

Appendix C:
Biological Resources

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C.1 - Biological Resource Assessment

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Biological Resource Assessment

SCHMIDIG/LAM Property

Livermore, Alameda County, California

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January 2018



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1.0 INTRODUCTION

On November 15, 2017, WRA, Inc. (WRA) performed a biological resources assessment of the approximately 35-acre SCHMIDIG/LAM property located at the terminus of Lassen Road, in Livermore, Alameda County, California (Study Area; Figure 1). The Study Area is located directly north of Highway 580, south of Spring Valley Common, and west of the Lassen Road terminus.

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.

No protocol-level presence/absence surveys have been conducted as part of this assessment. Our determinations regarding the potential of the Study Area to support special-status plant and wildlife species are 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 15, 2017. A delineation of Waters of the U.S. (“waters”) subject to the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (Corps) jurisdiction under Section 404 of the Clean Water Act (CWA), as well as stream and riparian areas subject to California Department of Fish and Wildlife (CDFW) jurisdiction under Section 1602 of California Fish and Game Code (CFGC), was conducted concurrently with this assessment.

2.0 REGULATORY BACKGROUND

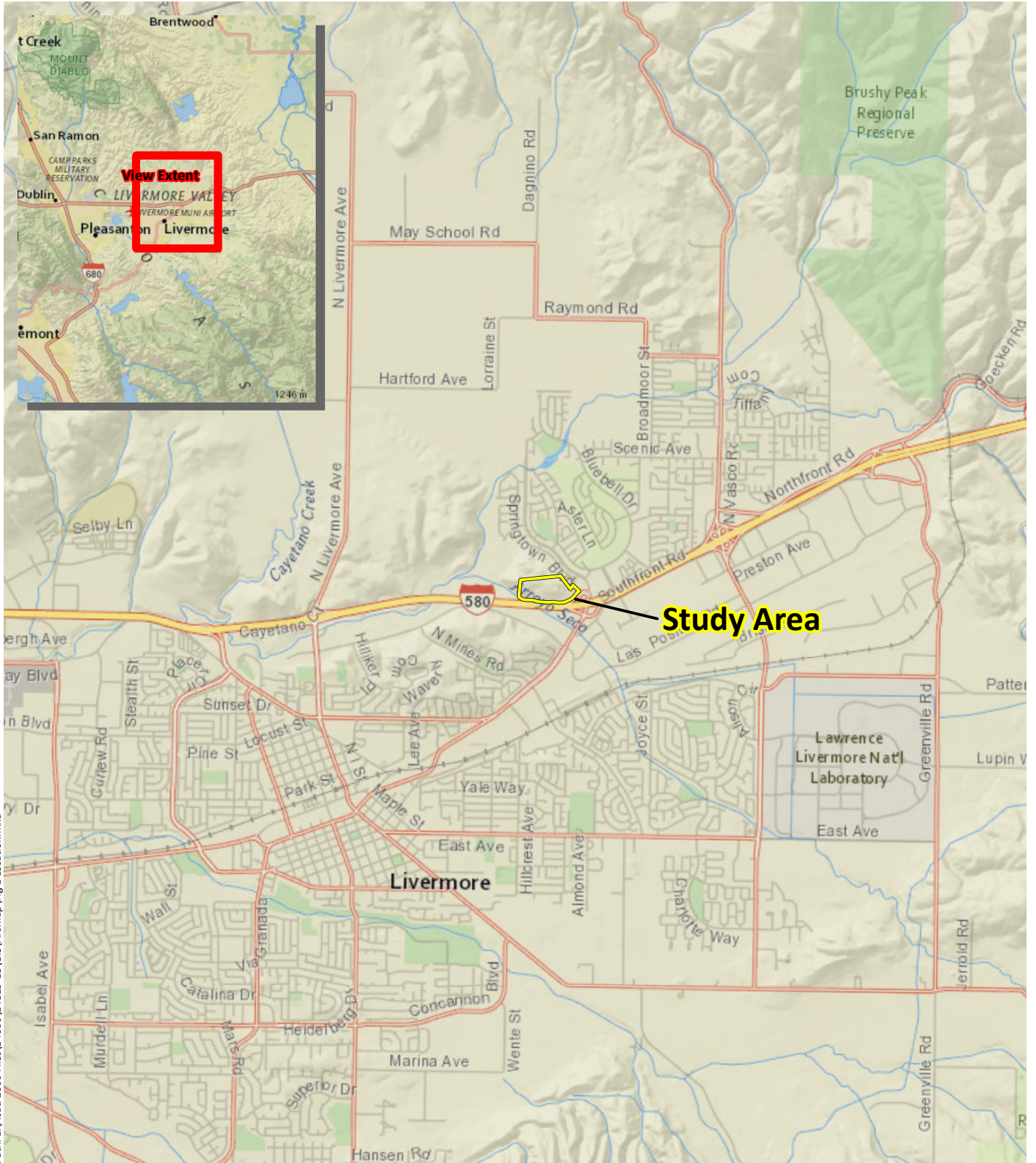
The following sections explain the regulatory context of this Biological Resources Assessment, including applicable laws and regulations that informed field investigations.

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; Habitat Conservation Plans (HCPs) 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.

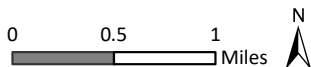


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Sources: National Geographic, WRA | Prepared By: czumwalt, 11/21/2017

Figure 1. Study Area Location Map

1910 Main Street
Walnut Creek, California



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 waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes wetlands and waters that may not be regulated by the Corps under Section 404.

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 Other Sensitive Biological Communities

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

2.1.4 Relevant Local Policies, Ordinances, and Regulations

East Alameda County Conservation Strategy

The Study Area is located in Conservation Zone 4 of the East Alameda County Conservation Strategy (EACCS; ICF 2010). The EACCS intends to provide an effective framework to protect, enhance, and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. Participation in the EACCS is voluntary. The City of Livermore is a partner in the EACCS and uses the document to provide a baseline inventory of biological resources and conservation priorities during project-level planning and environmental permitting. The EACCS

is a framework for guidance by regulatory agencies and does not include incidental take permits for threatened or endangered species similar to that provided by a Habitat Conservation Plan. Compliance with the EACCS is voluntary, but doing so streamlines the regulatory permitting process.

City of Livermore Tree Preservation Ordinance

The City of Livermore encourages the preservation of trees through its development review and permit approval process. The City Livermore Tree Preservation Ordinance (Section 12.20 of the Livermore Municipal Code) defines “protected trees” based on trunk circumference at breast height (CBH) i.e. 4.5 feet above grade. The definition of a protected tree varies depending on several factors including existing land use and property ownership status. However, for sites such as the Study Area, protected trees are defined as follows:

3. Any tree located on an undeveloped or underdeveloped property, regardless of zoning district, use, or development status, for which new development is proposed, with a circumference (CBH) of 18 inches or more; or

4. Any tree located in an open space, riparian, or habitat area with a circumference (CBH) of 18 inches or more;

The Ordinance requires that prior to the removal of a protected tree, all trees on-site must be surveyed by a certified arborist. Following the arborist survey, a “Tree Action Permit”, which must include an arborist’s report, must be approved by the City. Furthermore, the City may require mitigation measures as conditions of approval for the removal of protected trees.

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 those that are formal candidates for listing. The federal Bald and Golden Eagle Protection Act also provides broad protections to both eagle species that are roughly analogous to those of listed species. Additionally, CDFW Species of Special Concern, CDFW California Fully Protected species, USFWS Birds of Conservation Concern, and CDFW Special-status Invertebrates are all considered special-status species. Although these aforementioned species generally have no special legal status, they are given special consideration under CEQA. Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a “High Priority” or “Medium Priority” species for conservation by the WBWG are typically considered special-status and also considered under CEQA. In addition to regulations for special-status species, most native birds in the United States (including non-status species) are protected by the Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFG), i.e., sections 3503, 3503.5 and 3513. Under these laws, deliberately destroying active bird nests, eggs, and/or young is illegal.

Plant species included within the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (Inventory; CNPS 2017b) with California Rare Plant Rank (Rank) of 1, 2, and 3 are also considered special-status plant species and must be considered under CEQA. Very few Rank 4 plant species meet the definitions of Section 1901 Chapter 10 of the Native Plant

Protection Act or Sections 2062 and 2067 of the CDFW Code that outlines CESA. However, CNPS and CDFW strongly recommend that these species be fully considered during the preparation of environmental documentation relating to CEQA. This may be particularly appropriate for the type locality of a Rank 4 plant, for populations at the periphery of a species range or in areas where the taxon is especially uncommon or has sustained heavy losses, or from populations exhibiting unusual morphology or occurring on unusual substrates. A description of the CNPS Ranks is provided below in Table 1.

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

California Rare Plant Ranks	
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

3.0 METHODS

On November 15, 2017, the Study Area was traversed on foot to determine (1) plant communities present within the Study Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. Additionally, a routine jurisdictional wetland delineation and delineation of streams and riparian areas was conducted concurrently with this site assessment (WRA 2017a), and the results of the delineation were incorporated into this report. All plant and wildlife species encountered were recorded and are listed in Appendix A. Plants were identified using *The Jepson eFlora* (Jepson Flora Project [Eds.] 2017), to the taxonomic level necessary to determine rarity. Plant nomenclature follows the Jepson Flora Project (2017), except where noted. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities. Special-status species with a potential for occurrence, determined based on field visits and habitat suitability, are described in Appendix B. Representative photographs of the Study Area taken during field visits are included in Appendix C.

3.1 Biological Communities

Prior to the site visit, the *Soil Survey of Alameda County, California* (USDA1972, CSRL 2017) 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, we reviewed the Altamont United States Geological Survey (USGS) 7.5-minute quadrangle map and five surrounding

quadrangle maps (USGS 2015a-f), the National Wetlands Inventory (NWI; USFWS 2017a), and aerial photographs of the Study Area (Google Earth 2017) 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 2017a). However, in some cases it was necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations (see Section 2.1, above).

3.1.1 Non-sensitive Biological Communities

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

3.1.2 Sensitive Biological Communities

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

Wetlands and Non-Wetland Waters

The Study Area was surveyed to determine if any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFW were present. A routine delineation of Waters of the U.S. subject to Corps jurisdiction under Section 404 of the CWA; Waters of the State subject to RWQCB jurisdiction under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act; and streams subject to CDFW jurisdiction under Section 1602 of the CFGC was conducted concurrently by WRA on November 15, 2017. The results of this delineation are incorporated into this report and are also provided in more detail in a separate report (WRA 2017).

Other Sensitive Biological Communities

The Study Area was evaluated for the presence of other sensitive biological communities, including riparian areas, or sensitive plant communities recognized by CDFW. Prior to the site visit, aerial photographs, local soil maps, the *List of Vegetation Alliances* (CDFG 2010), and *A Manual of California Vegetation, Online Edition* (CNPS 2017a) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area. 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 Altamont 7.5-minute USGS quadrangle and five surrounding quadrangles

(USGS 2015a-f). 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 (CNDDDB) (CDFW 2017a)
- USFWS Information for Conservation and Planning Database (USFWS 2017b)
- CNPS Inventory records (CNPS 2017b)
- Consortium of California Herbaria (CCH 2017)
- CDFG publication “California Bird Species of Special Concern” (Shuford and Gardali 2008)
- CDFW California Wildlife Habitat Relationships database species accounts and range maps (CDFW 2017b)
- CDFW and University of California Press publication *California Amphibian and Reptile Species of Special Concern* (Thomson et al. 2016)
- Draft update of the Terrestrial Mammal Species of Special Concern in California (Bolster 1998)
- Western Bat Working Group Online Species Accounts (WBWG 2017)
- eBird Online Bird Occurrence Database (eBird 2017)

3.2.2 Site Assessment

A site visit was made to 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 listed 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:

- 1) No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirement (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- 2) 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.
- 3) 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.
- 4) 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.
- 5) Present. Species is observed on the site or has been recorded (i.e. CNDDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity in order 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 A.

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

Special-status species, if observed during the site visit, were recorded and are discussed below in Section 4.4.1 and in Appendix B. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. Special-status species for which further protocol-level surveys may be necessary are described in 5.0.

