps at ground level. This maintenance is likely the result of fuel reduction and fire control.

The perennial stream is considered sensitive as it is within jurisdiction of the Corps, RWQCB, and CDFW under Section 404/401 of the CWA, the Porter-Cologne Water Quality Control Act, and Section 1602 of the CFGC, respectively.

Arroyo Willow Thicket (Riparian)(*Salix lasiolepis* Shrubland Alliance). Rank S4 G4.

Arroyo willow thickets occur on streambanks and benches, slope seeps and drainages throughout California. Within the Study Area, a small patch of arroyo willow thicket was located along Washington Creek. The tree canopy was continuous and the understory was dense grass. This community is considered sensitive as it is associated with the perennial stream and is considered riparian; therefore it is under jurisdiction of CDFW under Section 1602 of the CFGC. Individual native trees within this community area also considered “protected trees” per the Petaluma Tree Ordinance as they are situated within a riparian area.

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, 95 special-status plant species have been documented in the vicinity of the Study Area (Appendix C). Figure 3 depicts known CNDDB records of special-status plant species within a 5-mile radius of the Study Area. All species documented to occur in the vicinity of the Study 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 Study Area;
- Plant species commonly associated with the special-status species, and which indicate the presence of suitable, intact habitat, are absent from the Study Area;
- Specific edaphic characteristics, such as soil derived from serpentine or volcanics are absent from the Study Area;
- Specific hydrologic characteristics, such as perennial saline, are absent from the Study Area;
- Very unique pH characteristics, such as alkali scalds or sinks are absent from the Study Area;
- Frequency of disturbance within the Study Area;
- Urban location of the Study Area.

4.3.2 Special-Status Wildlife

Based on a review of the resources databases listed in Section 3.2.1, 63 special-status wildlife species have been documented in the vicinity of the Study Area (Appendix C). Figure 4 depicts known CNDDB records of special-status plant species within a 5-mile radius of the Study Area. Many species documented to occur in the vicinity of the Study Area are unlikely or have no potential to occur due to one or more of the following factors:

- The Study Area is outside of the known or historical range of the species;
- The Study Area lacks suitable aquatic habitat (e.g., vernal pools, ponds);
- The Study Area lacks suitable foraging habitat (e.g., marshes);
- The Study Area lacks suitable tall nesting structures (e.g., old growth trees, or snags);
- The Study Area lacks suitable soil for den development;
- The Study Area does not contain mine shafts, caves or rocky cliffs;
- The Study Area lacks connectivity with suitable habitat.

The remaining ten species were either observed during the site visit or determined to have a moderate or high potential to occur.

Fringed myotis (*Myotis thysanodes*). WBWG High Priority. Moderate Potential. The fringed myotis ranges through much of western North America from southern British Columbia, Canada, south to Chiapas, Mexico and from Santa Cruz Island in California, east to the Black Hills of South Dakota. This species is found in desert scrubland, grassland, sage-grass steppe, old-growth forest, and subalpine coniferous and mixed deciduous forest. Oak and pinyon-juniper woodlands are most commonly used. The fringed myotis roosts in colonies from 10 to 2,000 individuals, although large colonies are rare. Caves, buildings, underground mines, rock crevices in cliff faces, and bridges are used for maternity and night roosts, while hibernation has only been

documented in buildings and underground mines. Tree-roosting has also been documented in Oregon, New Mexico, and California (WBWG 2018). Multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. This species may utilize manmade structures within the Study Area for roosting. Due to the presence of roosting opportunities as well as the proximity to water and foraging opportunities, this species has a moderate potential to roost within the Study Area.

Long-legged myotis (*Myotis volans*). WBWG High Priority. Moderate Potential. The long-legged myotis ranges across western North America from southeastern Alaska to Baja California and east to the Great Plains and central Texas. This species is usually found in coniferous forests, but also occurs seasonally in riparian and desert habitats. They use abandoned buildings, cracks in the ground, cliff crevices, exfoliating tree bark and hollows within snags as summer day roosts. Caves and mines are used as hibernation roosts. Long-legged myotis forage in and around the forest canopy and feed on moths and other soft-bodies insects (WBWG 2018). Multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. This species may utilize manmade structures within the Study Area for roosting. Due to the presence of roosting opportunities as well as the proximity to water and foraging opportunities, this species has a moderate potential to roost within the Study Area.

Pallid bat (*Antrozous pallidus*). CDFW Species of Special Concern. WBWG High Priority. Moderate Potential. Pallid bats occur in a number of habitats ranging from rocky arid deserts to grasslands and higher elevation coniferous forests. They are most abundant in the arid Sonoran life zones below 6,000 feet. Pallid bats often roost in colonies of between 20 and several hundred individuals. Roosts are typically in rock crevices, tree hollows, mines, caves, and a variety of man-made structures, including vacant and occupied buildings. Tree roosting has been documented in large conifer snags (e.g. ponderosa pine), inside basal hollows of redwoods and giant sequoias, and within bole cavities in oak trees. They have also been reported roosting in stacks of burlap sacks and stone piles. Pallid bats are primarily insectivorous, feeding on large prey that is taken on the ground, or sometimes in flight. Prey items include arthropods such as scorpions, ground crickets, and cicadas (WBWG 2018). The Study Area does not contain large trees, rocky outcrops, or cliff suitable for roosting by this species. However, multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. Bats may utilize manmade structures within the Study Area for roosting. Due to the presence of roosting opportunities as well as the proximity to water and foraging opportunities, this species has a moderate potential to roost within the Study Area.

Townsend's big-eared bat, (*Corynorhinus townsendii*), CDFW Species of Special Concern, WBWG High Priority. Moderate Potential. This species ranges throughout western North America from British Columbia to central Mexico. Its local distribution is strongly associated with the presence of caves, but roosting also occurs within man-made structures including mines and buildings. While many bats species wedge themselves into tight cracks and crevices, big-eared bats hang from walls and ceilings in the open. Males roost singly during the spring and summer months while females aggregate in the spring at maternity roosts to give birth. Females roost with their young until late summer or early fall, until the young become independent, flying and foraging on their own. In central and southern California, hibernation roosts tend to be made up of small aggregations of individuals (Pierson and Rainey 1998). Foraging typically occurs along edge habitats near streams and wooded areas, where moths are the primary prey (WBWG 2018). Multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. This species may utilize manmade structures within the Study Area for roosting. Due to the presence of roosting opportunities as well as the proximity to water and foraging opportunities, this species has a moderate potential to roost within the Study Area.

Nuttall's woodpecker (*Picoides nuttallii*). USFWS Bird of Conservation Concern. Present. Nuttall's Woodpecker, common in much of its range, is a year-round resident throughout most of California west of the Sierra Nevada. Typical habitat is oak or mixed woodland, and riparian areas (Lowther 2000). Nesting occurs in tree cavities, principally those of oaks and larger riparian trees. Nuttall's woodpecker also occurs in older residential settings and orchards where trees provide suitable foraging and nesting habitat. This species forages on a variety of arboreal invertebrates. Nuttall's woodpecker was observed in the Study Area during the site visit. The Study Area contains riparian habitat which may support nesting by this species.

Oak titmouse (*Baeolophus inornatus*), USFWS Bird of Conservation Concern. Present. This relatively common species is year-round resident throughout much of California including most of the coastal slope, the Central Valley and the western Sierra Nevada foothills. In addition, the species may also occur in residential settings where landscaping provides foraging and nesting habitat. Its primary habitat is woodland dominated by oaks. Local populations have adapted to woodlands of pines and/or junipers in some areas (Cicero 2000). The oak titmouse nests in tree cavities, usually natural cavities or those excavated by woodpeckers, though they may partially excavate their own (Cicero 2000). Seeds and arboreal invertebrates make up the birds' diet. Trees within the Study Area may provide suitable habitat to support nesting and foraging by the species. Oak titmouse was observed within the Study Area during the site visit.

Western pond turtle (*Actinemys marmorata*). CDFW Species of Special Concern. Moderate Potential. The only native freshwater turtle in California, western pond turtle is found in suitable aquatic habitat throughout California west of the Sierras. It inhabits perennial aquatic habitats, such as lakes, ponds, rivers, streams, and canals that provide submerged cover and suitable basking structures, such as rocks and logs. Western pond turtles prefer to nest on unshaded slopes close to their aquatic habitat, and hatchlings require shallow water with relatively dense vegetation for foraging for aquatic invertebrates (Jennings and Hayes 1994). Turtles require suitable aquatic habitat for most of the year; however, to escape periods of high water flow, high salinity, or prolonged dry conditions, WPT may move upstream and/or take refuge in vegetated, upland habitat for up to four months (Rathbun et al. 2002). Although upland habitat is utilized for refuge and nesting, this species preferentially utilizes aquatic and riparian corridors for movement and dispersal. A portion of Washington Creek is located within the Study Area. While there are no documented occurrences of WPT within Washington Creek, suitable aquatic habitat and limited basking habitat is present in the portion within the Study Area. The nearest documented occurrence is approximately two miles from the Study Area (CDFW 2018).

Chinook Salmon - Central Valley Fall/late fall-run ESU (*Oncorhynchus tshawytscha*), NMFS Species of Concern, CDFG Species of Special Concern. Moderate Potential. The Central Valley Fall/late fall-run Evolutionarily Significant Unit (ESU) includes all naturally spawned fall-run populations from the Sacramento - San Joaquin River mainstem and its tributaries. Late-fall run chinook salmon are morphologically similar to spring-run chinook. They are large salmonids, reaching 75-100 cm SL and weighing up to 9-10 kg or more. The great majority of late-fall chinook salmon appear to spawn in the mainstem of the Sacramento River, which they enter from October through February. Spawning occurs in January, February and March, although it may extend into April in some years. Fry have emerged by early June, and the juveniles hold in the river for nearly a year before moving out to sea the following December through March. The specific habitat requirements of late-fall chinook have not been determined, but they are presumably similar to other chinook salmon runs and fall within the range of physical and chemical characteristics of the Sacramento River above Red Bluff. When anticipated winter rains increase the streamflow of Washington Creek, this species may migrate through the Study Area in search of appropriate spawning habitat. In the Study Area, no gravelly substrate characteristic of Chinook spawning habitat is available. There is a moderate potential for this species to occur in the Study Area.

Steelhead - Central California Coast DPS (*Oncorhynchus mykiss irideus*), Federal Threatened. Moderate Potential. The Central California Coast DPS includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. Steelhead typically migrate to marine waters after spending two years in freshwater, though they may stay up to seven. They then reside in marine waters for 2 or 3 years prior to returning to their natal stream to spawn as 4-or 5-year-olds. Steelhead adults typically spawn between December and June. In California, females typically spawn two times before they die. Preferred spawning habitat for steelhead is in perennial streams with cool to cold water temperatures, high dissolved oxygen levels and fast flowing water. Abundant riffle areas (shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.

The Petaluma River has been designated Critical Habitat for this species, so presence is assumed in the Petaluma River. As Washington Creek is a tributary to the Petaluma River, the Study Area may provide rearing and foraging habitat. There is no suitable spawning habitat in the Study Area. The nearest occurrence is less than three miles from the Study Area on the east side of Petaluma (CDFW 2018).

Sacramento Splittail (*Pogonichthys macrolepidotus*), CDFW Species of Special Concern. **Moderate Potential**. Splittail are primarily freshwater fish that have been found mostly in slow-moving sections of rivers and sloughs, and in the Delta and Suisun Marsh they seemed to congregate in dead-end sloughs (Moyle et al. 1982, Daniels and Moyle 1983). Splittail are benthic foragers that feed extensively on opossum shrimp (*Neomysis mercedis*). However, detrital material typically makes up a high percentage of their stomach contents. They will feed opportunistically on earthworms, clams, insect larvae, and other invertebrates. They are preyed upon by striped bass and other predatory fishes. Splittail apparently require flooded vegetation for spawning and as foraging areas for young, hence are found in habitat subject to periodic flooding during the breeding season (Caywood 1974). The species has been documented to occur in the Petaluma River near the confluence of Washington Creek (CDFW 2018). This occurrence is less than 0.5-mile from the Study Area.

4.3.3 Listed Wildlife Species Unlikely to Occur in the Study Area

California red-Legged frog (*Rana draytonii*). Federal Threatened, CDFW Species of Special Concern. Unlikely. California red-legged frog (CRLF) is dependent on suitable aquatic and upland habitat. Aquatic habitat is characterized by dense, riparian vegetation and deep, still or slow-moving water. Water must be present in breeding habitat for a minimum of 20 weeks to allow for eggs to hatch, larvae to develop and transition into terrestrial frogs. Breeding occurs between late November and late April. CRLF may aestivate during the dry months in small mammal burrows, moist leaf litter, stream channels, and large cracks in the bottom of dried ponds. CRLF use upland habitat to disperse and forage.

Despite documented occurrences of CRLF within two miles of the Study Area (CDFW 2018), the species is unlikely to occupy the habitats within the Study Area. Washington Creek runs through and adjacent to the Study Area and contains potential aquatic non-breeding and dispersal habitat for this species, however barriers to dispersal and colonization, introduced predators and floods make the habitat within the Study Area inhospitable to CRLF. Red swamp crayfish (*Procambarus clarkii*) and centrarchid fish (sunfish) are documented to occur in the Petaluma River (CalFish 2018). These introduced predators are known to strongly reduce CRLF presence as their larvae are ill adapted to avoid them. The creek lacks sinuosity and complexity (protected backwaters, deep pools, dense emergent vegetation). The degree of disturbance and urbanization surrounding the Study Area is a hindrance to movement of CRLF from suitable breeding habitat. As a result of these barriers to dispersal and colonization and the aforementioned combination of factors that compromise the aquatic habitat in the Study Area, CRLF is unlikely to occur.

5.0 POTENTIAL IMPACTS, AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

5.1 Project Description

The proposed project is the construction of a new 13-unit apartment complex, including landscaping, parking, an outdoor activity area, and a flood/storm water detention/bio-retention basin (detention basin) within the approximately 0.70-acre parcel located at 109 Ellis Street (Project Area), Petaluma, CA. Prior to construction, all existing buildings and associated infrastructure will be demolished and the entire parcel will be filled and/or graded. All vegetation will also be removed within the Project Area. The driveway will be constructed using permeable concrete while the pedestrian walkways will be concrete paving. A swimming pool will be constructed on the northeastern side of the apartments; concrete paving will surround the perimeter of the pool. To the northeast of the pool a floodwater detention and storm water bio-retention basin (detention basin) will be constructed as mitigation for construction within floodplain and treatment of development storm water. The detention basin will be approximately 3.5-feet deep with a capacity designed to equal or exceed the volume of flood waters being displaced by the fill within the floodplain. A 12-inch inlet culvert will be placed within the TOB, above the OHWM of Washington Creek between the 10-year and 100-year flood elevation. Flood water will be hydraulically conveyed from Washington Creek into the basin from rising water levels. Once flood waters begin to recede, the detention basin will drain into Washington Creek through the drainage located at the bottom of the basin. The drainage includes a 6-inch outlet pipe with a 6-inch backwater valve (to prevent water flowing into the basin from the creek during periods of high water) located adjacent to the permeable substrate at the bottom of the drainage. The outlet pipe will be placed at approximately 16-feet elevation, approximately 3-feet below the 10-year flood elevation.

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 Study Area. The existing conditions in the Study Area are described above, based on surveys conducted in 2018. 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

Two sensitive biological communities are present within the Study Area including perennial stream and riparian arroyo willow thicket, additionally ten special-status wildlife species have potential to occur within the Study Area. Potential impacts to these sensitive resources associated with the proposed Project are discussed below. Recommended avoidance, minimization, and mitigation measures to reduce such impacts are also included.

5.3.1 Biological Communities

Potential Impact BIO-1: Impacts to Waters of the United States, and Waters of the State

Demolition and site grading will disturb soil across the Project Area. A trench dug to place the pipes for the detention basin, functioning within and below the TOB but above the OHWM of Washington Creek, will cause temporary disturbance to upland grassland habitat on the upper creek bank. The development of the detention basin includes the installation of two pipes, one located approximately 1-feet deep and the other 6-feet, to capture and release flood water. Site demolition and grading could potentially cause soil erosion and sedimentation in Washington Creek, adversely affecting water quality. Trenching and flow from the detention basin release pipe could cause bank erosion and sediment into Washington Creek that could adversely affect creek water quality. This development activity within and below the TOB will occur within regulatory agency jurisdictions that shall require permit authorizations from the RWQCB and CDFW, however permit authorization from the Corps of Engineers will not be required since work is above OHWM.

Mitigation Measure BIO-1: Impacts to Waters of the United States, and Waters of the State

Mitigation for potential impacts shall include installing and maintaining soil erosion/sedimentation BMPs prior to and during construction, and applying soil erosion/sedimentation BMPs (such as seeding with erosion control seed mix) after construction.

Work associated with the installation of the two pipes for the detention basin shall occur only during the dry season (between July 15 and October 1). Trenches shall be back filled to match original land contours.

A dissipation apron shall be incorporated into the construction plans of the detention basin. It shall be located below the 6-inch pipe outflow to reduce erosion of the stream bank. If the apron extends into the OHWM of Washington Creek, then a permit from the Corps shall be necessary.

Compensatory mitigation for impacts to creek bank, if determined necessary by regulatory agencies during permit application processing, may be a conditional requirement of permits. Implementation of these mitigation measures shall reduce potential impacts to less than significant.

Prior to construction activities within RWQCB or CDFW jurisdiction, necessary regulatory permits shall be obtained from the appropriate agencies. Regulatory permits to be obtained include RWQCB Water Quality Certification Waste Discharge Requirement and a Lake and Streambed Alteration Agreement (LSA) from CDFW. Because no work shall be conducted below OHWM, no Corps of Engineers permit will be required.

Potential Impact BIO-2: Impacts to Riparian Vegetation

Removal of riparian habitat, defined as woody vegetation such as trees and shrubs occurring along streams and lake shores, found along segments of Washington Creek would be an adverse impact. Project work along Washington Creek is designed within upland grassland habitat and shall not remove riparian vegetation or habitat. Because riparian habitat shall not be adversely affected, no mitigation of riparian habitat will be necessary.

Potential Impact BIO-3: Protected Tree Removal

The Project is not expected to remove protected trees as defined by the City of Petaluma Tree Ordinance. Therefore, no adverse impacts to trees shall result from the project.

5.3.2 Special-status Plant Species

No special-status plants were determined to be present or are expected to occur within the project area because of current level of existing development and non-native grasslands. Therefore, no adverse impacts to special-status plants shall result from the project.

5.3.3 Special-status Wildlife Species

Of the 63 special-status wildlife species known to occur in the greater vicinity of the Study Area, 10 were determined to have moderate or high potential to occur in the Study Area. Impact avoidance and minimization recommendations are described below.

Potential Impact BIO-4: Bats

Four species of bat were determined to have a moderate potential to occur within the Study Area due to the presence of buildings with broken windows, lifted side panels, and egress points that may allow bats to roost in the buildings, and could potentially be harmed by demolition of buildings. Species with potential to occur include: Townsend's big-eared bat, fringed myotis, long-legged myotis, and pallid bat. None of the bat species with potential to occur within the Study Area are state or federally listed as endangered, threatened or candidates for listing. Measures to avoid impacts to each bat species are equivalent and recommendations are outlined below.

Mitigation Measure BIO-4: Bat Avoidance

All bat roosts, including those of non-special-status bats are protected by CDFW. To avoid impacts to roosting bats, any project activities that would impact potential bat roosts (building demolition) shall be initiated outside of the maternity roosting season (March 1 – July 31). If building demolition cannot occur outside of the maternity season, then a bat roost survey shall be conducted within 14 days prior to the start of such activities. Any structures or trees that are determined to support roosts shall have a 200-foot no work buffer placed around them, and the buffer shall not be lifted until the maternity season has completed. If this is not feasible, appropriate species- and roost-specific mitigation measures should be developed in consultation with CDFW. With the implementation of these measures, the Project impact on bats will be less than significant.

Potential Impact BIO-5: Birds

Two special-status birds were observed in the Study Area during the site assessment (Nuttall's woodpecker and oak titmouse). Neither of the bird species listed above are state or federally listed as endangered, threatened or candidates for listing. Measures to avoid impacts to special-status birds as well as native nesting birds protected by the MBTA and CFGC are similar, and general recommendations are outlined below.

Mitigation Measure BIO-5: Bird Avoidance

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

If working outside of the nesting season is not possible, and project activities are initiated during the nesting season (February 1 – August 31), a qualified wildlife biologist shall 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 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 nest failure, the buffer around the nest shall be removed and work shall progress without restriction. With the implementation of these measures, the Project impact on nesting and/or protected birds will be less than significant.

Potential Impact BIO-6: Special-status fish

Project work including pipe installation for the detention basin and inflow-outflow pipes may require heavy equipment operation near Washington Creek, which could temporarily impact special-status fish by adversely affecting water quality due to sediments, fuel or lubricants, or other toxic substances entering the creek. Fish could also be accidentally entrapped in the sediment basin during flood events. Washington Creek is a tributary to the Petaluma River which is designated critical habitat for California central coast steelhead. It is considered EFH for coho and chinook salmon, and special-status salmonids may be present. Despite the EFH designation, Central Coast coho is considered extirpated from watersheds that drain into the San Francisco Bay. In order to prevent significant impacts to special-status fish, including salmonids, associated with work near Washington Creek and detention basin specifications, the following measures shall be implemented.

Mitigation measure BIO-6: Special-status fish

A screen shall be placed at the end of the inflow pipe to prevent accidental entrapment of special-status fish or any other aquatic species.

Work within the TOB of Washington Creek shall be completed during the dry season, between July 15 and October 1. Regulatory approval shall be obtained for all work within potentially jurisdictional areas from respective agencies. Prior to construction activities within RWQCB or CDFW jurisdiction, necessary regulatory permits shall be obtained from the appropriate agencies. All work within these areas shall conform to any conditions imposed by the regulating agencies.

Prior to construction, the contractor shall be required to prepare an Accidental Spill Prevention and Cleanup Plan. This plan shall include required spill control absorbent material, for use beneath stationary equipment, to be present on-site and available at all times.

All refueling and maintenance of equipment, other than stationary equipment, shall occur at least 100 feet from the creek's top-of-bank. Refueling or maintenance of stationary equipment within the channel (top of bank to top of bank) shall only occur when secondary containment sufficient to eliminate escape of all potential fluids is in place. Any hazardous chemical spills shall be cleaned immediately.