4.0 RESULTS

The Study Area consists of approximately 35 acres of undeveloped property immediately north of Highway 580 and west of Springtown Boulevard, near the terminus of Lassen Road in Livermore. The vast majority of the Study Area is comprised of upland, non-native annual grassland. Most of the site is grazed by livestock, with the exception of a small fenced area immediately south of Lassen Road, which had been disced prior to the site visit. Approximately 287 linear feet of perennial stream, Arroyo Seco, is located in the southwest portion of the Study Area. The topography is characterized by open, generally south-facing hillslopes of gentle to moderate steepness. Elevations range from approximately 598 to 505 feet above sea level. The following sections present the results and discussion of the biological assessment within the Study Area.

4.1 Biological Communities

Table 1 summarizes the area of each biological community type observed in the Study Area. There are a total of two non-sensitive biological communities which include non-native annual grassland and ruderal. There are two sensitive biological communities, which include willow wetland and perennial stream. Descriptions for each biological community contained in the following sections and illustrated in Figure 2.

Table 2. Summary of Biological Communities in the Study Area

Community Type	Area (acres)
Non-Sensitive Biological Communities	
Non-Native Annual Grassland	33.49
Ruderal	1.22
Sensitive Biological Communities	
Willow Wetland	0.12
Perennial Stream	0.36
Total	35.19



Figure 2. Biological Communities within the Study Area

4.1.1 Non-Sensitive Biological Communities

Non-native annual grassland

Non-native annual grasslands are known throughout California on all aspects and topographic positions underlain by a variety of substrates. Within the Study Area, non-native annual grassland contains elements of several vegetation alliances described by CNPS (2017a), including: yellow star thistle fields (*Centaurea solstitialis* Herbaceous Semi-Natural Alliance), wild oats grassland (*Avena* [*barbata*, *fatua*] Herbaceous Semi-Natural Alliance), annual brome grasslands (*Bromus* [*diandrus*, *hordeaceus*] – *Brachypodium distachyon*), and perennial rye grass fields (*Festuca perennis* [*Lolium perenne*] Herbaceous Semi-Natural Alliance). Trees and shrubs were generally absent. Commonly observed herbaceous species include slim oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), Italian ryegrass, yellow star thistle, and big heron bill (*Erodium botrys*).

Ruderal

Ruderal areas are extensive throughout California, particularly in developed and disturbed areas; however, these communities are not described by CNPS (2017a). Within the Study Area, the ruderal biological community is located in the far eastern portion, adjacent to the south of Lassen Road, in a fenced in area that was disced sometime prior to the November 2017 site visit. Though vegetation was sparse as a result of the discing, based on fallen vegetation present and standing vegetation along the fringes of the fencing, the area is dominated by non-native annual species such as slim oat, soft chess, Italian ryegrass, and black mustard (*Brassica nigra*). In addition, a due diligence assessment of the Study Area was conducted by WRA on March 16, 2017, and this area was observed to be dominated by the species listed above.

4.1.2 Sensitive Biological Communities

Willow wetland

Within the Study Area, a single willow wetland is located in the southwestern portion of the Study Area within the Arroyo Seco channel. It is a small feature that contains elements of two vegetation alliances described by CNPS (2017a), including red willow thickets (*Salix laevigata* Woodland Alliance), and arroyo willow thickets (*Salix lasiolepis* Shrubland Alliance). The overstory is a mix of red willow and arroyo willow. The understory is relatively sparse, and commonly observed species include watercress (*Nasturtium officinale*), slender willow herb (*Epilobium ciliatum*), and Italian ryegrass. The willow wetland is potentially jurisdictional by the Corps, RWQCB, and CDFW.

Perennial stream

A single perennial stream, Arroyo Seco, is present within the Study Area, in the southwestern portion. Arroyo Seco is shown as a dashed blue-line stream on the USGS Altamont 7.5-minute quadrangle (USGS 2015a). The stream is deeply incised, has a small bend, and flows from southeast to northwest. Approximately 0.15 acre (287 linear feet) of the stream are below OHWM. OHWM indicators present include bed and bank, scouring, and sediment sorting. Below OHWM, vegetation is generally sparse and includes watercress, cattail (*Typha* sp.), tall nutsedge (*Cyperus eragrostis*), and Bermuda grass (*Cynodon dactylon*). Approximately 0.36 acres (287 linear feet) of the stream are below TOB. Vegetation between OHWM and TOB is more similar to non-native annual grassland, but scattered coyote brush (*Baccharis pilularis* ssp. *consanguinea*) individuals are present at low cover. Common herbaceous species include Italian ryegrass, Italian thistle

(*Carduus pycnocephalus* ssp. *pycnocephalus*), prickly lettuce (*Lactuca serriola*), and black mustard. The perennial stream is potentially jurisdictional by the Corps, RWQCB, and CDFW.

4.2 Special-Status Species

4.2.1 Special-Status Plant Species

Based on a review of the resources databases listed in Section 3.2.1, 50 special-status plant species have been documented in the vicinity of the Study Area (Appendix B). Special-status plant species documented in the CNDDDB within 5 miles of the Study Area are shown in Figure 3. One special-status plant species has a moderate potential to occur within the Study Area. During a preliminary site assessment conducted by WRA in March 16, 2017 (WRA 2017b), it was determined that the special-status species stinkbells (*Fritillaria agrestis*) and Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) had moderate potential to occur within the Study Area. However, upon further analysis, it was determined that these species, as well as the remaining 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 serpentine, are absent from the Study Area;
- Specific habitats, such as vernal pools, chenopod scrub, and chaparral, are absent from the Study Area;
- Very unique pH characteristics, such as those found in alkali scalds, are absent from the Study Area.

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

Bent-flowered fiddleneck (*Amsinckia lunaris*). Rank 1B.2. Moderate Potential. Bent-flowered fiddleneck is an annual forb in the forget-me-not family (Boraginaceae) that blooms from March to June. It typically occurs in open areas within cismontane woodland, valley and foothill grassland, and coastal bluff scrub habitat, often on serpentine substrate, at elevations ranging from 10 to 1,625 feet (CDFW 2017a, CNPS 2017b, Jepson Flora Project 2017). Known associated species include coast live oak, blue oak (*Quercus douglasii*), California juniper (*Juniperus californicus*), buck brush (*Ceanothus cuneatus*), poison oak, miniature lupine (*Lupinus bicolor*), foothill lotus (*Acmispon brachycarpus*), calf lotus (*A. wrangelianus*), fringe pod (*Thysanocarpus curvipes*), q-tips (*Micropus californicus*), cream cups (*Platystemon californicus*), slender tarweed (*Madia gracilis*), common yarrow (*Achillea millefolium*), goldenback fern (*Pentagramma triangularis*), one-sided bluegrass (*Poa secunda*), woolly sunflower (*Eriophyllum lanatum*), and slender wild oat (*Avena barbata*) (CDFW 2017a).

Bent-flowered fiddleneck is known from 38 USGS 7.5-minute quadrangles in Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo, Sonoma, and Yolo counties (CNPS 2017b). There are no CNDDDB (CDFW 2017a) records in the greater vicinity of the Study Area and three CCH (2017) records and three Calflora observations (Calflora 2017) from Alameda County. The nearest and most recent documented occurrence in the vicinity of the Study Area is from 1999 and located approximately 5 miles northeast to the northeast in

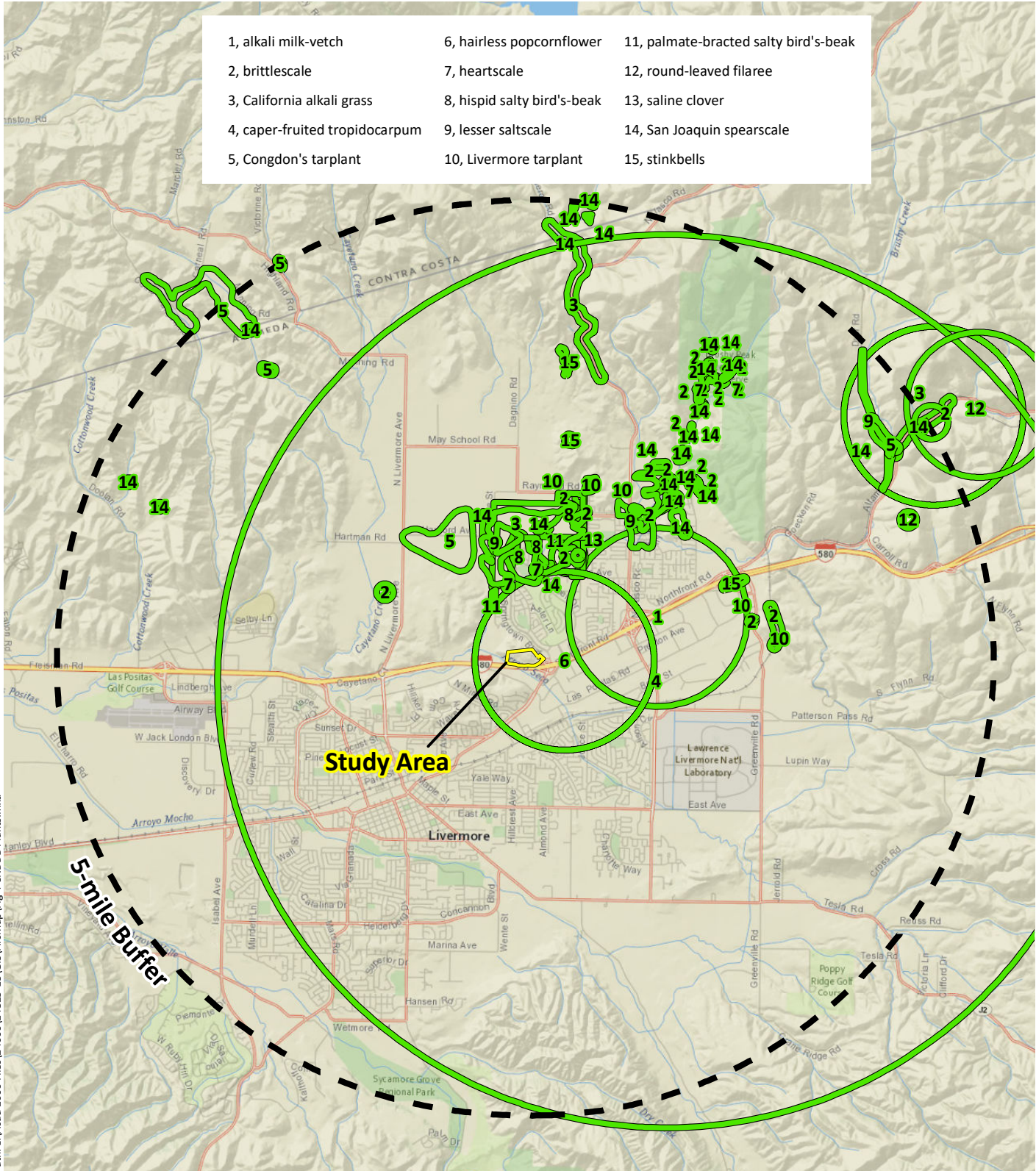
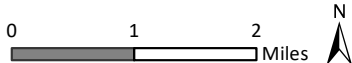


Figure 3. Special-Status Plant Species Documented in the CNDDDB within 5 Miles of the Study Area

1910 Main Street
Walnut Creek, California



the Altamont Pass vicinity. Bent-flowered fiddleneck has a moderate potential to occur in grassland habitat within the Study Area due to the presence of suitable substrate, known associated species, and the fact that this species can occur in disturbed areas (S. Batiuk personal observation 2017).

4.2.2 Special-Status Wildlife Species

Forty-seven special-status wildlife species have been recorded in the vicinity of the Study Area based on a review of CNDDDB (CDFW 2017a) and USFWS (USFWS 2017b) records and other resources. Appendix B summarizes the potential for each of these species to occur in the Study Area. Eighteen special-status wildlife species have been documented in the CNDDDB within 5 miles of the Study Area (Figure 4). No special-status wildlife species were observed in the Study Area during the site assessment, and eight special-status wildlife species have a moderate or high potential to occur in the Study Area: American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), white-tailed kite (*Elanus leucurus*), Allen's hummingbird (*Selasphorus sasin*), yellow warbler (*Setophaga petechia*), western pond turtle (WPT; *Actinemys marmorata*), California red-legged frog (CRLF; *Rana draytonii*), and California tiger salamander (CTS; *Ambystoma californiense*). These species are discussed below. All of the other wildlife observed in the Study Area (Appendix A) were commonly found species, including many adapted to occupation of disturbed areas.