All stockpiling of construction materials, equipment, and supplies, including storage of chemicals, refueling and maintenance, with the exception of stationary equipment, shall occur outside the creek channel. No equipment shall be washed where runoff could enter the creek.

No motorized equipment shall be left within the channel (top of bank to top of bank) overnight.

Work shall be conducted in isolation from flowing water.

By implementing these measures, the Project's impacts to special-status fish, including salmonids, shall be reduced to less than significant.

Potential Impact BIO-6: Western pond turtle

Western pond turtle is listed as a species of special concern by CDFW. Project activities may temporarily impact individuals of the species if individuals are present in Washington Creek during detention basin pipe installation. Detention basin design includes a 12-inch culvert for flood control, which is large enough for pond turtle to pass through in the unlikely event they should be near the pipe during high flood waters. Because the species is not listed as threatened or endangered, CDFW will not issue any permits for "take" of this species, however, measures to avoid impacts to western pond turtle are outlined below.

Mitigation Measure BIO-6: Western pond turtle

Within 48 hours prior to the initiation of Project work within the TOB of Washington Creek, a qualified biologist shall conduct a preconstruction survey for pond turtles. If a pond turtle is found during the survey, the qualified biologist will relocate it outside of the work area, or it shall be allowed to move out of the area under its own power. With the implementation of these measures and those previously described for aquatic habitats (BIO-1) (BMPs, work windows etc.), the impacts to western pond turtle will be less than significant.

6.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, 2nd Edition. University of California Press, Berkeley, CA.

Best, C. JT. Howell, W. Knight, I. Knight and M. Wells. 1996. A Flora of Sonoma County. California Native Plant Society. Sacramento, California.

Burridge, Betty, ed. 1995. Sonoma County Breeding Bird Atlas. Madrone Audubon Society, Santa Rosa CA.

Calfish. 2018. Online Database available online at https://www.calfish.org/Dataand Maps/CalFishDataExplorer.aspx; Most recently accessed December 2018.

California Department of Fish and Wildlife (CDFW). 2018. Natural Diversity Database, Wildlife and Habitat Data Analysis Branch. Sacramento. Most recently accessed: December 2018.

California Department of Fish and Game (CDFW). 2018b. California Natural Community List. Vegetation Classification and Mapping Program, California Department of Fish and Game, Sacramento, CA. August 2018.

California Department of Fish and Game (CDFG). Environmental Services Division (ESD). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code.

California Invasive Plant Council (Cal-IPC). 2018. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: http://www.cal-ipc.org/ip/inventory/index.php. Most recently accessed: December 2018.

California Native Plant Society (CNPS). 2018a. *A Manual of California Vegetation, Online Edition*. California Native Plant Society, Sacramento, CA. Available at: http://www.cnps.org/cnps/vegetation/ Most recently accessed: December 2018.

California Native Plant Society (CNPS). 2018b. Inventory of Rare and Endangered Plants. California Native Plant Society, Sacramento, California. Available at: www.cnps.org/inventory. Most recently accessed: December 2017.

California Soil Resources Lab (CSRL). 2018. Online Soil Survey. Online at: http://casoilresource.lawr.ucdavis.edu/drupal. Most recently accessed: December 2018.

Caywood, M. L. 1974. Contributions to the life history of the splittail Pogonichthys macrolepidotus (Ayres). M.S. thesis, California State University, Sacramento.

Cicero, C. 2000. Oak Titmouse (*Baeolophus inornatus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/485a

Consortium of California Herbaria (CCH). 2018. Data provided by the participants of the Consortium of California Herbaria. Online at: http://ucjeps.berkeley.edu/consortium. Most recently accessed: December 2018.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.

Google Earth. 2018. Aerial Imagery 1993-2017. Most recently accessed: December 2018.

Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Prepared for the California Department of Fish and Game, Sacramento, California

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final Report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. 225 pp.

Jepson Flora Project (eds.). 2018. Jepson eFlora. Online at: http://ucjeps.berkeley.edu/IJM.html. Most recently accessed: December 2018.

Lowther, Peter E. 2000. Nuttall's Woodpecker (*Picoides nuttallii*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/555

NatureServe. 2017. NatureServe Conservation Status. Available online at: http://explorer.natureserve.org/ranking.htm

Nationwide Environmental Title Research (NETR). 2018. Historic Aerials. Available online at: http://www.historicaerials.com/; most recently accessed: December 2018.

Pierson, ED and WE Rainey. 1998. Distribution, Status and Management of Townsend's Big-eared Bat (*Corynorhinus townsendii*) in California. Department of Fish and Game. BMCP Technical Report Number 96-7.

Shuford, W.D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and CDFG, Sacramento.

Stebbins, R.C. A Field Guide to Western Reptiles and Amphibians, 3rd Edition. 2003. The Peterson Field Guide Series, Houghton Mifflin Company, New York.

Thomson, R.C., A.N. Wright, and H.B. Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. Co-published by the California Department of Fish and Wildlife and University of California Press. Oakland, California.

University of California at Davis. 2016. Center for Watershed Sciences. Pisces: California Fish Data and Management Software. Available online at: http://pisces.ucdavis.edu/. Accessed December 2018.

U.S. Army Corps of Engineers (Corps). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. December.

U.S. Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA). 2007. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook.

U.S. Department of Agriculture (USDA). 1972. Soil Survey of Sonoma County. Soil Conservation Service.

United States Department of Agriculture (USDA). 2017. Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.1. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). Natural Resources Conservation Service. In cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.

U.S. Fish and Wildlife Service (USFWS). 2018a. National Wetlands Inventory website. U.S. Department of the Interior, USFWS, Washington D.C. Online at: http://www.fws.gov/nwi. Most recently accessed: November 2018.

U.S. Fish and Wildlife Service (USFWS). 2018b. Information for Planning and Consultation Database. Available online at: https://ecos.fws.gov/ipac/; Most recently accessed: November 2018.

U.S. Geological Survey (USGS). 1980. Petaluma 7.5-minute quadrangle.

Western Bat Working Group (WBWG). 2018. Species Accounts. Available online at: http://www.wbwg.org/speciesinfo/species_accounts/species_accounts.html.

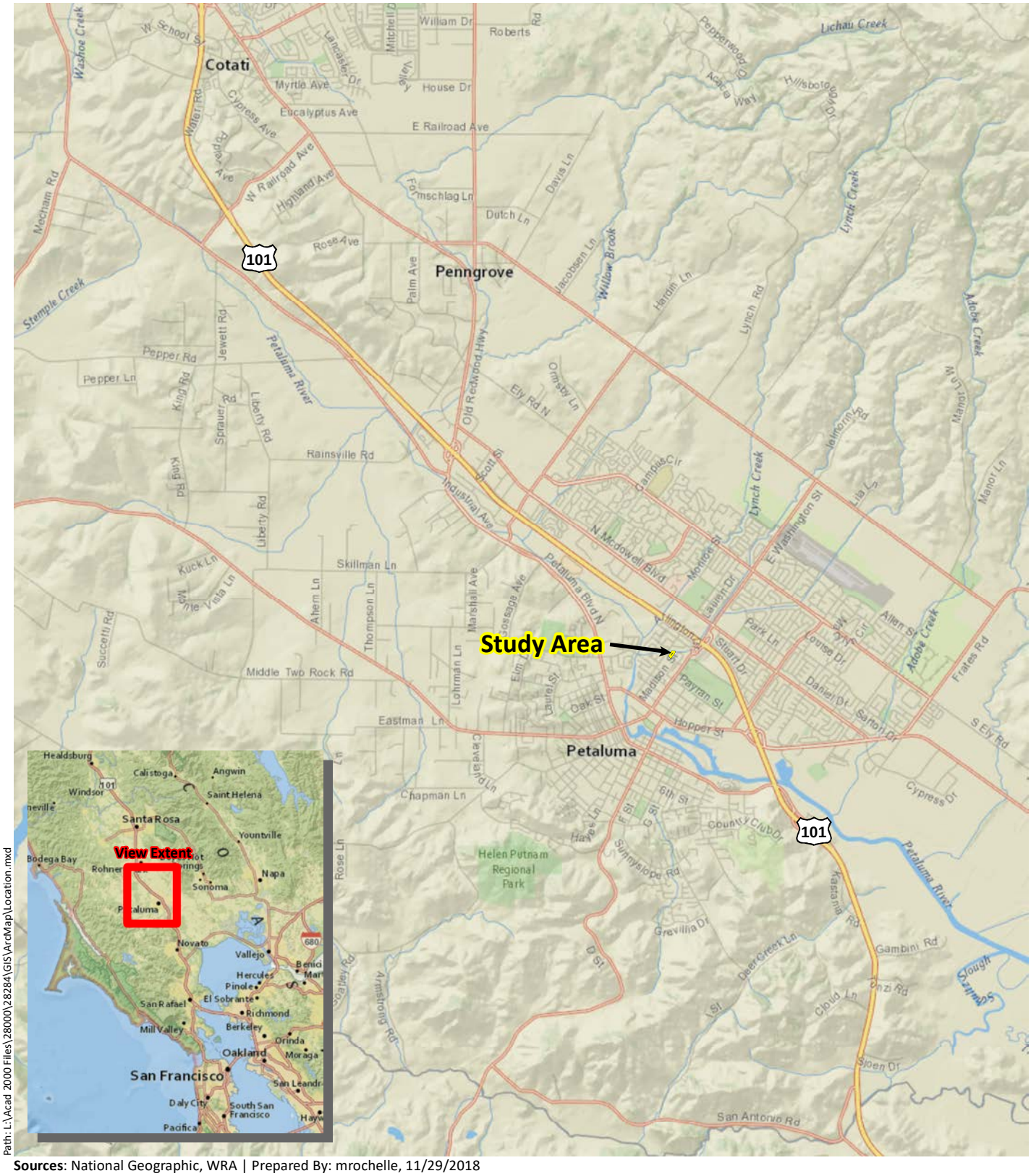
Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White. 1990. California's Wildlife, Volume I-III: Amphibians and Reptiles, Birds, Mammals. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento.