American badger (*Taxidea taxus*). CDFW Species of Special Concern, EACCS Focal Species. The American badger is a large, semi-fossorial member of the Mustelidae (i.e. weasel family). It is found uncommonly within the region in drier open stages of most scrub, grassland forest, and herbaceous habitats where friable soils and prey populations are present. Badgers are typically solitary and nocturnal, digging burrows to provide refuge during daylight hours. Burrow entrances are usually elliptical (rather than round), and each burrow generally has only one entrance. Young are born in the spring and independent by the end of summer. Badgers are carnivores, preying on a variety of fossorial mammals (especially ground squirrels) and occasionally other vertebrates and their eggs. Home ranges for this species tend to be large, depending on the habitat available; population density averages one badger per square mile in prime open country (Long 1973). Although the nearest documented occurrence north of the Interstate 580 is 4.1 miles north of the Study Area, this species can range widely and there are significant undeveloped lands that connect to the Study Area to the north. The Study Area contains a prey base (ground squirrels) and several large burrows were observed during the site visit, although no sign of recent badger occupation was detected. Habitat quality within the Study Area is somewhat reduced by the freeway and other adjacent development; therefore, this species has a moderate potential to occur within the Study Area.

Burrowing owl (*Athene cunicularia*). CDFW Species of Special Concern; USFWS Bird of Conservation Concern, EACCS Focal Species. The burrowing owl occurs as a year-round resident and winter visitor in much of California's lowlands, inhabiting open areas with sparse or non-existent tree or shrub canopies. Typical habitat is annual or perennial grassland, although human-modified areas such as agricultural lands and airports are also used (Poulin et al. 1993). This species is dependent on burrowing mammals to provide the burrows that are characteristically used for shelter and nesting, and in northern California it is typically found in close association with California ground squirrels (*Spermophilus beecheyi*). Manmade substrates such as pipes or debris piles may also be occupied in place of burrows. Prey consists of insects

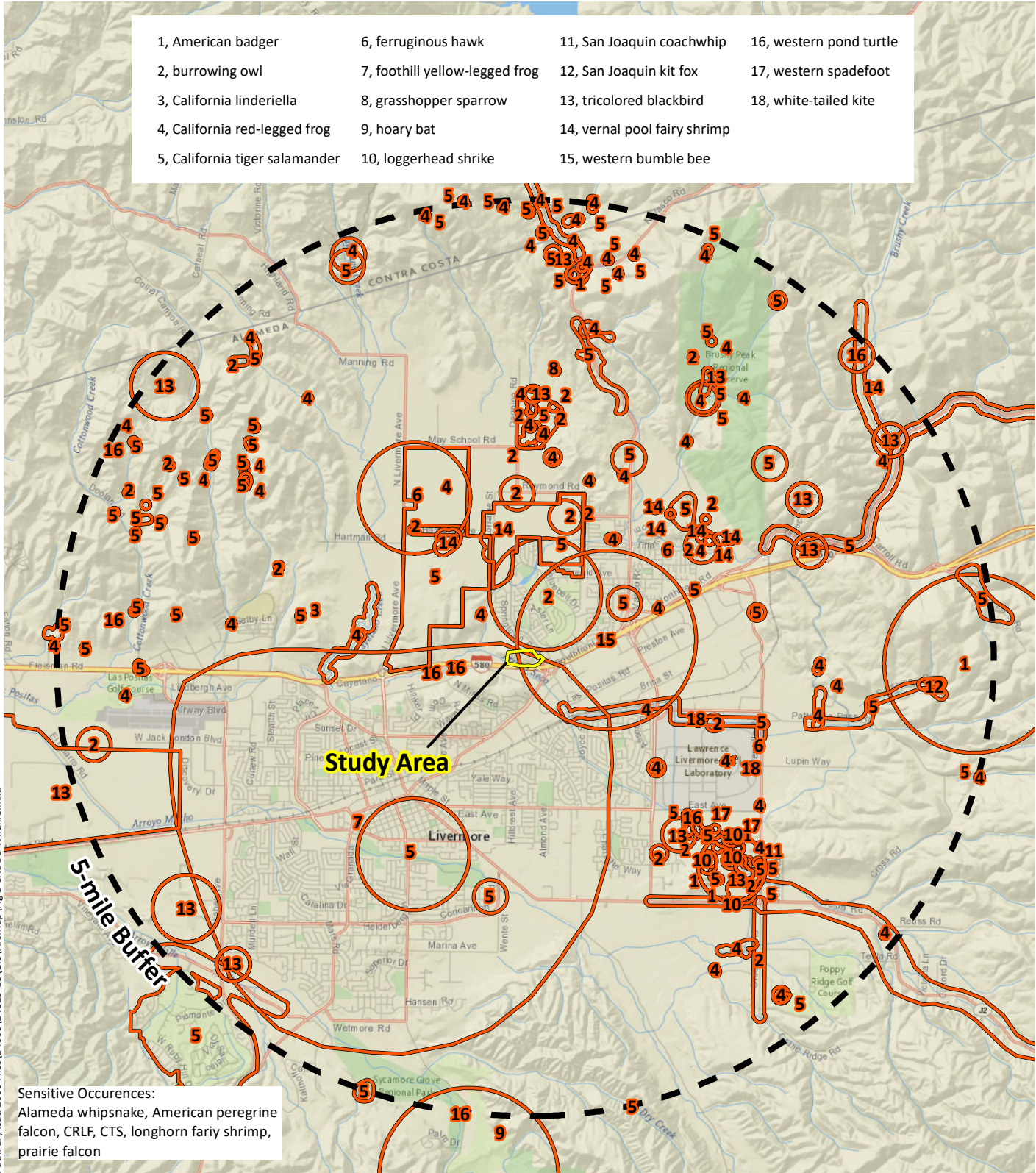


Figure 4. Special-Status Wildlife Species Documented in the CNDDDB within 5 Miles of the Study Area

and small vertebrates. Breeding typically takes place from March to July. The Study Area contains short grassland communities and ground squirrel burrows, which have the potential to support burrowing owl. The nearest documented occurrence is approximately 1.2 miles north of the Study Area (CDFW 2017a).

White-tailed kite (*Elanus leucurus*), CDFW Fully Protected Species. Moderate Potential. Kites occur in low elevation grassland, agricultural, wetland, oak woodland, and savannah habitats. Riparian zones adjacent to open areas are also used. Vegetative structure and prey availability seem to be more important than specific associations with plant species or vegetative communities. Lightly grazed or ungrazed fields generally support large prey populations and are often preferred to other habitats. Kites primarily feed on small mammals, although, birds, reptiles, amphibians, and insects are also taken. Nest trees range from single isolated trees to trees within large contiguous forests. Preferred nest trees are extremely variable, ranging from small shrubs (less than 10 feet tall) to large trees (greater than 150 feet tall) (Dunk 1995). There is a moderate potential for white-tailed kite to occur in the Study Area due to the presence of suitable nesting sites in the trees along Arroyo Seco and adjacent open grassland which provide open foraging habitat.

Allen's hummingbird (*Selasphorus sasin*). USFWS Bird of Conservation Concern. Moderate Potential. Allen's hummingbird, common in many portions of its range, is a summer resident along the majority of California's coast and a year-round resident in portions of coastal southern California and the Channel Islands. Breeding occurs in association with the coastal fog belt, and typical habitats used include coastal scrub, riparian, woodland and forest edges, and eucalyptus or cypress groves (Mitchell 2000). It feeds on nectar, as well as insects and spiders. Considering this species' association with riparian communities, this species has a moderate potential to nest within the trees along Arroyo Seco.

Yellow warbler (*Dendroica petechia brewsteri*). CDFW Species of Special Concern. Moderate Potential. Yellow warbler occurs most commonly in wet, deciduous thickets along stream courses, especially those dominated by willows. This species is found at lower elevations in California and at higher elevations along watercourses with riparian growth (Lowther et al. 1999). Yellow warbler populations have declined due to brood parasitism by brown-headed cowbirds (*Molothrus ater*) and habitat destruction. This species' diet is primarily comprised of insects, supplemented with berries. Considering this species' association with willows and other dense riparian vegetation, it has a moderate potential to nest within the trees along Arroyo Seco within the Study Area.

Western pond turtle (*Actinemys marmorata*). CDFW Species of Special Concern. Moderate Potential. The only native freshwater turtle in California, WPT 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. WPT 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 4 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. WPT has been documented in Arroyo Seco approximately 0.8 mile downstream of the Study Area, and may use the creek within the Study Area as a movement corridor. Breeding is unlikely within the Study Area due to the steep banks of the stream within its boundary and the relatively short

vegetation created by the grazing regime. Therefore, WPT has a moderate potential to occur within the Study Area, but is only likely to occur within the creek.

California red-legged frog (*Rana draytonii*), Federal Threatened Species, CDFW Species of Special Concern, EACCS Focal Species. CRLF is dependent on suitable aquatic, estivation, and upland habitat. During periods of wet weather, starting with the first rainfall in late fall, red-legged frogs disperse away from their dry-season refuge sites to seek suitable breeding habitat. Aquatic and breeding habitat is characterized by dense, shrubby, riparian vegetation and deep, still or slow-moving water. Breeding occurs between late November and late April. CRLF find refuge during the dry months in small mammal burrows, moist leaf litter, incised stream channels, and large cracks in the bottom of dried ponds. CRLF has been documented in a tributary to Arroyo Seco 0.5 mile northwest of the Study Area (CDFW 2017a). Although the Study Area does not contain wetlands significant vegetation and low-flowing water to support CRLF breeding, there are several stock ponds on properties within 2 miles of the Study Area that may be suitable. CRLF may use Arroyo Seco as a movement corridor, or may attempt to disperse through the Study Area overland following rain events. However, much of the Study Area is surrounded by development and CRLF would not be able to move through the Study Area into other suitable habitats overland. This species therefore has a moderate potential to occur in the Study Area.

California tiger salamander (*Ambystoma californiense*), Federal Threatened, State Threatened, EACCS Focal Species. CTS is restricted to grasslands and low-elevation foothill regions in California (generally under 1,500 feet) where it uses seasonal aquatic habitats for breeding. The salamanders breed in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry), and occupy substantial areas surrounding the breeding pool as adults. CTS spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by living underground in burrows (such as those created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands. CTS has been documented 1.2 miles northwest of the Study Area (CDFW 2017a). Although the Study Area does not contain seasonal wetlands to support CTS breeding, there are several stock ponds on properties within 1 mile of the Study Area that may be suitable. CTS may use Arroyo Seco as a dispersal corridor or may attempt to disperse through the Study Area overland following rain events. However, much of the Study Area is surrounded by development, and CTS would not be able to move through the Study Area into other suitable habitats overland. Ground squirrel burrows were present within the Study Area during the site visit, which may be used by CTS as refuge during the dry months. This species therefore has a moderate potential to occur in the Study Area.

4.3 City of Livermore Tree Preservation Ordinance

A small number of trees were observed within the Study Area, and nearly all occurred within or on the banks of Arroyo Seco. Of the trees observed, approximately five red willows located in the Arroyo Seco channel bottom appeared to be have a potentially large enough CBH to qualify as protected trees.

5.0 PRELIMINARY PROPOSED PROJECT DESCRIPTION

A January 2018 Land Use Plan (Land Plan) provided by Westgate Ventures illustrates a project design that places all development activities outside of potential Corps, RWQCB, and CDFW jurisdictional areas. Based on a Project Area boundary determined by the limit of design, no impacts are proposed within or immediately adjacent to Arroyo Seco (Figure 5). Project

development is focused within non-native grassland and ruderal communities, and incorporates residential development, landscaped areas, and trails. The northeastern portion of the Project Area, farthest from Arroyo Seco, will consist of residential development. Adjacent to the west and south of the residential development area will be open space uses, including trails, a community garden, and ornamental landscaping.

6.0 SUMMARY AND RECOMMENDATIONS

Two sensitive communities are present within the Study Area. One special-status plant species and eight special-status wildlife species have a moderate potential to occur within the Study Area. A small number of red willows located within the Arroyo Seco channel may qualify as protected trees. The following sections present recommendations for future studies and potential measures to avoid or reduce impacts to these sensitive resources.