This page intentionally left blank

APPENDIX A

FIGURES

This page intentionally left blank



Path: L:\Acad 2000 Files\28000\28284\GIS\ArcMap\Location.mxd

Sources: National Geographic, WRA | Prepared By: mrochelle, 11/29/2018

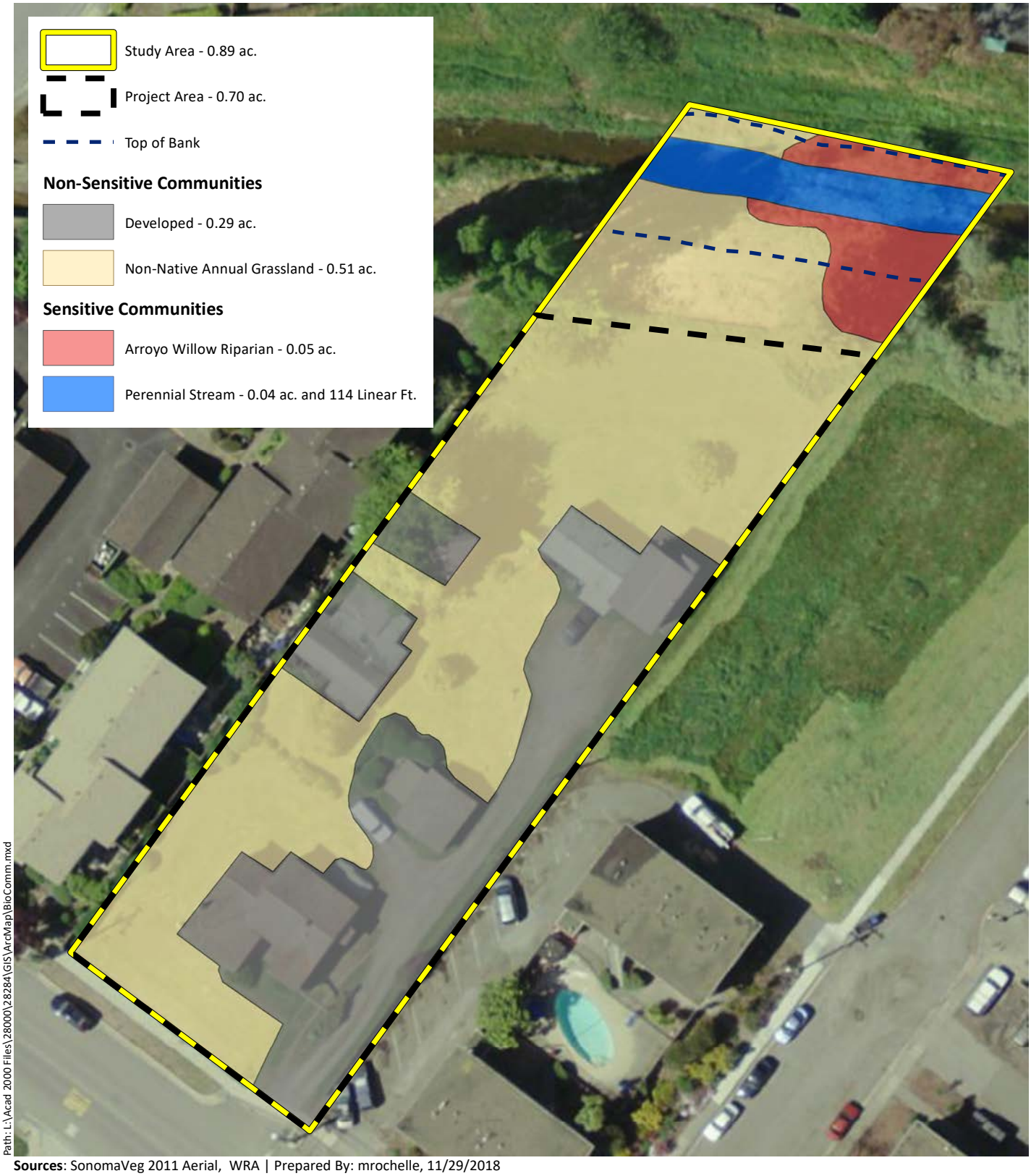
Figure 1. Study Area Location

109 Ellis St. Petaluma Biological Resources Assessment
Petaluma, Sonoma County, California

0 0.5 1 Miles

N

wra ENVIRONMENTAL CONSULTANTS



Path: L:\Acad 2000 Files\28000\28284\GIS\ArcMap\BioComm.mxd

Sources: SonomaVeg 2011 Aerial, WRA | Prepared By: mrochelle, 11/29/2018

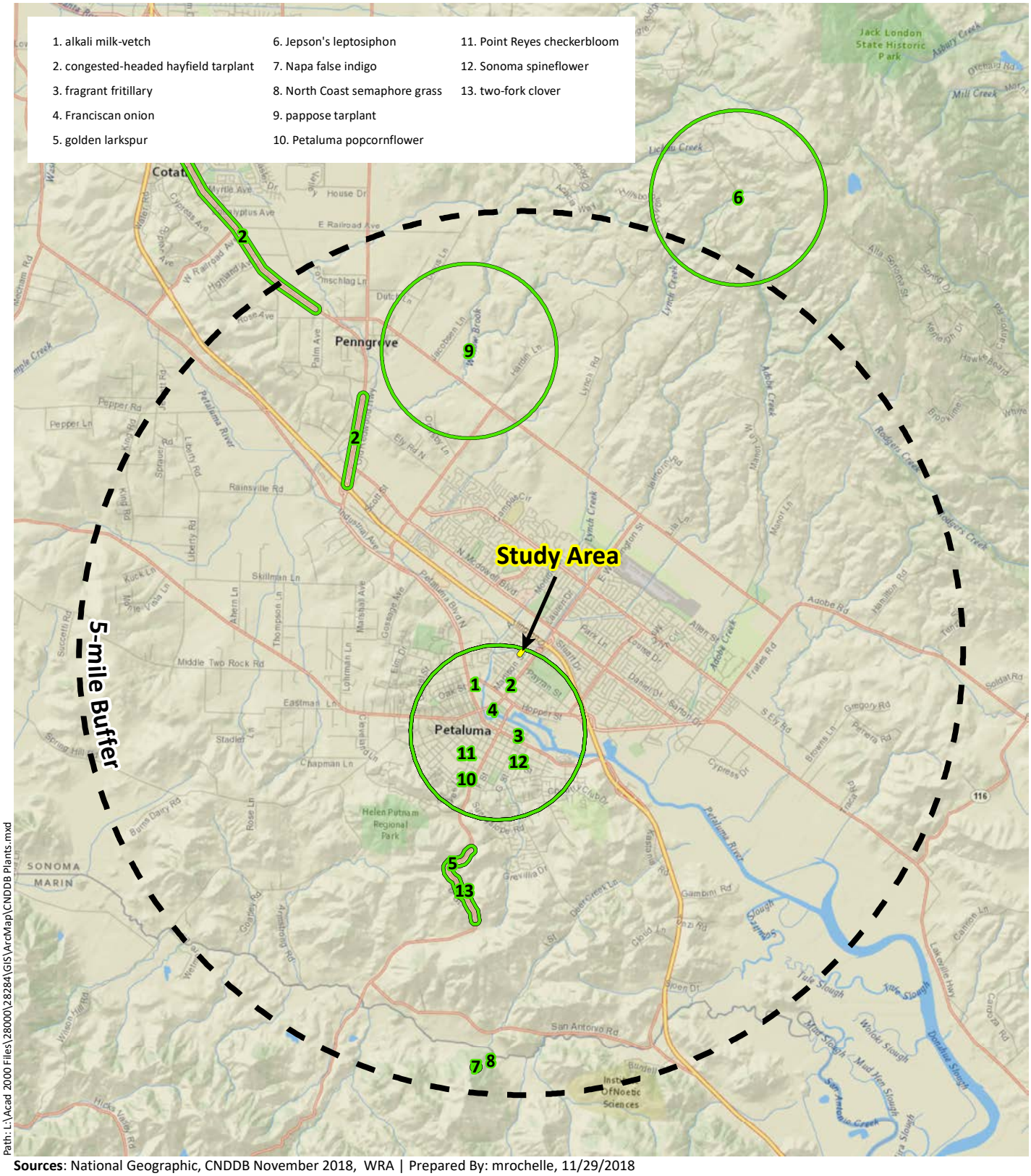
Figure 2. Biological Communities within the Study Area

109 Ellis St. Petaluma Biological Resources Assessment
Petaluma, Sonoma County, California

0 25 50 Feet

N

wra
ENVIRONMENTAL CONSULTANTS



Sources: National Geographic, CNDDB November 2018, WRA | Prepared By: mrochelle, 11/29/2018

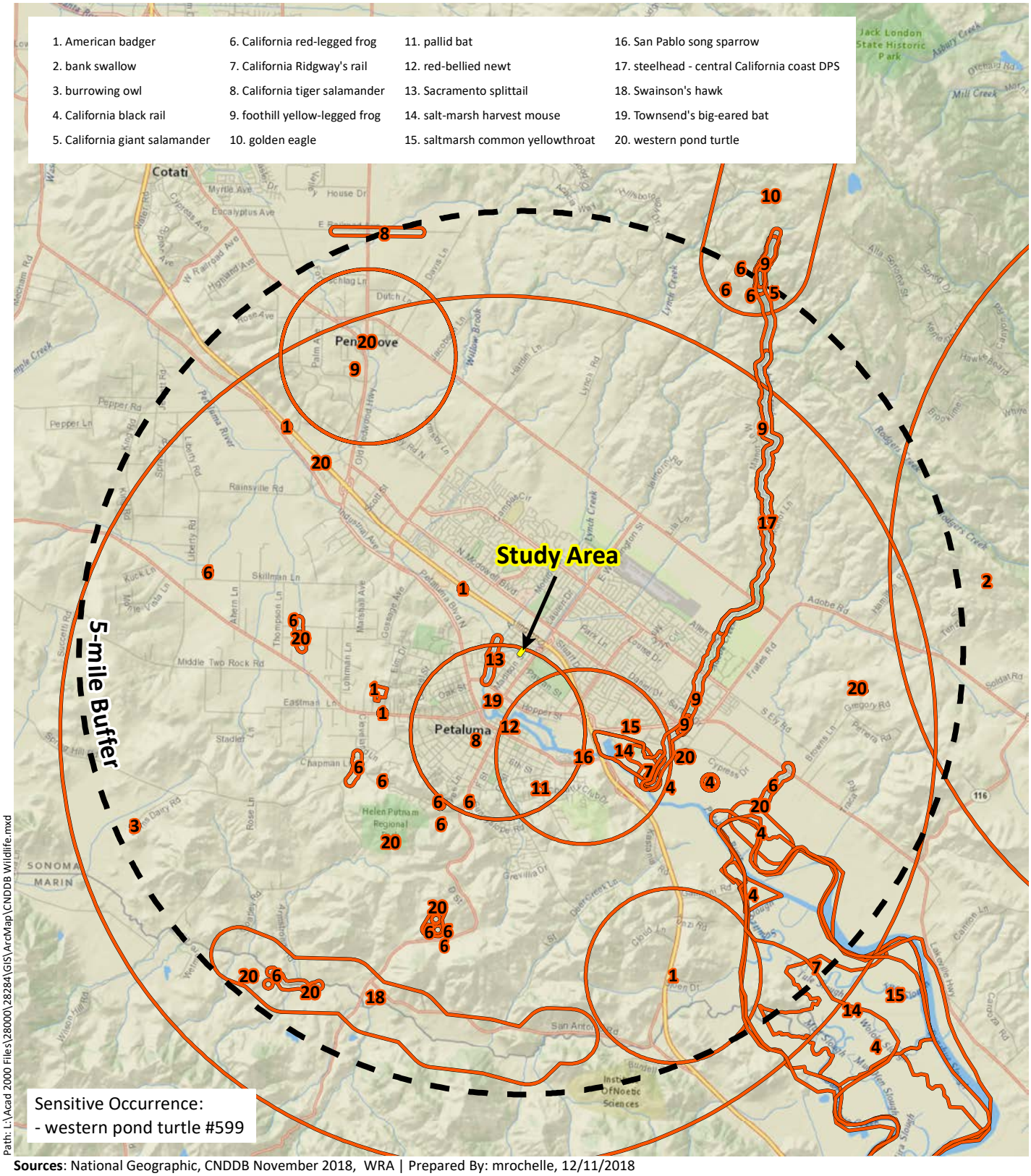
Figure 3. Special-Status Plant Species Documented within 5-miles of the Study Area