6.1 Biological Communities

The Study Area was comprised primarily of non-sensitive non-native annual grassland and ruderal biological communities; however, two sensitive biological communities are present and include willow wetland and perennial stream. The 0.12 acre of willow wetland within the Study Area are potentially within the jurisdiction of the Corps under Section 404 of the Clean Water Act and RWQCB under the Porter Cologne Act and Section 401 of the Clean Water Act. The Study Area contains 0.36 acre of perennial stream which are protected under Section 1602 of the CFGC.

One perennial stream was present within the Study Area for a total acreage of 0.36 acre (287 linear feet). This perennial stream may be potentially jurisdictional under Section 404 of the Clean Water Act, Section 401 of the Porter-Cologne Act and Section 1602 of the CFGC.

6.2 Special-Status Plant Species

Of the 50 special-status plant species known from the vicinity of the Study Area, one species, bent-flowered fiddleneck, has moderate potential to occur within the Study Area. A protocol-level plant survey is recommended in the spring during the peak blooming period of this to determine its presence or absence within the Study Area. If bent-flowered fiddleneck and/or another special-status plant species is found, impact avoidance and minimization and/or mitigation measure are recommended.

6.3 Special-Status Wildlife Species

Of the 47 special-status wildlife species known from the vicinity of the Study Area, two were observed during the site assessment, and eight have a moderate potential to occur within the Study Area. American badger and burrowing owl would be associated with the grassland communities, and the remaining special-status species with potential to occur on the site would be in association with trees and along the Arroyo Seco. Considering that the trees within the Study Area occur along the stream, and that the stream would be the primary area used by special-status amphibian and reptile species and all but one of the special-status bird species, it is recommended that any future projects avoid impacts within or adjacent to Arroyo Seco and the associated trees. Suggested surveys, consultation, and mitigation measures for each species, or group of species are listed below.



Path: L:\Acad 2000 Files\240000\24323-13\GIS\ArcMap\Fig. 5 Preliminary Project Area.mxd

Sources: Esri Streaming - NAIP 2016, WRA | Prepared By: smortensen, 1/29/2018

Figure 5. Preliminary Project Area Based on the January 2018 Land Plan

American badger

American badger is listed as a species of special concern by the CDFW. Potential future activities within the Study Area may affect individuals with burrows within the Study Area. Because the species is not federal or state listed as threatened or endangered, formal consultation is not required. However, if the proposed Project impacts grassland habitat, the CDFW may require specific measures for the project to prevent take of the species.

General measures required for projects which may affect American badger include: pre-construction surveys, work windows, setbacks from active dens, and implementation of best management practices to avoid potential den sites. Surveys are recommended to identify potential den sites, and avoidance measures and any suitable setbacks would be contingent on the results of the survey.

Burrowing owl

Burrowing owl is listed as a species of special concern by the CDFW. Potential future activities within the Study Area may affect individuals with burrows within the Study Area. Because the species is not listed as threatened or endangered, formal consultation is not required. However, if the proposed Project impacts grassland habitat containing suitable burrows, the CDFW may require specific measures for the project to prevent take of the species.

General measures required for projects which may affect burrowing owl include: preconstruction surveys, biological monitoring, implementation of an environmental awareness training program, seasonal work windows, setbacks from active burrows, and passive relocation of individuals outside of the nesting season. Surveys are recommended to identify potential active burrows, and avoidance measures and any suitable setbacks would be contingent on the results of the survey.

Birds

Three additional special-status bird species have a moderate potential to occur in the Study Area and include: white-tailed kite, Allen's hummingbird, and yellow warbler.

None of the bird species listed above are state or federally listed as endangered, threatened or are candidates for listing. White-tailed kite is listed as a California fully protected species. This designation requires extra consideration for buffer zones around active nests but is otherwise protected and surveyed for in the same manner as other species listed above. 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.

For the protection of special-status birds, as well as native nesting birds protected by the MBTA and CFGC, proposed Project activities should occur to the extent feasible, outside of the nesting season from September 1 – January 31. If this is not possible, and project activities are initiated during the nesting season (February 1 through August 31), then WRA recommends that a nesting bird survey be conducted by a qualified wildlife biologist no more than 14 days prior to the start of project activities. If nests are identified, a no-disturbance buffer should be implemented to avoid impacts to nesting birds. Buffers typically range from 25 feet to 500 feet depending on the species and protection status of that species.

California-red legged frog and California tiger salamander

California red-legged frog (CRLF) and California tiger salamander (CTS) are listed under ESA, and CTS is also listed under CESA. Based on the proposed Project Plan, no development activities will occur within the Arroyo Seco; however, Project development will be occurring within nearby non-native grassland, which may function as upland dispersal habitat for these species after rain events and potential estivation habitat for CTS during the dry months. As such, formal or informal consultation with the USFWS may be recommended. The determination of formal versus informal consultation would depend upon factors such as: project type, final project location within the Study Area, methods used for construction, and construction procedures and timing of activities.

Avoidance measures often required for projects that have the potential to affect CRLF and CTS include: protocol level surveys, biological monitoring, installation of exclusion fencing, implementation of an environmental awareness training program, seasonal work windows, setbacks from aquatic features and/or the purchase of mitigation credits. These measures are included in the 2012 Programmatic Biological Opinion, and most, if not all, would be required through permitting efforts independent of this established Biological Opinion.

Western pond turtle

Western pond turtle (WPT) is listed as a species of special concern by CDFW. Potential future activities within the Study Area may affect individuals as they attempt to move through Arroyo Seco. Because the species is not listed as threatened or endangered, formal consultation is not required. Given that the proposed Project will not impact the stream, this species is unlikely to be impacted.

6.4 City of Livermore Protected Trees

Approximately five red willows located within the Arroyo Seco channel may qualify as protected trees. If these trees are planned for removal, a certified arborist survey of the Study Area is recommended to determine whether these trees qualify as protected. If so, the submittal of a Tree Action Permit to the City of Livermore may be required.

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APPENDIX A

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

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Appendix A-1. List of Plant Species Observed within the Study Area on November 15, 2017.

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Acacia melanoxylon</i>	Blackwood acacia	non-native (invasive)	tree	-	Limited	-
<i>Asclepias fascicularis</i>	Milkweed	native	perennial herb	-	-	FAC
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i>	Coyote brush	native	shrub	-	-	-
<i>Brassica nigra</i>	Black mustard	non-native (invasive)	annual herb	-	Moderate	-
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i>	Italian thistle	non-native (invasive)	annual herb	-	Moderate	-
<i>Centaurea melitensis</i>	Tocalote	non-native (invasive)	annual herb	-	Moderate	-
<i>Centaurea solstitialis</i>	Yellow starthistle	non-native (invasive)	annual herb	-	High	-
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Convolvulus arvensis</i>	Field bindweed	non-native	perennial herb, vine	-	-	-
<i>Croton setiger</i>	Turkey-mullein	native	perennial herb	-	-	-

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Cynara cardunculus</i> <i>ssp. flavescens</i>	Cardoon	non-native	perennial herb	-	-	-
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Cyperus eragrostis</i>	Tall cyperus	native	perennial grasslike herb	-	-	FACW
<i>Elymus glaucus</i>	Blue wildrye	native	perennial grass	-	-	FACU
<i>Elymus triticoides</i>	Beardless wild rye	native	perennial grass	-	-	FAC
<i>Epilobium ciliatum</i>	Slender willow herb	native	perennial herb	-	-	FACW
<i>Erigeron canadensis</i>	Canada horseweed	native	annual herb	-	-	FACU
<i>Erodium botrys</i>	Big heron bill	non-native	annual herb	-	-	FACU
<i>Festuca perennis</i>	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
<i>Foeniculum vulgare</i>	Fennel	non-native (invasive)	perennial herb	-	High	-
<i>Galium aparine</i>	Cleavers	native	annual herb	-	-	FACU
<i>Geranium molle</i>	Crane's bill geranium	non-native	annual, perennial herb	-	-	-
<i>Grindelia camporum</i>	Gumweed	native	perennial herb	-	-	FACW
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
<i>Hordeum marinum</i> <i>ssp. gussoneanum</i>	Barley	non-native (invasive)	annual grass	-	Moderate	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU
<i>Juglans hindsii</i>	Northern California black walnut	native	tree	Rank 1B.1*	-	FAC
<i>Lactuca serriola</i>	Prickly lettuce	non-native	annual herb	-	-	FACU
<i>Lepidium latifolium</i>	Perennial pepperweed	non-native (invasive)	perennial herb	-	High	FAC
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native	perennial herb	-	-	FAC
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	-	Limited	OBL
<i>Malva</i> sp.	Mallow	non-native	annual	-	-	NL
<i>Malvella leprosa</i>	Alkali mallow	native	perennial herb	-	-	FACU
<i>Melilotus albus</i>	White sweetclover	non-native	annual, biennial herb	-	-	-
<i>Mentha</i> sp.	Mint	non-native	perennial herb	-	-	FACW
<i>Nasturtium officinale</i>	Watercress	native	perennial herb (aquatic)	-	-	OBL
<i>Nicotiana glauca</i>	Tree tobacco	non-native (invasive)	tree, shrub	-	Moderate	FAC
<i>Paspalum dilatatum</i>	Dallis grass	non-native	perennial grass	-	-	FAC
<i>Persicaria</i> sp.	Smartweed	unknown	annual herb	-	-	FACW/ OBL

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Phalaris aquatica</i>	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Plantago major</i>	Common plantain	non-native	perennial herb	-	-	FAC
<i>Polypogon monspeliensis</i>	Annual beard grass	non-native (invasive)	annual grass	-	Limited	FACW
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Cottonwood	native	tree	-	-	FAC
<i>Raphanus sativus</i>	Jointed charlock	non-native (invasive)	annual, biennial herb	-	Limited	-
<i>Rosa</i> sp.	Rose	native	shrub	-	-	FAC/ FACU
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Salix laevigata</i>	Polished willow	native	tree	-	-	FACW
<i>Salix lasiolepis</i>	Arroyo willow	native	tree, shrub	-	-	FACW
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-
<i>Sonchus oleraceus</i>	Sow thistle	non-native	annual herb	-	-	UPL
<i>Tragopogon porrifolius</i>	Salsify	non-native	perennial herb	-	-	-
<i>Trifolium hirtum</i>	Rose clover	non-native (invasive)	annual herb	-	Limited	-
<i>Typha</i> sp.	Cattail	unknown	perennial herb	-	-	OBL
<i>Xanthium strumarium</i>	Cocklebur	native	annual herb	-	-	FAC

▪ All species identified using the *Jepson eFlora* [Jepson Flora Project (eds.) 2017]; nomenclature follows *Jepson eFlora* [Jepson Flora Project (eds.) 2017]

*Special-status only within its native range. The Study Area is outside of the native range of this species.

¹Rarity Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2017)

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

²Invasive Status: California Invasive Plant Inventory (Cal-IPC 2017)

High: Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.

Moderate: Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically

Limited: Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically

Assessed: Assessed by Cal-IPC and determined to not be an existing current threat

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

OBL:	Almost always found in wetlands; >99% frequency
FACW:	Usually found in wetlands; 67-99% frequency
FAC:	Equally found in wetlands and uplands; 34-66% frequency
FACU:	Usually not found in wetlands; 1-33% frequency
UPL:	Almost never found in wetlands; >1% frequency
NL:	Not listed, assumed almost never found in wetlands; >1% frequency
NI:	No information; not factored during wetland delineation

Appendix A-2. Wildlife Species Observed in the Study Area.

Scientific Name	Common Name
<i>Ovis aries</i>	domestic sheep
<i>Bos taurus</i>	domestic cattle
<i>Sturnella neglecta</i>	western meadowlark
<i>Zonotrichia atricapilla</i>	golden-crowned sparrow
<i>Haemorhous purpureus</i>	purple finch
<i>Sayornis nigricans</i>	black phoebe
<i>Anas platyrhynchos</i>	mallard
<i>Buteo jamaicensis</i>	red tailed hawk

APPENDIX B

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

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Appendix B. Potential for Special-Status Plant and Wildlife Species to Occur in the Study Area. List compiled from the U.S. Fish and Wildlife Service Information for Conservation and Planning Database (USFWS 2017b), the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CDFW 2017a), and the California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2017b) for the Livermore, Diablo, Tassajara, Altamont, Mendenhall Springs, Byron Hot Springs, Dublin, Niles, and La Costa Valley USGS 7.5-minute quadrangles. Other resources consulted include the Alameda County Breeding Bird Atlas (Richmond et al. 2011), eBird occurrence data (eBird 2017), and other CDFW lists and publications (Thomson et al. 2016, Shuford and Gardali 2008).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Plants				
Santa Clara thorn-mint <i>Acanthomintha lanceolata</i>	Rank 4.2	Chaparral (often serpentine), cismontane woodland, coastal scrub. Elevation ranges from 260 to 3935 feet (80 to 1200 meters). Blooms Mar-Jun.	No Potential. The Study Area does not contain chaparral, cismontane woodland, or coastal scrub habitats.	No further actions are recommended for this species
large-flowered fiddleneck <i>Amsinckia grandiflora</i>	FE, SE, Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 885 to 1805 feet (270 to 550 meters). Blooms (Mar)Apr-May.	Unlikely. The Study Area does not contain cismontane woodland habitat. Although the Study Area contains grassland habitat, there is a high abundance of the invasive yellow-star-thistle, which could outcompete this species. In addition, this species typically occurs on very steep slopes (CDFW 2017a), which are not naturally present in the Study Area. The banks of Arroyo Seco are steep, but that is a result of historic anthropogenic channelization and subsequent downcutting.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
bent-flowered fiddleneck <i>Amsinckia lunaris</i>	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 5 to 1640 feet (3 to 500 meters). Blooms Mar-Jun.	Moderate Potential. Although the grassland habitat within the Study Area is weedy and experiences disturbance by cattle, this species is known to occur in disturbed conditions (CDFW 2017a, CCH 2017).	Appropriately timed surveys are recommended for this species.
California androsace <i>Androsace elongata ssp. acuta</i>	Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 490 to 4280 feet (150 to 1305 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain chaparral, cismontane woodland, coastal scrub, meadows and seeps, or pinyon and juniper woodland habitats. The grassland habitat is comprised of dense, non-native species, which are likely to outcompete this small species.	No further actions are recommended for this species
slender sliver moss <i>Anomobryum julaceum</i>	Rank 4.2	Damp rock and soil on outcrops, usually roadcuts, in broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 1000 to 3280 feet (100 to 330 meters).	Unlikely. This species typically occurs on perennially or seasonally wet sandstone at the base of outcrops or on roadcuts (K. Kellman pers. comm.), and such habitat is not present within the Study Area.	No further actions are recommended for this species
Mt. Diablo manzanita <i>Arctostaphylos auriculata</i>	Rank 1B.3	Chaparral (sandstone), cismontane woodland. Elevation ranges from 440 to 2135 feet (135 to 650 meters). Blooms Jan-Mar.	No Potential. The Study Area does not contain chaparral or cismontane woodland habitats.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Contra Costa manzanita <i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i>	Rank 1B.2	Chaparral (rocky). Elevation ranges from 1410 to 3610 feet (430 to 1100 meters). Blooms Jan-Mar(Apr).	No Potential. The Study Area does not contain chaparral habitat or rocky substrate.	No further actions are recommended for this species
alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation ranges from 0 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	No Potential. The Study Area does not contain playa or vernal pool habitats or alkaline substrate.	No further actions are recommended for this species
heartscale <i>Atriplex cordulata</i> var. <i>cordulata</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy). Elevation ranges from 0 to 1835 feet (0 to 560 meters). Blooms Apr-Oct.	No Potential. The Study Area does not contain chenopod scrub or meadows and seeps habitats or sandy, alkali flats and scalds.	No further actions are recommended for this species
crownscale <i>Atriplex coronata</i> var. <i>coronata</i>	Rank 4.2	Chenopod scrub, valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1935 feet (1 to 590 meters). Blooms Mar-Oct.	No Potential. The Study Area does not contain chenopod scrub or vernal pool habitats or alkaline clay soils in grassland habitats.	No further actions are recommended for this species
Lost Hills crownscale <i>Atriplex coronata</i> var. <i>vallicola</i>	Rank 1B.2	Chenopod scrub, valley and foothill grassland, vernal pools. Elevation ranges from 160 to 2085 feet (50 to 635 meters). Blooms Apr-Sep.	No Potential. The Study Area does not contain chenopod scrub, vernal pool, or alkaline grassland habitats. The Study Area also does not contain known associated species (CDFW 2017a)	No further actions are recommended for this species
brittlescale <i>Atriplex depressa</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1050 feet (1 to 320 meters). Blooms Apr-Oct.	No Potential. The Study Area does not contain chenopod scrub, playas, vernal pool, or alkaline grassland habitats.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
lesser saltscale <i>Atriplex minuscula</i>	Rank 1B.1	Chenopod scrub, playas, valley and foothill grassland. Elevation ranges from 45 to 655 feet (15 to 200 meters). Blooms May-Oct.	No Potential. The Study Area does not contain chenopod scrub, playa, or sandy, alkaline grassland.	No further actions are recommended for this species
big-scale balsamroot <i>Balsamorhiza macrolepis</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 295 to 5100 feet (90 to 1555 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain chaparral or cismontane woodland habitats. This species often occurs in or near rocky, serpentine or volcanic substrates, which are not present within the Study Area. In addition, grassland habitat is comprised of dense non-native species and is heavily utilized by cattle in some areas.	No further actions are recommended for this species
big tarplant <i>Blepharizonia plumosa</i>	Rank 1B.1	Valley and foothill grassland. Elevation ranges from 95 to 1655 feet (30 to 505 meters). Blooms Jul-Oct.	Unlikely. Although the Study Area contains grassland habitat, this species typically occurs on shrink-swell clay substrates (CDFW 2017a), which are not present within the Study Area. In addition, no possible big tarplant skeletons or remnants of tarplants were observed on November 15, 2017.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
round-leaved filaree <i>California macrophylla</i>	Rank 1B.2	Cismontane woodland, valley and foothill grassland. Elevation ranges from 45 to 3935 feet (15 to 1200 meters). Blooms Mar-May.	No Potential. The Study Area does not contain cismontane woodland habitat and does not contain clay substrate outside of the Arroyo Seco channel, which is not suitable for this species because of the extended inundation period and relatively strong water flow.	No further actions are recommended for this species
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	Rank 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation ranges from 95 to 2755 feet (30 to 840 meters). Blooms Apr-Jun.	Unlikely. The Study Area does not contain chaparral, cismontane woodland, or riparian woodland habitats. This species typically occurs on wooded and brushy slopes (CDFW 2017a), which are not present in the Study Area. In addition, the grassland habitat is densely weedy.	No further actions are recommended for this species
Lemmon's jewelflower <i>Caulanthus lemmonii</i>	Rank 1B.2	Pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 260 to 5185 feet (80 to 1580 meters). Blooms Feb-May.	Unlikely. This species is known in the region from dry, rocky shale banks and sandy clay slopes and flats, and such habitat is not present within the Study Area. The grassland habitat is comprised of dense non-native species and is heavily utilized by cattle in some areas.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Congdon's tarplant <i>Centromadia parryi ssp. congdonii</i>	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 755 feet (0 to 230 meters). Blooms May-Oct(Nov).	Unlikely. This species is known from alkaline and/or clay substrates. Suitable alkaline substrate is not present within the Study Area, and clay substrate is only present in Arroyo Seco channel bottom, which is not suitable for this species because of the extended inundation period and relatively strong water flow.	No further actions are recommended for this species
hispid bird's-beak <i>Chloropyron molle ssp. hispidum</i>	Rank 1B.1	Meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 0 to 510 feet (1 to 155 meters). Blooms Jun-Sep.	No Potential. The Study Area does not contain meadows and seeps, playas, or alkaline meadow, or alkaline sink habitats.	No further actions are recommended for this species
palmate-bracted bird's-beak <i>Chloropyron palmatum</i>	FE, SE, Rank 1B.1	Chenopod scrub, valley and foothill grassland. Elevation ranges from 15 to 510 feet (5 to 155 meters). Blooms May-Oct.	Unlikely. The Study Area does not contain chenopod scrub habitat. This species usually occurs on alkaline Pescadero silty clay, which is not present in the Study Area.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
small-flowered morning-glory <i>Convolvulus simulans</i>	Rank 4.2	Chaparral (openings), coastal scrub, valley and foothill grassland. Elevation ranges from 95 to 2430 feet (30 to 740 meters). Blooms Mar-Jul.	Unlikely. The Study Area does not contain chaparral or coastal scrub habitats. The Study Area contains grassland habitat, but this species is known from serpentine ridges and clay substrates (CDFW 2017a). Serpentine substrate is not present in the Study Area, and clay substrate is only present in Arroyo Seco channel bottom, which is not suitable for this species because of the extended inundation period and relatively strong water flow.	No further actions are recommended for this species
Livermore tarplant <i>Deinandra bacigalupii</i>	SE, Rank 1B.1	Meadows and seeps (alkaline). Elevation ranges from 490 to 605 feet (150 to 185 meters). Blooms Jun-Oct.	No Potential. The Study Area does not contain alkaline meadows and seeps habitat.	No further actions are recommended for this species
Hospital Canyon larkspur <i>Delphinium californicum</i> <i>ssp. interius</i>	Rank 1B.2	Chaparral (openings), cismontane woodland (mesic), coastal scrub. Elevation ranges from 635 to 3595 feet (195 to 1095 meters). Blooms Apr-Jun.	No Potential. The Study Area does not contain chaparral, cismontane woodland, or coastal scrub habitats.	No further actions are recommended for this species
recurved larkspur <i>Delphinium recurvatum</i>	Rank 1B.2	Chenopod scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 5 to 2590 feet (3 to 790 meters). Blooms Mar-Jun.	No Potential. The Study Area does not contain chenopod scrub, cismontane woodland, or alkaline grassland habitats.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
spiny-sepaled button-celery <i>Eryngium spinosepalum</i>	Rank 1B.2	Valley and foothill grassland, vernal pools. Elevation ranges from 260 to 3200 feet (80 to 975 meters). Blooms Apr-Jun.	No Potential. The Study Area does not contain vernal pool habitat.	No further actions are recommended for this species
diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	Rank 1B.1	Valley and foothill grassland (alkaline, clay). Elevation ranges from 0 to 3200 feet (0 to 975 meters). Blooms Mar-Apr.	No Potential. The Study Area does not contain alkaline clay slopes and flats.	No further actions are recommended for this species
San Joaquin spearscale <i>Extriplex joaquinana</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 0 to 2740 feet (1 to 835 meters). Blooms Apr-Oct.	No Potential. The Study Area does not contain chenopod scrub, meadows and seeps, playa, or alkaline grassland habitats.	No further actions are recommended for this species
stinkbells <i>Fritillaria agrestis</i>	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 30 to 5100 feet (10 to 1555 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain chaparral, cismontane woodland, pinyon and juniper woodland habitats or serpentine substrate. Clay soils are only present in the Arroyo Seco channel, which is not suitable for this species because of the extended inundation period and relatively strong water flow.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Diablo helianthella <i>Helianthella castanea</i>	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elevation ranges from 195 to 4265 feet (60 to 1300 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, or riparian woodland habitats. The species usually occurs in rocky, azonal soils, often in partial shade, in chaparral/oak woodland interface (CDFW 2017a), and such conditions are not present in the Study Area.	No further actions are recommended for this species
hogwallow starfish <i>Hesperovax caulescens</i>	Rank 4.2	Valley and foothill grassland (mesic, clay), vernal pools (shallow). Elevation ranges from 0 to 1655 feet (0 to 505 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain vernal pool habitat or grassland habitat on clay substrate.	No further actions are recommended for this species
Brewer's western flax <i>Hesperolinon breweri</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 95 to 3100 feet (30 to 945 meters). Blooms May-Jul.	Unlikely. The Study Area does not contain chaparral or cismontane woodland habitats. This species often occurs in rocky, serpentine soil (CDFW 2017a), which is not present within the Study Area.	No further actions are recommended for this species
woolly rose-mallow <i>Hibiscus lasiocarpus</i> <i>var. occidentalis</i>	Rank 1B.2	Marshes and swamps (freshwater). Elevation ranges from 0 to 395 feet (0 to 120 meters). Blooms Jun-Sep.	No Potential. The Study Area does not contain marsh or swamp habitat.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE, Rank 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation ranges from 0 to 1540 feet (0 to 470 meters). Blooms Mar-Jun.	No Potential. The species occurs in vernal pools, swales and low depressions (CDFW 2017a), which are not present in the Study Area.	No further actions are recommended for this species
Ferris' goldfields <i>Lasthenia ferrisiae</i>	Rank 4.2	Vernal pools (alkaline, clay). Elevation ranges from 65 to 2295 feet (20 to 700 meters). Blooms Feb-May.	No Potential. The Study Area does not contain vernal pool habitat.	No further actions are recommended for this species
Mason's lilaepsis <i>Lilaeopsis masonii</i>	SR, Rank 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub. Elevation ranges from 0 to 35 feet (0 to 10 meters). Blooms Apr-Nov.	No Potential. The Study Area does not contain marsh and swamp or riparian scrub habitats.	No further actions are recommended for this species
Delta mudwort <i>Limosella australis</i>	Rank 2B.1	Marshes and swamps (freshwater or brackish), riparian scrub. Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms May-Aug.	No Potential. The Study Area does not contain marsh and swamp or riparian scrub habitats.	No further actions are recommended for this species
showy golden madia <i>Madia radiata</i>	Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 80 to 3985 feet (25 to 1215 meters). Blooms Mar-May.	Unlikely. The Study Area does not contain cismontane woodland habitat. This species mostly occurs on adobe clay (CDFW 2017a), which is only present within the Arroyo Seco channel, which is not suitable for this species because of the extended inundation period and relatively strong water flow.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
San Antonio Hills monardella <i>Monardella antonina ssp. antonina</i>	Rank 3	Chaparral, cismontane woodland. Elevation ranges from 1045 to 3280 feet (320 to 1000 meters). Blooms Jun-Aug.	No Potential. The Study Area does not contain chaparral or cismontane woodland habitats.	No further actions are recommended for this species
little mousetail <i>Myosurus minimus ssp. apus</i>	Rank 3.1	Valley and foothill grassland, vernal pools (alkaline). Elevation ranges from 65 to 2100 feet (20 to 640 meters). Blooms Mar-Jun.	Unlikely. The Study Area does not contain vernal pools or alkaline valley and foothill grassland habitats.	No further actions are recommended for this species
adobe navarretia <i>Navarretia nigelliformis ssp. nigelliformis</i>	Rank 4.2	Valley and foothill grassland vernal pools, vernal pools sometimes. Elevation ranges from 325 to 3280 feet (100 to 1000 meters). Blooms Apr-Jun.	No Potential. The Study Area does not contain vernal pool or vernal pools sometimes grassland habitat.	No further actions are recommended for this species
shining navarretia <i>Navarretia nigelliformis ssp. radians</i>	Rank 1B.2	Cismontane woodland, valley and foothill grassland, vernal pools. Elevation ranges from 210 to 3280 feet (65 to 1000 meters). Blooms (Mar)Apr-Jul.	Unlikely. The Study Area does not contain cismontane woodland or vernal pool habitats. This species is known from clay substrate, which is only present in the channel bottom of Arroyo Seco, which is not suitable for this species because of the extended inundation period and relatively strong water flow.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
prostrate vernal pool navarretia <i>Navarretia prostrata</i>	Rank 1B.1	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools. Elevation ranges from 5 to 3970 feet (3 to 1210 meters). Blooms Apr-Jul.	No Potential. The Study Area does not contain vernal pool or vernal mesic grassland habitat.	No further actions are recommended for this species
hairless popcornflower <i>Plagiobothrys glaber</i>	Rank 1A	Meadows and seeps (alkaline), marshes and swamps (coastal salt). Elevation ranges from 45 to 590 feet (15 to 180 meters). Blooms Mar-May.	No Potential. The Study Area does not contain meadows and seeps, marsh, or swamp habitats.	No further actions are recommended for this species
California alkali grass <i>Puccinellia simplex</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 3050 feet (2 to 930 meters). Blooms Mar-May.	No Potential. The Study Area does not contain chenopod scrub, meadows and seeps, vernal pool, or alkaline grassland habitat.	No further actions are recommended for this species
chaparral ragwort <i>Senecio aphanactis</i>	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub. Elevation ranges from 45 to 2625 feet (15 to 800 meters). Blooms Jan-Apr(May).	No Potential. The Study Area does not contain chaparral, cismontane woodland, or coastal scrub habitats.	No further actions are recommended for this species
long-styled sand-spurrey <i>Spergularia macrotheca</i> var. <i>longistyla</i>	Rank 1B.2	Meadows and seeps, marshes and swamps. Elevation ranges from 0 to 835 feet (0 to 255 meters). Blooms Feb-May.	No Potential. The Study Area does not contain meadows and seeps, marsh, or swamp habitats.	No further actions are recommended for this species