109 Ellis St. Petaluma Biological Resources Assessment
Petaluma, Sonoma County, California

0 1 2 Miles

N

wra
ENVIRONMENTAL CONSULTANTS



Path: L:\Acad 2000 Files\28000\28284\GIS\ArcMap\CNDDB Wildlife.mxd

Sources: National Geographic, CNDDB November 2018, WRA | Prepared By: mrochelle, 12/11/2018

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

109 Ellis St. Petaluma Biological Resources Assessment
Petaluma, Sonoma County, California

0 1 2 Miles

N

ENVIRONMENTAL CONSULTANTS

APPENDIX B

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

This page intentionally left blank

Appendix B-1. Plant species observed in the Study Area, November 27, 2018

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Alliaceae	Allium triquetrum	White flowered onion	non-native	perennial herb (bulb)	-	-	-
Apiaceae	Foeniculum vulgare	Fennel	non-native (invasive)	perennial herb	-	High	-
Apocynaceae	Nerium oleander	Oleander	non-native	tree	-	-	-
Apocynaceae	Vinca major	Vinca	non-native (invasive)	perennial herb	-	Moderate	-
Asteraceae	Helminthotheca echioides	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
Asteraceae	Lactuca saligna	Willow lettuce	non-native	annual herb	-	-	UPL
Asteraceae	Leontodon saxatilis	Hawkbit	non-native	annual herb	-	-	FACU
Asteraceae	Taraxacum officinale	Red seeded dandelion	non-native	perennial herb	-	-	FACU
Convolvulaceae	Convolvulus arvensis	Field bindweed	non-native	perennial herb, vine	-	-	-
Cyperaceae	Cyperus eragrostis	Tall cyperus	native	perennial grasslike herb	-	-	FACW
Cyperaceae	Scirpus microcarpus	Mountain bog bulrush	native	perennial grasslike herb	-	-	OBL
Juglandaceae	Juglans hindsii	Northern California black walnut	native	tree		-	FAC
Malvaceae	Malva neglecta	Dwarf mallow	non-native	annual, perennial herb	-	-	-
Pinaceae	Pinus sp.	Pine	-	-	-	-	-
Poaceae	Avena sp.	Wild oat	non-native	-	-	-	-
Poaceae	Bromus hordeaceus	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
Poaceae	Cynodon dactylon	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU
Poaceae	Elymus triticoides	Beardless wild rye	native	perennial grass	-	-	FAC

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Poaceae	Festuca perennis	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
Poaceae	Paspalum distichum	Knot grass	native	perennial grass	-	-	FACW
Poaceae	Phalaris aquatica	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU
Rosaceae	Cotoneaster sp.	-	-	-	-	-	-
Rosaceae	Rosa sp.	-	-	-	-	-	-
Rosaceae	Rubus armeniacus	Himalayan blackberry	non-native (invasive)	shrub	-	High	FAC
Rubiaceae	Galium aparine	Cleavers	native	annual herb	-	-	FACU
Salicaceae	Salix exigua	Narrowleaf willow	native	tree, shrub	-	-	FACW
Salicaceae	Salix lasiandra var. lasiandra	Pacific willow	native	tree	-	-	FACW
Salicaceae	Salix lasiolepis	Arroyo willow	native	tree, shrub	-	-	FACW
Sapindaceae	Acer negundo	Boxelder	native	tree	-	-	FACW
Verbenaceae	Phyla nodiflora	Common lippia	native	perennial herb	-	-	FACW

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012), *A Flora of Sonoma County* (Best et al. 1996) and/or *The Jepson Flora Project* (eFlora 2018); nomenclature follows *The Jepson Flora Project* (eFlora 2018) unless otherwise noted.

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

[1]Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2018)

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

[2]Invasive Status: California Invasive Plant Inventory (Cal-IPC 2006)

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

[3]Wetland 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 B-2. Wildlife species observed in the Study Area on November 27, 2018.

Scientific Name	Common Name
Wildlife	
Baeolophus inornatus	oak titmouse
Calypte anna	Anna's hummingbird
Corvus brachyrhynchos	American crow
Picoides nuttallii	Nuttall's woodpecker
Poecile rufescens	chestnut backed chickadee
Setophaga coronata	yellow-rumped warbler
Sturnus vulgaris	European starling
Turdus migratorius	American robin

APPENDIX C

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

This page intentionally left blank

Appendix C. Potential for Special-status Species to Occur in the Study Area. List compiled from the CDFW BIOS database (CDFW 2018), USFWS IPaC Report (USFWS 2018b), and CNPS Electronic Inventory (CNPS 2018b) searches within the Two Rock, Cotati, Glen Ellen, Point Reyes NE, Petaluma, Petaluma River, Iverness, San Geronimo, Novato USGS 7.5' quadrangles.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Plants				
pink sand-verbena *Abronia umbellata var. breviflora*	Rank 1B.1	Coastal dunes. Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Jun-Oct.	**No Potential.** The Study Area does not contain sand dunes.	This species is not present. No further recommendations.
Blasdale's bent grass *Agrostis blasdalei*	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 Study Area is not very near the coast.	This species is not present. No further recommendations.
Franciscan onion *Allium peninsulare var. franciscanum*	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.** The Study Area does not contain serpentine soils and is highly disturbed.	This species is not present. No further recommendations.
Sonoma alopecurus *Alopecurus aequalis var. sonomensis*	FE, Rank 1B.1	Marshes and swamps (freshwater), riparian scrub. Elevation ranges from 15 to 1200 feet (5 to 365 meters). Blooms May-Jul.	**Unlikely.** While the Study Area contains riparian scrub and riparian banks, the extent of these habitats is very limited, they are disturbed through regular vegetation maintenance and do not provide suitable habitat for this species. Additionally, all nearby occurrences are not very recent.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Napa false indigo *Amorpha californica var. napensis*	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.** The Study Area does not contain forest, woodland or chaparral habitat.	This species is not present. No further recommendations.
bent-flowered fiddleneck *Amsinckia lunaris*	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.	**Unlikely.** While the Study Area contains grassland habitat, the grassland is regularly mowed which likely precludes this annual species. Additionally, no known occurrences are located nearby.	This species is not present. No further recommendations.
coast rockcress *Arabis blepharophylla*	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 Study Area does not contain rocky outcrops.	This species is not present. No further recommendations.
Mt. Tamalpais manzanita *Arctostaphylos montana ssp. montana*	Rank 1B.3	Chaparral, valley and foothill grassland. Elevation ranges from 520 to 2495 feet (160 to 760 meters). Blooms Feb-Apr.	**No Potential.** The Study Area does not contain chaparral or serpentine soils.	This species is not present. No further recommendations.
Marin manzanita *Arctostaphylos virgata*	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.** The Study Area does not contain forest habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	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.** The Study Area does not contain dune habitat.	This species is not present. No further recommendations.
alkali milk-vetch *Astragalus tener var. tener*	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.** The Study Area does not contain alkali grasslands. Additionally, the only nearby occurrence has been determined to be extirpated.	This species is not present. No further recommendations.
Sonoma sunshine *Blennosperma bakeri*	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.	**No Potential.** The Study Area does not contain mesic grasslands or vernal pool habitat.	This species is not present. No further recommendations.
Bolander's reed grass *Calamagrostis bolanderi*	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.	**No Potential.** The Study Area does not contain marsh, bogs, seep habitat nor forest habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Oakland star-tulip *Calochortus umbellatus*	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.	**No Potential.** The Study Area does not contain serpentine soils nor forest habitat.	This species is not present. No further recommendations.
swamp harebell *Campanula californica*	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.** The Study Area does not contain marsh, seeps, bog nor forest habitat.	This species is not present. No further recommendations.
seaside bittercress *Cardamine angulata*	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.** The Study Area does not contain forest habitat.	This species is not present. No further recommendations.
Lyngbye's sedge *Carex lyngbyei*	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.** The Study Area does not contain marsh habitat.	This species is not present. No further recommendations.
Tiburon paintbrush *Castilleja affinis var. neglecta*	FE, ST, Rank 1B.2	Valley and foothill grassland (serpentine). Elevation ranges from 195 to 1310 feet (60 to 400 meters). Blooms Apr-Jun.	**No Potential.** The Study Area does not contain rocky serpentine sites.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
johnny-nip *Castilleja ambigua var. ambigua*	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.	**No Potential.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
Humboldt Bay owl's-clover *Castilleja ambigua var. humboldtiensis*	Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms Apr-Aug.	**No Potential.** The Study Area does not contain coastal salt marsh habitat.	This species is not present. No further recommendations.
Nicasio ceanothus *Ceanothus decornutus*	Rank 1B.2	Chaparral (maritime). Elevation ranges from 770 to 950 feet (235 to 290 meters). Blooms Mar-May.	**No Potential.** The Study Area does not contain maritime chaparral.	This species is not present. No further recommendations.
glory brush *Ceanothus gloriosus var. exaltatus*	Rank 4.3	Chaparral. Elevation ranges from 95 to 2000 feet (30 to 610 meters). Blooms Mar-Jun(Aug).	**No Potential.** The Study Area does not contain chaparral habitat.	This species is not present. No further recommendations.
Point Reyes ceanothus *Ceanothus gloriosus var. gloriosus*	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 Study Area is not very near the coast.	This species is not present. No further recommendations.
Mt. Vision ceanothus *Ceanothus gloriosus var. porrectus*	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.	**No Potential.** The Study Area does not occur very near the coast.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Mason's ceanothus *Ceanothus masonii*	SR, Rank 1B.2	Chaparral (openings, rocky, serpentine). Elevation ranges from 750 to 1640 feet (230 to 500 meters). Blooms Mar-Apr.	**No Potential.** The Study Area does not contain chaparral habitat.	This species is not present. No further recommendations.
Sonoma ceanothus *Ceanothus sonomensis*	Rank 1B.2	Chaparral (sandy, serpentine or volcanic). Elevation ranges from 705 to 2625 feet (215 to 800 meters). Blooms Feb-Apr.	**No Potential.** The Study Area does not contain chaparral habitat.	This species is not present. No further recommendations.
pappose tarplant *Centromadia parryi ssp. parryi*	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.	**Unlikely.** The Study Area does not contain mesic, alkaline sites.	This species is not present. No further recommendations.
Point Reyes bird's-beak *Chloropyron maritimum ssp. palustre*	Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Jun-Oct.	**No Potential.** The Study Area does not contain coastal salt marsh habitat.	This species is not present. No further recommendations.
soft bird's-beak *Chloropyron molle ssp. molle*	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.** The Study Area does not contain coastal salt marsh habitat.	This species is not present. No further recommendations.
Sonoma spineflower *Chorizanthe valida*	FE, SE, Rank 1B.1	Coastal prairie (sandy). Elevation ranges from 30 to 1000 feet (10 to 305 meters). Blooms Jun-Aug.	**No Potential.** The Study Area does not contain coastal prairie habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	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.** The Study Area does not contain marsh habitat.	This species is not present. No further recommendations.
Franciscan thistle *Cirsium andrewsii*	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.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
Mt. Tamalpais thistle *Cirsium hydrophilum var. vaseyi*	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.** The Study Area does not contain serpentine soils.	This species is not present. No further recommendations.
Baker's larkspur *Delphinium bakeri*	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.** The Study Area does not contain decomposed shale.	This species is not present. No further recommendations.
golden larkspur *Delphinium luteum*	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.** The Study Area does not contain rocky slopes.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
western leatherwood *Dirca occidentalis*	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.** The Study Area does not contain brushy slopes nor woodland/forest habitat.	This species is not present. No further recommendations.
dwarf downingia *Downingia pusilla*	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.** The Study Area does not contain vernal pools or lake margins.	This species is not present. No further recommendations.
small spikerush *Eleocharis parvula*	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 Study Area does not contain coastal salt marsh habitat.	This species is not present. No further recommendations.
California bottle-brush grass *Elymus californicus*	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 Study Area does not contain forest or woodland habitat.	This species is not present. No further recommendations.
Koch's cord moss *Entosthodon kochii*	Rank 1B.3	Cismontane woodland (soil). Elevation ranges from 590 to 3280 feet (180 to 1000 meters).	**No Potential.** The Study Area does not contain woodland habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
streamside daisy *Erigeron biolettii*	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.	**No Potential.** The Study Area does not contain rocky ledges or slopes nor forest habitat.	This species is not present. No further recommendations.
Tiburon buckwheat *Eriogonum luteolum var. caninum*	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.	**No Potential.** The Study Area does not contain serpentine soils.	This species is not present. No further recommendations.
bluff wallflower *Erysimum concinnum*	Rank 1B.2	Coastal bluff scrub, coastal dunes, coastal prairie. Elevation ranges from 0 to 605 feet (0 to 185 meters). Blooms Feb-Jul.	**No Potential.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
Marin checker lily *Fritillaria lanceolata var. tristulis*	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.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
fragrant fritillary *Fritillaria liliacea*	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.** While the Study Area contains grassland underlain by clay soils, the area is regularly disturbed and likely precludes this perennial bulb species.	This species is not present. No further recommendations.
blue coast gilia *Gilia capitata ssp. chamissonis*	Rank 1B.1	Coastal dunes, coastal scrub. Elevation ranges from 5 to 655 feet (2 to 200 meters). Blooms Apr-Jul.	**No Potential.** The Study Area does not contain coastal dune or scrub habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
woolly-headed gilia *Gilia capitata ssp. tomentosa*	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.** The Study Area is not very near the coast nor contains rocky outcrops.	This species is not present. No further recommendations.
San Francisco gumplant *Grindelia hirsutula var. maritima*	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.** The Study Area does not contain sandy or serpentine soils and does not occur very near the coast.	This species is not present. No further recommendations.
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	Rank 1B.2	Valley and foothill grassland. Elevation ranges from 65 to 1835 feet (20 to 560 meters). Blooms Apr-Nov.	**Unlikely.** While the Study Area contains grassland habitat, the grassland is regularly mowed which likely precludes this annual species. Additionally, the nearest occurrence is mapped as a best guess and potentially inaccurate.	This species is not present. No further recommendations.
short-leaved evax *Hesperevax sparsiflora var. brevifolia*	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.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
Marin western flax *Hesperolinon congestum*	FT, ST, Rank 1B.1	Chaparral, valley and foothill grassland. Elevation ranges from 15 to 1215 feet (5 to 370 meters). Blooms Apr-Jul.	**No Potential.** The Study Area does not contain serpentine soils.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
water star-grass *Heteranthera dubia*	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 Study Area does not contain alkali water or sites.	This species is not present. No further recommendations.
Point Reyes horkelia *Horkelia marinensis*	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.** The Study Area is not very near the coast nor contains sandy soils.	This species is not present. No further recommendations.
harlequin lotus *Hosackia gracilis*	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.	**No Potential.** The Study Area does not contain suitable mesic sites necessary for this species.	This species is not present. No further recommendations.
island rock lichen *Hypogymnia schizidiata*	Rank 1B.3	Closed-cone coniferous forest, chaparral. Elevation ranges from 1180 to 1330 feet (360 to 405 meters).	**No Potential.** The Study Area does not contain forest or chaparral habitat.	This species is not present. No further recommendations.
coast iris *Iris longipetala*	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 Study Area does not contain mesic grasslands or forest habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Burke's goldfields *Lasthenia burkei*	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.** The Study Area does not contain mesic grasslands nor vernal pools.	This species is not present. No further recommendations.
perennial goldfields *Lasthenia californica ssp. macrantha*	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.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
Contra Costa goldfields *Lasthenia conjugens*	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.	**No Potential.** The Study Area does not contain mesic grasslands nor vernal pools.	This species is not present. No further recommendations.
beach layia *Layia carnosa*	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 Study Area does not contain coastal habitat.	This species is not present. No further recommendations.
legenere *Legenere limosa*	Rank 1B.1	Vernal pools. Elevation ranges from 0 to 2885 feet (1 to 880 meters). Blooms Apr-Jun.	**No Potential.** The Study Area does not contain vernal pools.	This species is not present. No further recommendations.
bristly leptosiphon *Leptosiphon acicularis*	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.	**No Potential.** The Study Area does not contain woodland, chaparral or coastal prairie habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Jepson's leptosiphon *Leptosiphon jepsonii*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 325 to 1640 feet (100 to 500 meters). Blooms Mar-May.	**No Potential.** The Study Area does not contain volcanic or serpentine soils.	This species is not present. No further recommendations.
woolly-headed lessingia *Lessingia hololeuca*	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.** While the Study Area contains grassland habitat underlain by clay soils, the area is regularly mowed which likely precludes this species.	This species is not present. No further recommendations.
Tamalpais lessingia *Lessingia micradenia var. micradenia*	Rank 1B.2	Chaparral, valley and foothill grassland. Elevation ranges from 325 to 1640 feet (100 to 500 meters). Blooms (Jun)Jul-Oct.	**No Potential.** The Study Area does not contain serpentine soils.	This species is not present. No further recommendations.
Mason's lilaeopsis *Lilaeopsis masonii*	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.** The Study Area does not contain tidal zones on brackish sloughs.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
coast lily *Lilium maritimum*	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.	**No Potential.** The Study Area does not contain forest habitat, is not very near the coast nor contains marshes.	This species is not present. No further recommendations.
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	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.	**No Potential.** The Study Area does not contain saturated, acidic sandy soils.	This species is not present. No further recommendations.
Sebastopol meadowfoam *Limnanthes vinculans*	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.** The Study Area does not contain valley oak woodland nor mesic grassland habitat.	This species is not present. No further recommendations.
Mt. Diablo cottonweed *Micropus amphibolus*	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.	**No Potential.** The Study Area does not contain rocky slopes.	This species is not present. No further recommendations.
marsh microseris *Microseris paludosa*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 15 to 1165	**No Potential.** The Study Area does not contain forest or woodland habitat nor occurs very near the coast.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
		feet (5 to 355 meters). Blooms Apr-Jun(Jul).		
elongate copper moss *Mielichhoferia elongata*	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.** The Study Area does not contain acidic rock substrates.	This species is not present. No further recommendations.
northern curly-leaved monardella *Monardella sinuata ssp. nigrescens*	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 Study Area does not contain sandy soils nor is very near the coast.	This species is not present. No further recommendations.
cotula navarretia *Navarretia cotulifolia*	Rank 4.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 6005 feet (4 to 1830 meters). Blooms May-Jun.	**Unlikely.** While the Study Area contains grassland on clay soils, the regular disturbance within the Study Area likely precludes this diminutive annual species.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	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.** The Study Area does not contain vernal pools nor mesic grasslands.	This species is not present. No further recommendations.
Marin County navarretia *Navarretia rosulata*	Rank 1B.2	Closed-cone coniferous forest, chaparral. Elevation ranges from 655 to 2085 feet (200 to 635 meters). Blooms May-Jul.	**No Potential.** The Study Area does not contain forest or chaparral habitat.	This species is not present. No further recommendations.
Gairdner's yampah *Perideridia gairdneri ssp. gairdneri*	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.	**Unlikely.** While the Study Area contains grassland underlain by clay soils, the regular disturbance and urban location of the Study Area likely precludes this species.	This species is not present. No further recommendations.
North Coast phacelia *Phacelia insularis var. continentis*	Rank 1B.2	Coastal bluff scrub, coastal dunes. Elevation ranges from 30 to 560 feet (10 to 170 meters). Blooms Mar-May.	**No Potential.** The Study Area does not contain coastal habitat.	This species is not present. No further recommendations.
Petaluma popcornflower *Plagiobothrys mollis var. vestitus*	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.	**No Potential.** The Study Area does not contain mesic grassland habitat. Additionally, this species is believed to be extinct.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
North Coast semaphore grass *Pleuropogon hooverianus*	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.** The Study Area does not contain extensive riparian habitat.	This species is not present. No further recommendations.
nodding semaphore grass *Pleuropogon refractus*	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 Study Area does not contain extensive riparian habitat.	This species is not present. No further recommendations.
Marin knotweed *Polygonum marinense*	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.** The Study Area does not contain coastal or brackish marsh.	This species is not present. No further recommendations.
Cunningham Marsh cinquefoil *Potentilla uliginosa*	Rank 1A	Marshes and swamps. Elevation ranges from 95 to 130 feet (30 to 40 meters). Blooms May-Aug.	**No Potential.** The Study Area does not contain marsh habitat.	This species is not present. No further recommendations.
Lobb's aquatic buttercup *Ranunculus lobbii*	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.	**No Potential.** The Study Area does not contain mesic grassland habitat nor forest habitat.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
California beaked-rush *Rhynchospora californica*	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.** The Study Area does not contain marsh habitat.	This species is not present. No further recommendations.
round-headed beaked-rush *Rhynchospora globularis*	Rank 2B.1	Marshes and swamps (freshwater). Elevation ranges from 145 to 195 feet (45 to 60 meters). Blooms Jul-Aug.	**No Potential.** The Study Area does not contain marsh habitat.	This species is not present. No further recommendations.
Victor's gooseberry *Ribes victoris*	Rank 4.3	Broadleafed upland forest, chaparral. Elevation ranges from 325 to 2460 feet (100 to 750 meters). Blooms Mar-Apr.	**No Potential.** The Study Area does not contain forest or chaparral habitat.	This species is not present. No further recommendations.
Sanford's arrowhead *Sagittaria sanfordii*	Rank 1B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 0 to 2135 feet (0 to 650 meters). Blooms May-Oct(Nov).	**Unlikely.** The Study Area does not contain marsh habitat.	This species is not present. No further recommendations.
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	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.** The Study Area does not contain marsh habitat nor occurs very near the coast.	This species is not present. No further recommendations.
Tamalpais jewelflower *Streptanthus batrachopus*	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 Study Area does not contain serpentine soils.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Mt. Tamalpais bristly jewelflower *Streptanthus glandulosus ssp. pulchellus*	Rank 1B.2	Chaparral, valley and foothill grassland. Elevation ranges from 490 to 2625 feet (150 to 800 meters). Blooms May-Jul(Aug).	**No Potential.** The Study Area does not contain serpentine soils.	This species is not present. No further recommendations.
two-fork clover *Trifolium amoenum*	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.	**No Potential.** The Study Area is not very near the coast nor contains serpentine soils.	This species is not present. No further recommendations.
Santa Cruz clover *Trifolium buckwestiorum*	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 Study Area does not contain mesic grasslands nor forest habitat.	This species is not present. No further recommendations.
saline clover *Trifolium hydrophilum*	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.	**No Potential.** The Study Area does not contain mesic, alkaline sites.	This species is not present. No further recommendations.
San Francisco owl's-clover *Triphysaria floribunda*	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.	**No Potential.** The Study Area is not very near the coast.	This species is not present. No further recommendations.
coastal triquetrella *Triquetrella californica*	Rank 1B.2	Coastal bluff scrub, coastal scrub. Elevation ranges from 30 to 330 feet (10 to 100 meters).	**No Potential.** The Study Area is not very near the coast.	This species is not present. No further recommendations.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Wildlife				
Mammals				
pallid bat *Antrozous pallidus*	SSC; WBWG High	Found in a variety of habitats ranging from grasslands to mixed forests, favoring open and dry, rocky areas. Roost sites include crevices in rock outcrops and cliffs, caves, mines, and also hollow trees and various manmade structures such as bridges, barns, and buildings (including occupied buildings). Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Moderate Potential.** The Study Area does not contain large trees, rocky outcrops, or cliff suitable for roosting by this species. However, multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. Bats may utilize manmade structures within the Study Area for roosting.	To avoid impacts to roosting bats, any project activities that would impact potential bat roosts (building demolition) shall be initiated outside of the maternity roosting season (March 1 – July 31). If building demolition cannot occur outside of the maternity season, then a bat roost survey shall be conducted within 14 days prior to the start of such activities. See Section 5.3.3 for further details.
Point Reyes mountain beaver *Aplodontia rufa phaea*	SSC	Occurs only in western Marin County, almost entirely within Point Reyes National Seashore. Found on moist slopes within areas of coastal scrub. Lives in burrow systems and forages on a variety of herbaceous plants.	**No Potential.** The Study Area is outside of this species range and does not contain suitable coastal scrub habitat.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Townsend's big-eared bat Corynorhinus townsendii	SSC; WBWG High	Humid coastal regions of northern and central California. Roost in limestone caves, lava tubes, mines, buildings etc. Will only roost in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to disturbance	**Moderate Potential.** Multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. Bats may utilize manmade structures within the Study Area for roosting.	To avoid impacts to roosting bats, any project activities that would impact potential bat roosts (building demolition) shall be initiated outside of the maternity roosting season (March 1 – July 31). If building demolition cannot occur outside of the maternity season, then a bat roost survey shall be conducted within 14 days prior to the start of such activities. See Section 5.3.3 for further details.