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
saline clover <i>Trifolium hydrophilum</i>	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	No Potential. The Study Area does not contain marsh, swamp, vernal pool, or mesic alkaline grassland habitats.	No further actions are recommended for this species
caper-fruited tropidocarpum <i>Tropidocarpum capparideum</i>	Rank 1B.1	Valley and foothill grassland (alkaline hills). Elevation ranges from 0 to 1495 feet (1 to 455 meters). Blooms Mar-Apr.	No Potential. The Study Area does not contain alkaline valley and foothill grassland on clay substrate.	No further actions are recommended for this species
oval-leaved viburnum <i>Viburnum ellipticum</i>	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 705 to 4595 feet (215 to 1400 meters). Blooms May-Jun.	No Potential. The Study Area does not contain chaparral, cismontane woodland, or lower montane coniferous forest habitats.	No further actions are recommended for this species
Mammals				

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
<p>San Joaquin kit fox <i>Vulpes macrotis mutica</i></p>	<p>FE, ST, EACCS</p>	<p>Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.</p>	<p>Unlikely. The nearest CNDDDB occurrence of this species is 4.3 miles east of the Study Area and was recorded in 1989 (CDFW 2017a). This species is generally considered to be absent west of the Altamont Hills in Alameda County (Sproul and Flett 1993). The Study Area contains some grassland communities, but it partially nestled within developed areas adjacent to residential development and the Interstate 580, even further reducing the likelihood this species would inhabit the area. .</p>	<p>No further actions are recommended for this species.</p>
<p>American badger <i>Taxidea taxus</i></p>	<p>SSC, EACCS</p>	<p>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.</p>	<p>Moderate Potential. The Study Area contains suitable grassland habitat with a prey base (ground squirrels) to support this species and the Study Area connects to larger areas of open, undeveloped land to the north. A couple of larger burrows were observed during the site assessment, however, no signs of recent badger occupancy were observed.</p>	<p>Preconstruction surveys, and other avoidance measures dependent on survey findings and the scope of future projects within the Study Area. See Section 5.3 for further details..</p>