silver-haired bat *Lasionycteris noctivagans*.	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 Study Area does not contain forested habitat to support this species.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
western red bat *Lasiurus blossevillii*	SSC, WBWG High	Highly migratory and typically solitary, roosting primarily in the foliage of trees or shrubs. Roosts are usually in broad-leaved trees including cottonwoods, sycamores, alders, and maples. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas.	**Unlikely.** The Study Area does not contain suitable broad-leaved trees with dense foliage to provide roosting structure for this species. Additionally, the Study Area is in a highly urbanized area.	No further actions recommended for this species.
hoary bat *Lasiurus cinereus*	WBWG Medium	Prefers open forested 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 water.	**Unlikely.** The Study Area does not contain suitable trees with dense foliage to provide roosting structure for this species.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
fringed myotis *Myotis thysanodes*	WBWG High	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-grass steppes. Building, mines, and large trees and snags are important day and night roosts.	**Moderate Potential.** Multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. Bats may utilize manmade structures within the Study Area for roosting.	To avoid impacts to roosting bats, any project activities that would impact potential bat roosts (building demolition) shall be initiated outside of the maternity roosting season (March 1 – July 31). If building demolition cannot occur outside of the maternity season, then a bat roost survey shall be conducted within 14 days prior to the start of such activities. See Section 5.3.3 for further details.
long-legged Myotis *Myotis volans*	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.	**Moderate Potential.** Multiple buildings are present within the Study Area with egress points including lifted side panels and broken windows. Bats may utilize manmade structures within the Study Area for roosting.	To avoid impacts to roosting bats, any project activities that would impact potential bat roosts (building demolition) shall be initiated outside of the maternity roosting season (March 1 – July 31). If building demolition cannot occur outside of the maternity season, then a bat roost survey shall be conducted within 14 days prior to the start of such activities. See Section 5.3.3 for further details.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
salt-marsh harvest mouse *Reithrodontomys raviventris*	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.** The Study Area does not contain pickleweed marsh or brackish waters to support this species.	No further actions recommended for this species.
American badger *Taxidea taxus*	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.	**Unlikely.** Although the nearest occurrence is less than one mile from the Study Area (CDFW 2018), no mammal burrows were observed onsite and no potential badger burrows (large, oval shaped), throw piles, tracks or scat were found during the site visit. Also, the Study Area is within a greater area of urban development.	No further actions recommended for this species.
Birds				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
golden eagle *Aquila chrysaetos*	CFP, BCC	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 Study Area does not contain suitable nesting or foraging habitat and is in a greater area of urban development. The nearest recorded nesting occurrence of this species is approximately 5 miles northeast of the Study Area is oak woodland (CDFW 2018).	No further actions recommended for this species.
ferruginous hawk *Buteo regalis*	BCC	Winter visitor to open habitats, including grasslands, sagebrush flats, scrub, and low foothills surrounding valleys. Preys on mammals. Does not breed in California.	**Unlikely.** The Study Area is outside of the breeding range of this species and does not contain suitable foraging habitat.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Swainson's hawk *Buteo swainsoni*	ST, BCC	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.** A historical record from 1856 exists for this species about 5 miles south of the Study Area (CDFW 2018). However, this historic occurrence is outside what is generally considered to be the breeding range of the species in California (CDFW 2018).	No further actions recommended for this species.
western snowy plover *Charadrius alexandrinus nivosus*	FT, SSC, BCC	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 appropriate foraging or nesting habitat occurs onsite. The Study Area lacks suitable soils and coastal, estuarine, and alkali lake habitats.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Nuttall's woodpecker *Picoides nuttallii*	BCC	Year-round resident in lowland woodlands throughout much of California west of the Sierra Nevada. Typical habitat is dominated by oaks; also occurs in riparian woodland. Nests in tree cavities.	**Present.** This species was observed during the site visit. The Study Area contains riparian habitat which may support nesting by this species.	Future Project activities shall occur outside of the nesting season from September 1 – January 31, to the extent feasible. If working outside of the nesting season is not possible, and project activities are initiated during the nesting season (February 1 – August 31), a qualified wildlife biologist shall conduct a nesting bird survey no more than 14 days prior to the start of Project activities. See Section 5.3.3 for further details.
oak titmouse *Baeolophus inornatus*	BCC	Occurs year-round in woodland and savannah habitats where oaks are present, as well as riparian areas. Nests in tree cavities.	**Present.** This species was observed during the site visit. The Study Area contains riparian habitat which may support nesting by this species.	Future Project activities shall occur outside of the nesting season from September 1 – January 31, to the extent feasible. If working outside of the nesting season is not possible, and project activities are initiated during the nesting season (February 1 – August 31), a qualified wildlife biologist shall conduct a nesting bird survey no more than 14 days prior to the start of Project activities. See Section 5.3.3 for further details.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
California brown pelican *Pelecanus occidentalis californicus*	FD, SD, CFP	(Nesting colony) colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators.	**No Potential.** This species forages in the open ocean and breeds along the coast. The Study Area does not contain or border suitable habitat.	No further actions recommended for this species.
bald eagle *Haliaeetus leucocephalus*	FD, SE, CFP, BCC	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 Study Area is largely surrounded by development and does not provide suitable nesting or foraging habitat for this species.	No further actions recommended for this species.
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP, BCC	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.** The Study Area lacks the native vegetation this species prefers. There is no tidal marsh habitat within or adjacent to the Study Area.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
California thrasher *Toxostoma redivivum*	BCC	Year-round resident in lowland and coastal chaparral, as well as riparian woodland thickets. Commonly seen in parks and gardens. Typically nest in dense shrubs, and feed chiefly on insects and fruit.	**Unlikely.** The Study Area lacks the dense brush and continuous canopy that this species prefers.	No further actions recommended for this species.
wrentit *Chamaea fasciata*	BCC	Year-round resident in coastal scrub and chaparral along the West Coast. Nests in many types of vegetation including California sage, coyote brush, blackberry, poison oak, coffeeberry, Douglas-fir, bush lupine, wild rose, valley oak, and wild grape.	**Unlikely**. The Study Area does nto contain suitable scrub or chaparral habitat to support this species..	No further actions recommended for this species.
California Ridgway's rail *Rallus obsoletus obsoletus*	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 molluscs and crustaceans.	**No Potential.** The Study Area lacks the native vegetation this species prefers. There is no tidal marsh habitat within or adjacent to the Study Area.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
California least tern *Sterna antillarum browni*	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 Study Area does not contain suitable estuarine shore habitat and is outside the known range for this species.	No further actions recommended for this species.
marbled murrelet *Brachyramphus marmoratus*	FT, SE	Predominantly coastal marine. Nests in old-growth coniferous forests up to 30 miles inland along the Pacific coast, from Eureka to Oregon border, and in Santa Cruz/San Mateo Counties. Nests are highly cryptic, and typically located on platform-like branches of mature redwoods and Douglas firs. Forages on marine invertebrates and small fishes.	**No Potential.** No suitable coastal redwood habitat is present within or in the vicinity of the Study Area.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
white-tailed kite *Elanus leucurus*	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.	**Unlikely.** The Study Area is within the known range for this species and may fly through the site. However, the Study Area is partially developed and is surrounded by development, limiting foraging opportunities in the area.	No further actions recommended for this species.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT, SE, BCC	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.	**Unlikely.** The Study Area is surrounded by development and disturbed areas and does not provide the extent or quality of habitat utilized by this species.	No further actions recommended for this species.
burrowing owl *Athene cunicularia*	SSC, BCC	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.** No suitable mammal burrows were observed onsite. The Study Area is primarily developed and does not provide the open habitat favored by this species.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
short-eared owl *Asio flammeus*	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 Study Area is primarily developed and does not provide open areas for roosting or nesting. Burridge (1995) reports only a single confirmed breeding for the species in Sonoma County.	No further actions recommended for this species.
long-eared owl *Asio otus*	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.** This species is known to nest in the region (Burridge 1995). However, the Study Area is primarily developed and does not provide suitable roosting or nesting habitat.	No further actions recommended for this species.
northern spotted owl *Strix occidentalis caurina*	FT, ST, SSC	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests with patches of big trees. Prefers high, multistory canopy dominated by big trees, trees with cavities or broken tops, woody debris and space under canopy.	**No Potential.** The Study Area is primarily developed and does not contain any old growth trees or other structures that would support breeding for this species.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
olive-sided flycatcher *Contopus cooperi*	SSC, BCC	Summer resident. Typical breeding habitat is montane coniferous forests. At lower elevations, also occurs in wooded canyons and mixed forests and woodlands. Often associated with forest edges. Arboreal nest sites located well off the ground.	**Unlikely.** Typical open woodland or forest habitats characteristic of this species do not occur in the vicinity of the Study Area.	No further actions recommended for this species.
yellow rail *Coturnicops noveboracensis*	BCC, 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 Study Area does not contain marsh habitat or wet meadows to support this species.	No further actions recommended for this species.
northern harrier *Circus cyaneus*	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.	**No Potential.** The Study Area is within a greater area of development and does not contain open habitat to support foraging or nesting by this species.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
loggerhead shrike *Lanius ludovicianus*	SSC, BCC	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.	**Unlikely.** The Study Area is primarily developed and does not contain suitable foraging habitat for this species.	No further actions recommended for this species.
yellow warbler *Setophaga petechia*	SSC, BCC	Nests in riparian stands of willows, cottonwoods, aspens, sycamores, and alders. Also nests in montane shrubbery in open conifer forests.	**Unlikely.** The Study Area is adjacent to riparian habitat. However, the riparian vegetation is sparse and is within a greater area of urban development and is unlikely to support nesting for this species.	No further actions recommended for this species
yellow-breasted chat *Icteria virens*	SSC	Summer resident, occurring in riparian areas with an open canopy, very dense understory, and trees for song perches. Nests in thickets of willow, blackberry, and wild grape.	**Unlikely.** The Study Area does not contain riparian habitat with suitable dense understory to support this species.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Frequents low, dense vegetation near water including fresh to saline emergent wetlands. Brushy habitats used in migration. Forages among wetland herbs and shrubs for insects primarily.	**Unlikely.** The Study Area does not contain suitable wetland or brushy habitat to support this species.	No further actions recommended for this species.
grasshopper sparrow *Ammodramus savannarum*	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.** The Study Area is primarily developed and does not contain open grassland for nesting or foraging by this species.	No further actions recommended for this species
Samuel's (San Pablo) song sparrow *Melospiza melodia samuelis*	SSC, BCC	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 Study Area does not contain or border saline emergent wetlands.	No further actions recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
tricolored blackbird *Agelaius tricolor*	SC, SSC, BCC	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 Study Area does not contain the extent of emergent vegetation typically associated with this species. Pockets of suitable vegetation are rare, disparate and fragmented. Nearest occurrence is over five miles from the Study Area (CDFW 2018).	No further actions recommended for this species
bank swallow *Riparia riparia*	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.s	**Unlikely.** The Study Area does not contain vertical bank habitat necessary for breeding of this species. Bank swallow may forage over the site during migration.	No further actions recommended for this species
Reptiles and Amphibians				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
western (pacific) pond turtle *Actinemys marmorata*	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	**Moderate Potential.** The Study Area is adjacent to Washington Creek, which is suitable aquatic habitat, though basking habitat is limited. The nearest documented occurrence is approximately two miles from the Study Area (CDFW 2018).	Prior to the initiation of Project work on the banks of Washington Creek, a qualified biologist shall conduct a preconstruction survey for pond turtles. If a pond turtle is found during surveys, the qualified biologist will relocate it outside of the work area, or it shall be allowed to move out of the area under its own power. See Section 5.3.3 for further details.
California giant salamander *Dicamptodon ensatus*	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.	**Unlikely**. The substrate within the stream in the Study Area is dominated by silt and sand and interstitial spaces between larger grains or structures are rare or absent. As a result, larval habitat is absent and the species is unlikely to occur.	No further actions recommended for this species
Blainville's (coast) horned lizard *Phrynosoma blainvillii*	SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Prefers friable, rocky, or shallow sandy soils for burial; open areas for sunning; bushes for cover; and an abundant supply of ants and other insects.	**Unlikely.** The Study Area does not provide suitable sandy soils or vegetation communities typically inhabited by this species.	No further actions recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
California tiger salamander *Ambystoma californiense*	FE, ST	Populations in Santa Barbara and Sonoma counties currently listed as endangered; threatened in remainder of range. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Adults are fossorial and utilize mammal burrows and other subterranean refugia. Breeding occurs primarily in vernal pools and other seasonal water features.	**Unlikely.** Temporary, still water habitat does not occur onsite. Also, the Study Area is primarily developed and is within an urban area. The nearest documented occurrence is approximately 1 mile south from 1856 which was mapped with little information about the exact locality of the occurrence (CDFW 2018).	No further actions recommended for this species
western spadefoot *Scaphiopus hammondii*	SSC	Occurs primarily in grasslands but occasionally populates valley-foothill hardwood woodlands. Feed on insects, worms, and other invertebrates.	**Unlikely.** The Study Area is primarily developed and is within a greater area of urban development. There are no documented occurrences of this species in the vicinity (CDFW 2018).	No further actions recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
red-bellied newt *Taricha rivularis*	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.	**Unlikely.** This Study Area is not within coastal forest habitat and does not contain suitable strong flowing stream to support this species development. There is a recorded occurrence within 1 mile of the Study Area ; however, the collection was mapped non-specifically to the Petaluma area (CDFW 2018).	No further actions recommended for this species
California red-legged frog *Rana draytonii*	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.** The Study Area is surrounded by urban development and barriers that hinder dispersal into the Study Area. Aquatic habitat adjacent to the Study Area is impacted by heavy sediment loads that fill in pools. The nearest occurrence is approximately two miles from the Study Area (CDFW 2018).	Despite a determination of unlikely to occur, due to the presence of nearby occurrences and its federal threatened status, measures to avoid CRLF are recommended and described in section 5.3.3 and include a preconstruction survey and work windows.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
foothill yellow-legged frog *Rana boylii*	SC, SSC	Found in or adjacent to 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.	**Unlikely.** Although the nearest occurrence is less than five miles from the Study Area (CDFW 2018), the Study Area does not contain or border suitable rocky stream habitat.	No further actions recommended for this species
Fish				
river lamprey *Lampetra ayresi*	SSC	Lower Sacramento River, San Joaquin River and Russian River. May occur in coastal streams north of San Francisco Bay. Adults need clean, gravelly riffles, Ammocoetes need sandy backwaters or stream edges, good water quality and temps < 25 degrees C.	**Unlikely.** The Study Area is outside the known range for this species (CDFW 2018). Additionally, the Study Area does not provide suitable spawning or rearing habitat.	No further actions recommended for this species
green sturgeon *Acipenser medirostris*	FT, SSC	Spawn in the Sacramento River and the Klamath River. Spawn at temperatures between 8-14 degrees C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	**Unlikely.** No occurrences for this species have been documented near the Study Area (CDFW 2018), and no suitable spawning habitat is available onsite.	No further actions recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
delta smelt *Hypomesus transpacificus*	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.	**Unlikely.** The Study Area is outside the known range for this species (CDFW 2018), which typically occurs in the Sacramento San Joaquin delta system.	No further actions recommended for this species
longfin smelt *Spirinchus thaleichthys*	FC, ST, SSC	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.	**Unlikely.** There is no record of this species in Sonoma County, and the Study Area is outside the established range boundary in the Petaluma River system (CDFW 2018).	No further actions recommended for this species
Tomales roach *Lavinia symmetricus*	SCC	Habitat generalists. Tolerant of relatively high temperatures and low oxygen levels, however unable to tolerate very saline water. Tributaries to Tomales Bay.	**No Potential.** The Study Area is outside of the range of the species.	No further actions recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Sacramento splittail *Pogonichthys macrolepidotus*	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).	**Moderate Potential.** The species has been documented to occur in the Petaluma River near the confluence of Washington Creek (CDFW 2018). This occurrence is less than 0.5-mile from the Study Area.	This species may occur in Washington Creek due to the presence of nearby occurrences. Measures to avoid Sacramento splittail are described in section 5.3.3.
chinook salmon - Central Valley fall-run ESU *Oncorhynchus tshawytscha*	SSC	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Moderate Potential.** This ESU typically spawns in the Central Valley but may migrate up the Petaluma River from San Pablo Bay. No substrate appropriate for spawning is available onsite.	This species may occur in Washington Creek. Measures to avoid Chinook Salmon are described in section 5.3.3.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
chinook salmon - California coastal ESU *Oncorhynchus tshawytscha*	FT	California Coastal Chinook Salmon ESU includes all naturally spawned populations of Chinook salmon from rivers and streams south of the Klamath River (exclusive) to the Russian River (inclusive). Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27 degrees C lethal to adults.	**No Potential.** This ESU occurs within Sonoma County but is not known to occur in the Petaluma River system. Federal listing of this ESU extends only from Humboldt County to the Russian River.	No further actions recommended for this species.
coho salmon - central California coast ESU *Oncorhynchus kisutch*	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.	**Unlikely.** This ESU is found in Sonoma County; however, there are no records of Coho in the Petaluma River system (CDFW 2018). Additionally, no suitable spawning habitat is present within the Study Area.	No further actions recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	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 1 or more years before migrating downstream to the ocean.	**Moderate Potential.** The Petaluma River has been designated Critical Habitat for this species, so presence is assumed. As Washington Creek is a tributary to the Petaluma River, the Study Area may provide rearing and foraging habitat. There is no suitable spawning habitat in the Study Area. The nearest occurrence is less than three miles from the Study Area on the east side of Petaluma (CDFW 2018).	This species may occur in Washington Creek. Measures to avoid steelhead are described in section 5.3.3.
tidewater goby *Eucyclogobius newberryi*	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.** The Study Area does not contain coastal aquatic habitat, and there are no known occurrences of this species within 5 miles of the Study Area (CDFW 2018).	No further actions recommended for this species
Invertebrates				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
California freshwater shrimp *Syncaris pacifica*	FE, SE	Endemic to Marin, Napa, and Sonoma counties. Found in low elevation, low gradient streams where riparian cover is moderate to heavy. Shallow pools away from main stream flow. Winter: undercut banks with exposed roots. Summer: leafy branches touching water.	**Unlikely.** The nearest occurrence is approximately 10 miles from the Study Area, and there are no records of this species in the Petaluma River (CDFW 2018).	No further actions recommended for this species
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE	Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on in 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, Sedum spathulifolium.	**No Potential.** The Study Area is outside of the range of this species, is below the elevation range of the species. Additionally, the host plant Sedum spathulifolium was not observed during the site visit.	No further actions recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS***
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	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 *Viola adunca*. Adult flight season may range from late June to early September.	**No Potential.** The Study Area contains no coastal prairie, dune or grassland habitats and no *Viola* were observed in the Study Area.	No further actions recommended for this species

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
FD	Federal Delisted
SE	State Endangered
ST	State Threatened
SC	State Candidate
SD	State Delisted
SSC	Species of Special Concern
BCC	Bird of Conservation Concern
CFP	CDFW Fully Protected

California Rare Plant Rank (CRPR)

Rank 1A	CRPR 1A: Plants presumed extinct in California
Rank 1B	CRPR 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2A	CRPR 2A: Plants presumed extirpated in California, but more common elsewhere
Rank 2B	CRPR 2B: 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)
Rank 4	CRPR 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

****Potential to Occur:**

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.

*****Results and Recommendations:**

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

Assumed Present. Species has a high likelihood of occurring and actions to avoid/mitigate impacts are recommended; surveys not conducted.

Assumed Absent. Species is assumed to not be present or utilize the site due to a lack of key habitat components.

Not Observed. Species was not observed during protocol-level surveys.

This page intentionally left blank

APPENDIX D

REPRESENTATIVE STUDY AREA PHOTOGRAPHS

This page intentionally left blank

Photo 1. Photo looking west from eastern edge of Project Area.

Photo 2. Photo looking northwest along fenceline at eastern edge of Project Area.

Photo 3. Photo looking north along the top of bank of Washington Creek. The arroyo willow riparian vegetation can be seen on the right.

Photo 4. Photo looking north towards the arroyo willow riparian vegetation.

Photo 5. Photo looking north east towards Washington Creek. Vegetation was present in the shallower portions of the stream.

Photo 6. Photo looking south east towards Washington Creek.

Photo 7. Photo looking north from existing driveway towards existing residence.

Photo 8. Photo looking southwest from northwest corner of Project Area.