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
ringtail (ring-tailed cat) <i>Bassariscus astutus</i>	CFP	Is widely distributed throughout most of California, but absent from some portions of the Central Valley and northeastern California. The species is nocturnal, primarily carnivorous and is associated with a mixture of dry forest and shrubland in close association with rocky areas and riparian habitat, using hollow trees and cavities for shelter. Usually not found more than 1 km (0.6 mi) from permanent water.	Unlikely. The Study Area does not contain shrub or woodland habitat to support this species, and the few trees on the site do not have large cavities to provide shelter. Moreover much of the Study Area lies adjacent to developed land that does not provide habitat or movement corridors for this species, limiting likely access.	No further actions are recommended for this species.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	SSC	Found in both chaparral and forest habitats with a moderate canopy and moderate to dense understory. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	No Potential. The Study Area is generally outside of this subspecies' known range within the San Francisco Bay Area, and does not contain woodland habitat to support this species.	No further actions are recommended for this species.
pallid bat <i>Antrozous pallidus</i>	SSC, WBWG	Occupies a variety of habitats at low elevation including grassland, shrubland, woodland, and forest. Most common in open, dry habitats and commonly roosts in fissures in cliffs, abandoned buildings, and under bridges.	Unlikely. This species may occasionally fly over or forage within the grassland communities with the Study Area, however there are no suitable cavities in trees or structures to provide suitable roosting habitat.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
hoary bat <i>Lasiurus cinereus</i>	WBWG	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Unlikely. This species may occasionally fly over or forage within the grassland communities with the Study Area, however given the few trees within the Study Area and their location adjacent to developed areas (Interstate 580), roosting is unlikely.	No further actions are recommended for this species.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SC, SSC, WBWG	Primarily found in rural settings in a wide variety of habitats including oak woodland and mixed coniferous-deciduous forest. Day roosts highly associated with caves and mines. Building roost sites must be cave like. Very sensitive to human disturbance.	Unlikely. Typical undisturbed cavernous roost or suitable building sites are not present in the Study Area; however, the species may occasionally forage over the Study Area.	No further actions are recommended for this species.
western mastiff bat <i>Eumops perotis californicus</i>	SSC, WBWG	Found in a wide variety of open, arid and semi-arid habitats. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	Unlikely. The Study Area does not contain rock structures typically associated with this species. This species may occasionally forage or pass through the Study Area during migration but it is unlikely to roost there.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
western red bat <i>Lasiurus blossevillii</i>	SSC, WBWG	This species is highly migratory and is typically solitary, roosting primarily in the foliage of trees or shrubs. It is associated with broad-leaved tree species 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. This species may occasionally fly over or forage within the grassland communities with the Study Area, however given the few trees within the Study Area and their location adjacent to developed areas (Interstate 580), roosting is unlikely.	No further actions are recommended for this species.
long-legged myotis <i>Myotis volans</i>	WBWG	Primarily found in coniferous forests, but also occurs seasonally in riparian and desert habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	Unlikely. The Study Area does not contain the coniferous forest this species typically inhabits. This species may occasionally forage within the open portions of the Study Area, but it is unlikely to roost there.	No further actions are recommended for this species.
long-eared myotis <i>Myotis evotis</i>	WBWG	Occurs in semiarid shrublands, sage, chaparral, and agricultural areas, but is usually associated with coniferous forests from sea level to 9000 feet. Individuals roost under exfoliating tree bark, and in hollow trees, caves, mines, cliff crevices, and rocky outcrops on the ground. They also sometimes roost in buildings and under bridges.	Unlikely. The Study Area does not contain the coniferous forest habitat typically associated with this species. This species may occasionally forage or pass through the Study Area during migration but it is unlikely to roost there.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
fringed myotis <i>Myotis thysanodes</i>	WBWG	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-grass steppes. Buildings, mines and large trees and snags are important day and night roosts.	Unlikely. The Study Area does not contain the woodland or scrub habitats typically associated with this species and does not contain cavities suitable for roosting. This species may occasionally forage or pass through the Study Area during migration but it is unlikely to roost there.	No further actions are recommended for this species.
Birds				
golden eagle <i>Aquila chrysaetos</i>	CFP, EPA, BCC, EACCS	Resident in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees in open areas.	Unlikely. The Study Area provides open foraging habitat, but does not contain undisturbed trees or cliffs to support nesting. This species may occasionally fly over or forage within the Study Area, but it is extremely unlikely to nest there.	No further actions are recommended for this species.
bald eagle <i>Haliaeetus leucocephalus</i>	SE, EPA, CFP, BCC	Occurs year-round in California, but primarily a winter visitor. 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. This species may occasionally fly over the Study Area, but it does not contain lakes or reservoirs to support foraging or nearby large, undisturbed trees to support nesting.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
ferruginous hawk <i>Buteo regalis</i>	BCC	Winter visitor. Frequents open habitats including grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Preys on rodents and other vertebrates.	Unlikely. The Study Area provides open foraging habitat for wintering birds; however this species does not breed in the region.	No further actions are recommended for this species.
Swainson's hawk <i>Buteo swainsonii</i>	ST, BCC	Summer resident in the region. Forages in grasslands and nests in the immediate vicinity, often in relatively isolated, trees or tree groves. Most of the California population breeds in the Central Valley. Forages on insects and rodents, also other vertebrates.	Unlikely. The Study Area is west of this species' typical breeding range in the Central Valley, and the nearest documented nesting occurrence is over 11 miles east of the Study Area in the Central Valley (CDFW 2017a). This species may occasionally pass through the Study Area during migration or forage within it, but it is extremely unlikely to nest there.	No further actions are recommended for this species.
northern harrier <i>Circus cyaneus</i>	SSC	Nests and forages in grassland habitats, usually in association with coastal salt and freshwater marshes. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas. May also occur in alkali desert sinks.	Unlikely. This species may occasionally forage within the Study Area, but there is no freshwater marsh communities with dense vegetation to support nesting.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
white-tailed kite <i>Elanus leucurus</i>	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	Moderate Potential. The Study Area provides open foraging habitat, and trees along Arroyo Seco may support nesting.	Preconstruction surveys, and other avoidance measures dependent on survey findings and the scope of future projects within the Study Area. See Section 5.3 for further details.
prairie falcon <i>Falco mexicanus</i>	BCC	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Unlikely. The Study Area and surrounding areas do not provide typical cliff nesting habitat. This species may forage within the vicinity of the Study Area, but has not been found to nest in the vicinity; only nesting in southern Alameda County (Richmond et al. 2011).	No further actions are recommended for this species.
American peregrine falcon <i>Falco peregrinus anatum</i>	CFP, BCC	Year-round resident and winter visitor. Occurs in a wide variety of habitats, though often associated with coasts, bays, marshes and other bodies of water. Nests on protected cliffs and also on man-made structures including buildings and bridges. Preys on birds, especially waterbirds. Forages widely.	Unlikely. The Study Area and surrounding areas do not provide tall structures near water to support nesting. This species may occasionally fly over or forage in the Study Area, but it is unlikely to nest.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
burrowing owl <i>Athene cunicularia</i>	BCC, SSC, EACCS	Inhabits, dry annual or perennial grassland, desert and scrubland characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably California ground squirrel.	Moderate Potential. This species is known to the vicinity with several documented occurrences nearby, the closest of which in the past 20 years is 1.5 miles to the northwest (CDFW 2017a). The Study Area contains short vegetation due to grazing, and potentially suitable ground squirrel burrows were observed within the Study Area during the site visit.	Preconstruction surveys, and other avoidance measures dependent on survey findings and the scope of future projects within the Study Area. See Section 5.3 for further details.
short-eared owl <i>Asio flammeus</i>	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	No Potential. This species is rare in Alameda County and the Study Area does not contain marshes or dense herbaceous vegetation to support foraging or nesting (Richmond et al 2011).	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
long-eared owl <i>Asio otus</i>	SSC	Occurs year-round in California. Nests in trees in a variety of woodland habitats, including oak and riparian, as well as tree groves. Requires adjacent open land with rodents for foraging, and the presence of old nests of larger birds (hawks, crows, magpies) for breeding.	Unlikely. Although this species was more common historically in the region, there are few current records of it in the region and the majority of recent nesting records are from southeast Alameda County in the Diablo hills (eBird 2017, Richmond et al. 2011). Potentially suitable riparian habitat within the Study Area is adjacent to development and is only a narrow band along Arroyo Seco, rendering it of low quality for this species.	No further actions are recommended for this species.
Allen's hummingbird <i>Selasphorus sasin</i>	BCC	Summer resident along the California coast, breeding in a variety of woodland and forest habitats, including parks and gardens with abundant nectar sources. Nest in shrubs and trees with dense vegetation.	Moderate Potential. Trees and vegetation along Arroyo Seco within the Study Area are suitable for nesting, and also provide foraging habitat.	Preconstruction surveys, and other avoidance measures dependent on survey findings and the scope of future projects within the Study Area. See Section 5.3 for further details.
Lewis's woodpecker <i>Melanerpes lewis</i>	BCC	Uncommon resident in California occurring on open oak savannahs, broken deciduous and coniferous habitats. Breeds primarily in ponderosa pine forests, riparian woodlands and disturbed pine forests but is also known to nest in orchards and oak woodlands. Rare nester in the San Francisco Bay Area.	Unlikely. This species is uncommon in the region and is primarily a winter visitor. It is not known to nest near Livermore (Richmond et al 2011).	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Nuttall's woodpecker <i>Picoides nuttallii</i>	BCC	Resident in lowland woodlands throughout much of California west of the Sierra Nevada. Typical habitat is dominated by oaks.	Unlikely. The few trees within the Study Area along Arroyo Seco do not contain cavities to support nesting. This species may occasionally forage within the Study Area but is unlikely to nest there.	No further actions are recommended for this species.
loggerhead shrike <i>Lanius ludovicianus</i>	BCC, SSC	Found in broken woodlands, savannah, pinyon-juniper, Joshua tree and riparian woodlands, and desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Moderate Potential. The nearest CNDDDB record for this species is located 4.9 miles northeast of the Study Area (CDFW 2016A). Open grassland foraging habitat is available within the Study Area and the Study Area contains trees and dense vegetation that may support nesting.	Recommendations for this species are provided in Section 5.3.
tricolored blackbird <i>Agelaius tricolor</i>	SC, BCC, SSC, EACCS	Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Nesting area must be large enough to support about 50 pairs.	Unlikely. This species is uncommon in the region, and does not frequently nest in Alameda County (eBird 2015; Richmond et al 2011, CDFW 2017a). Additionally emergent vegetation within the Study Area is sparse and not able to support at least 50 pairs. This species may pass through or occasionally forage within the Study Area, but it is extremely unlikely to nest there.	Recommendations for this species are provided in Section 5.3.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	SSC	Summer resident. Breeds colonially in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds. Requires abundant large insects such as dragonflies; nesting is timed for maximum emergence of insect prey.	Unlikely. This species is very uncommon in the region, and is only known to have nested once in Alameda County in recent times (eBird 2017; Richmond et al 2011). Additionally, emergent vegetation within the Study Area is sparse and is extremely unlikely to support nesting.	No further actions are recommended for this species.
song sparrow –“Modesto Population” <i>Melospiza melodia</i>	SSC, BCC	Restricted to the Sacramento and extreme northern San Joaquin Valleys from Colusa County south to Stanislaus County. Associated with woody riparian habitat and freshwater marshes.	No Potential. The Study Area is west of this subspecies’ range in the Central Valley (CDFW 2017a, Shuford and Gardali 2008).	No further actions are recommended for this species.
grasshopper sparrow <i>Ammodramus savannarum</i>	SSC	Summer resident in the region. Breeds in open grassland habitats, generally with low- to moderate-height grasses and scattered shrubs.	Unlikely. This species prefers large amounts of open space, and is rare near developed areas in the Livermore Valley, preferring the Diablo Hills (eBird 2017; Richmond et al. 2011). This species may occasionally pass through or forage within the Study Area, but it is unlikely to nest there.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
black-chinned sparrow <i>Spizella atrogularis</i>	BCC	Prefers sloping ground in mixed chaparral, chamise-redshank chaparral, sagebrush, and similar brushy habitats. Often on arid, south-facing slopes with ceanothus, manzanita, sagebrush, and chamise.	Unlikely. This species is uncommon in the region, and is only known to nest in southeastern Alameda County (eBird 2017; Richmond et al 2011). Furthermore, the Study Area does not contain scrub/chaparral habitats to support this species.	No further actions are recommended for this species.
yellow-breasted chat <i>Icteria virens</i>	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. This species is not known to occur or breed near Livermore (Richmond et al, 2011; eBird 2017).	No further actions are recommended for this species.
yellow warbler <i>Setophaga (Dendroica) petechia brewsteri</i>	BCC, SSC	Frequents riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores and alders for nesting and foraging. Also nests in montane shrubbery in open conifer forests.	Moderate Potential. The Study Area contains willows along Arroyo Seco dense enough to support nesting, although habitat quality is reduced due to the adjacent freeway.	Preconstruction surveys, and other avoidance measures dependent on survey findings and the scope of future projects within the Study Area. See Section 5.3 for further details.
yellow-billed magpie <i>Pica nuttalli</i>	BCC	Oak savannah with large trees and large expanses of open ground. The Central Valley floor, gentle slopes, and open park-like areas including along stream courses. Grasslands, pasture, or cultivated fields are needed for foraging.	Unlikely. The Study Area does not contain oak savannah or large trees to support nesting. This species may occasionally pass through or forage within the Study Area, but it is unlikely to nest there.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
oak titmouse <i>Baeolophus inornatus</i>	BCC	Oak woodland and savannah, open broad-leaved evergreen forests containing oaks, and riparian woodlands. Associated with oak and pine-oak woodland and arborescent chaparral.	Unlikely. The few trees within the Study Area along Arroyo Seco do not contain cavities to support nesting. This species may occasionally forage within the Study Area but is unlikely to nest there.	No further actions are recommended for this species.
Lawrence's goldfinch <i>Spinus (= Carduelis) lawrencei</i>	BCC	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding. Closely associated with oaks.	Unlikely. This species may fly through and occasionally forage in the Study Area. However, this species is not known to frequently nest in the Pleasanton area, the Study Area does not contain chaparral habitats to support this species, and large swaths of more suitable habitat are available in the nearby Diablo hills (Richmond et al 2011).	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Reptiles and Amphibians				
California red-legged frog <i>Rana draytonii</i>	FT, SSC, EACCS	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. Must have access to estivation habitat.	Moderate Potential. This species has been documented in a tributary to Arroyo Seco 0.5 mile northwest of the Study Area (CDFW 2017a). Although the Study Area does not contain wetlands significant vegetation and low-flowing water to support CRLF breeding, there are several stock ponds on properties within 2 miles of the Study Area that may be suitable. CRLF may use Arroyo Seco as a movement corridor, or may attempt to disperse through the Study Area overland following rain events. However, much of the Study Area is surrounded by development and CRLF would not be able to move through the Study Area into other suitable habitats overland.	Recommendations for this species are provided in Section 5.3.
foothill yellow-legged frog <i>Rana boylei</i>	SSC, EACCS	Found in or near rocky streams in a variety of habitats. Feeds on both aquatic and terrestrial invertebrates.	Unlikely. The Study Area does not contain rocky perennial streams to support this species, and the nearest documented extant occurrence is over 8 miles to the southeast in the Diablo Hills (CDFW 2017a).	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
western spadefoot <i>Spea (=Scaphiopus) hammondi</i>	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Shallow temporary pools formed by winter rains are essential for breeding and egg-laying.	Unlikely. The Study Area is north of the species' known range in eastern Alameda County, and is across interstate 580 (an impassable barrier) from the nearest occurrence 2.7 miles to the south (CDFW 2017a).	No further actions are recommended for this species.
California tiger salamander <i>Ambystoma californiense</i>	FE/FT, ST, EACCS	Populations in Santa Barbara and Sonoma Counties are currently listed as endangered, and the Central Valley populations are listed as threatened. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	Moderate Potential. This species has been documented 1.2 miles northwest of the Study Area (CDFW 2017a). Although the Study Area does not contain seasonal wetlands to support CTS breeding, there are several stock ponds on properties within 1 mile of the Study Area that may be suitable. CTS may use Arroyo Seco as a dispersal corridor or may attempt to disperse through the Study Area overland following rain events. However, much of the Study Area is surrounded by development, and CTS would not be able to move through the Study Area into other suitable habitats overland. Ground squirrel burrows were present within the Study Area during the site visit, which may be used by CTS as refuge during the dry months.	Recommendations for this species are provided in Section 5.3.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
western pond turtle <i>Actinemys marmorata</i>	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	Moderate Potential. This species has been documented in Arroyo Seco approximately 0.8 mile downstream of the Study Area, and may use the creek within the Study Area as a movement corridor. Breeding is unlikely within the Study Area due to the steep banks of the stream within its boundary and the relatively short vegetation created by the grazing regime.	Recommendations for this species are provided in Section 5.3.
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT, ST, EACCS	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses.	Unlikely. The Study Area does not contain permanent chaparral/hardwood mosaic habitat required by this species. Furthermore, the Study Area is bordered by development to the south and east, preventing dispersing snakes from using it as a movement corridor.	No further actions are recommended for this species.
San Joaquin whipsnake <i>Masticophis flagellum ruddocki</i>	SSC	Found in valley grassland and saltbush scrub in the San Joaquin Valley in open, dry habitats with little or no tree cover. Requires mammal burrows for refuge and breeding sites.	Unlikely. The Study Area is north of the species' known range in eastern Alameda County, and is across interstate 580 (an impassable barrier) from the nearest occurrence 2.7 miles to the south (CDFW 2017a).	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
California glossy snake <i>Arizona elegans occidentalis</i>	SSC	Ranges from Contra Costa to San Diego Counties along the western foothills of the Central Valley and from the coast to inland areas in Ventura to San Diego Counties. Found in a variety of habitat types including grasslands, fields, chaparral, and coastal sage scrub within its geographic range.	Unlikely. This species is only known to eastern Alameda County in the Altamont Hills (Thomson et al. 2016, CDFW 2017a).	No further actions are recommended for this species.
silvery legless lizard <i>Anniella pulchra pulchra</i>	SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Unlikely. This species is only known to eastern Alameda County in the Altamont Hills (Thomson et al. 2016, CDFW 2017a). Additionally, the Study Area does not contain sandy or loamy soils to support this species.	No further actions are recommended for this species.
Blainville's (coast) horned lizard <i>Phrynosoma blainvillii (coronatum)</i>	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. This species is only currently known to eastern Alameda County in the Altamont Hills (Thomson et al. 2016, CDFW 2017a). Additionally, the Study Area does not contain sandy or loamy soils to support this species.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
Fishes				
steelhead - central CA coast DPS <i>Oncorhynchus mykiss irideus</i>	FT, EACCS	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.	No Potential. The nearest CNDDDB record for this species in the same watershed as the Study Area is located over 10 miles southwest of the Study Area in Alameda Creek, dated 1999 (CDFW 2017a). While steelhead may have occurred within Arroyo Seco historically, complete fish passage barriers now prevent steelhead from migrating to this stream (Hanson et al. 2004).	No further actions are recommended for this species.
eulachon – Southern DPS <i>Thaleichthys pacificus</i>	FT, SSC	Found in Klamath River, Mad River, Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers with moderate water velocities and bottom of pea-sized gravel, sand and woody debris.	No Potential. The Study Area is outside this species' normal range along the north coast of California. Occurrences in the region are of vagrant individuals.	No further actions are recommended for this species.
Delta smelt <i>Hypomesus transpacificus</i>	FT, SE, RP	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	No Potential. The Study Area is outside of the species' known range and does not have estuarine or other suitable aquatic habitat.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
longfin smelt <i>Spirinchus thaleichthys</i>	FC, ST, SSC, RP	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	No Potential. The Study Area is outside of the species' known range and does not have estuarine or other suitable aquatic habitat.	No further actions are recommended for this species.
hardhead <i>Mylopharodon conocephalus</i>	SSC	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Clear, deep pools with sand-gravel-boulder bottoms and slow water velocity. Not found where exotic Centrarchids predominate.	No Potential. The Study Area is outside of the species' known range.	No further actions are recommended for this species.
Invertebrates				
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT, SSI	Occurs only in the Central Valley of California, in association with blue elderberry (<i>Sambucus nigra</i> ssp. <i>caerulea</i>). Prefers to lay eggs in elderberry 2 to 8 inches in diameter; some preference shown for "stressed" elderberry.	No Potential. This species is only known the Central Valley and has not been documented in Alameda County.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT, SSI, EACCS	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabits small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	No Potential. The Study Area does not contain seasonal wetlands or vernal pools to support this species.	No further actions are recommended for this species.
longhorn fairy shrimp <i>Branchinecta longiantenna</i>	FE, SSI, EACCS	Endemic to the eastern margin of the central coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	No Potential. The Study Area does not contain seasonal wetlands or vernal pools to support this species.	No further actions are recommended for this species.
California linderiella <i>Linderiella occidentalis</i>	SSI	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and TDS	No Potential. The Study Area does not contain seasonal wetlands or vernal pools to support this species.	No further actions are recommended for this species.
midvalley fairy shrimp <i>Branchinecta mesovallensis</i>	SSI	Vernal pools in the Central Valley in Sacramento, Solano, Merced, Madera, San Joaquin, Fresno, and Contra Costa counties.	No Potential. The Study Area does not contain seasonal wetlands or vernal pools to support this species.	No further actions are recommended for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE**	RECOMMENDATIONS
western bumble bee <i>Bombus occidentalis</i>	SSI	Formerly common throughout much of western North America; populations from southern British Columbia to central California have nearly disappeared. Occurs in a wide variety of habitat types. Nests are constructed annually in pre-existing cavities, usually on the ground (e.g. mammal burrows). Many plant species are visited and pollinated.	Unlikely. This species is widespread, and although it may occasionally be found within the Study Area, the Study Area does not contain significant amount of habitat resources to support a population. Development of the Study Area would not have a significant effect on this species.	No further actions are recommended for this species.

*** Key to status codes:**

EPA	Eagle Protection Act Species
FE	Federal Endangered
FT	Federal Threatened
BCC	USFWS Birds of Conservation Concern
SE	State Endangered
ST	State Threatened
SC	State Candidate
SSC	CDFW Species of Special Concern
SSI	CDFW Special-Status Invertebrate
CFP	CDFW Fully Protected Animal
WBWG	Western Bat Working Group (High or Medium) Priority species
EACCS	Final East Alameda County Conservation Strategy (2010) Proposed Focal Species

California Rare Plant Ranks:

Rank 1A	California Rare Plant Rank 1A: Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	California Rare Plant Rank 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2B	California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	California Rare Plant Rank 3: Plants about which CNPS needs more information (a review list)
Rank 4	California Rare Plant Rank 4: Plants of limited distribution (a watch list)

Threat Ranks for California Rare Plant Rank Plant Species

- 0.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3 Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

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APPENDIX C

REPRESENTATIVE STUDY AREA PHOTOGRAPHS

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Photograph 1. Image shows a representative example of the non-native annual grassland biological community in the northwestern portion of the Study Area. View facing northwest. Photograph taken November 15, 2017.



Photograph 2. Image shows the disced ruderal biological community (to the left of the fence) and the non-native annual grassland biological community (to the right of the fence) in the eastern portion of the Study Area. View facing southeast. Photograph taken November 15, 2017.



Photograph 3. Image shows the willow wetland feature, which is located within Arroyo Seco (a perennial stream) channel in the southwestern portion of the Study Area. View facing southeast. Photograph taken November 15, 2017.



Photograph 4. Image shows the western portion of the Arroyo Seco (a perennial stream) channel where it exits the Study Area at the southwestern boundary of the Study Area. View facing northwest. Photograph taken November 15, 2017.

C.2 - CNDDDB Altamont Query

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CALIFORNIA DEPARTMENT OF
FISH and WILDLIFE RareFind

Query Summary:
 Quad IS (Altamont (3712166))

CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Accipiter cooperii	Cooper's hawk	Birds	ABNKC12040	115	1	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	951	8	None	Candidate Endangered	G2G3	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Ambystoma californiense	California tiger salamander	Amphibians	AAAAA01180	1178	31	Threatened	Threatened	G2G3	S2S3	null	CDFW_WL-Watch List, IUCN_VU-Vulnerable	Cismontane woodland, Meadow & seep, Riparian woodland, Valley & foothill grassland, Vernal pool, Wetland
Ammodramus savannarum	grasshopper sparrow	Birds	ABPBXA0020	26	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Valley & foothill grassland
Antrozous pallidus	pallid bat	Mammals	AMACC10010	415	1	None	None	G5	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Astragalus tener var. tener	alkali milk-vetch	Dicots	PDFAB0F8R1	65	1	None	None	G2T2	S2	1B.2	null	Alkali playa, Valley & foothill grassland, Vernal pool, Wetland
Athene cunicularia	burrowing owl	Birds	ABNSB10010	1972	12	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland

												Conservation Concern	
<i>Atriplex cordulata</i> var. <i>cordulata</i>	heartscale	Dicots	PDCHE040B0	66	4	None	None	G3T2	S2	1B.2	BLM_S-Sensitive	Chenopod scrub, Meadow & seep, Valley & foothill grassland	
<i>Atriplex depressa</i>	brittlescale	Dicots	PDCHE042L0	60	5	None	None	G2	S2	1B.2	null	Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland	
<i>Atriplex minuscula</i>	lesser saltscale	Dicots	PDCHE042M0	52	8	None	None	G2	S2	1B.1	null	Alkali playa, Chenopod scrub, Valley & foothill grassland	
<i>Balsamorhiza macrolepis</i>	big-scale balsamroot	Dicots	PDAST11061	50	1	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland	
<i>Blepharizonia plumosa</i>	big tarplant	Dicots	PDAST1C011	53	1	None	None	G1G2	S1S2	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	
<i>Bombus occidentalis</i>	western bumble bee	Insects	IIHYM24250	282	1	None	None	G2G3	S1	null	USFS_S-Sensitive, XERCES_IM-Imperiled	null	
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	Crustaceans	ICBRA03030	766	3	Threatened	None	G3	S3	null	IUCN_VU-Vulnerable	Valley & foothill grassland, Vernal pool, Wetland	
<i>Buteo regalis</i>	ferruginous hawk	Birds	ABNKC19120	107	2	None	None	G4	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Great Basin scrub, Pinon & juniper woodlands, Valley & foothill grassland	
<i>Buteo swainsoni</i>	Swainson's hawk	Birds	ABNKC19070	2465	1	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland	
<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Congdon's tarplant	Dicots	PDAST4R0P1	93	1	None	None	G3T2	S2	1B.1	BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland	
<i>Chloropyron molle</i> ssp. <i>hispidum</i>	hispid salty bird's-beak	Dicots	PDSCR0J0D1	35	1	None	None	G2T1	S1	1B.1	BLM_S-Sensitive	Alkali playa, Meadow & seep, Wetland	
<i>Chloropyron palmatum</i>	palmate-bracted bird's-beak	Dicots	PDSCR0J0J0	25	1	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Chenopod scrub, Meadow & seep, Valley & foothill grassland, Wetland	
<i>Deinandra bacigalupii</i>	Livermore tarplant	Dicots	PDAST4R0V0	4	4	None	Endangered	G1	S1	1B.1	null	Meadow & seep	
<i>Delphinium californicum</i> ssp. <i>interius</i>	Hospital Canyon larkspur	Dicots	PDRAN0B0A2	28	1	None	None	G3T3	S3	1B.2	null	Chaparral, Cismontane woodland, Coastal scrub, Meadow & seep	
<i>Elanus leucurus</i>	white-tailed kite	Birds	ABNKC06010	177	2	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected,	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill	

											IUCN_LC- Least Concern	grassland, Wetland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1346	1	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Extriplex joaquinana	San Joaquin spearscale	Dicots	PDCHE041F3	124	7	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden	Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland
Fritillaria agrestis	stinkbells	Monocots	PMLIL0V010	32	3	None	None	G3	S3	4.2	null	Chaparral, Cismontane woodland, Pinon & juniper woodlands, Ultramafic, Valley & foothill grassland
Hygrotus curvipes	curved-foot hygrotus diving beetle	Insects	IICOL38030	21	2	None	None	G1	S1	null	null	Aquatic
Lanius ludovicianus	loggerhead shrike	Birds	ABPBR01030	109	2	None	None	G4	S4	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest, Desert wash, Joshua tree woodland, Mojavean desert scrub, Pinon & juniper woodlands, Riparian woodland, Sonoran desert scrub
Lasiurus cinereus	hoary bat	Mammals	AMACC05030	238	1	None	None	G5	S4	null	IUCN_LC-Least Concern, WBWG_M-Medium Priority	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
Masticophis flagellum ruddocki	San Joaquin coachwhip	Reptiles	ARADB21021	93	1	None	None	G5T2T3	S2?	null	CDFW_SSC-Species of Special Concern	Chenopod scrub, Valley & foothill grassland
Plagiobothrys glaber	hairless popcornflower	Dicots	PDBOR0V0B0	9	1	None	None	GH	SH	1A	null	Marsh & swamp, Salt marsh, Vernal pool, Wetland
Puccinellia simplex	California alkali grass	Monocots	PMPOA53110	71	3	None	None	G3	S2	1B.2	null	Chenopod scrub, Meadow & seep, Valley & foothill grassland, Vernal pool
Rana boylei	foothill yellow-legged frog	Amphibians	AAABH01050	2268	2	None	Candidate Threatened	G3	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive	Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow

												& seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Amphibians	AAABH01022	1501	28	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable	Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Spea hammondii	western spadefoot	Amphibians	AAABF02020	463	2	None	None	G3	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	Cismontane woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	Dicots	PDCAR0W062	22	3	None	None	G5T2	S2	1B.2	null	Marsh & swamp, Meadow & seep
Sycamore Alluvial Woodland	Sycamore Alluvial Woodland	Riparian	CTT62100CA	17	1	None	None	G1	S1.1	null	null	Riparian woodland
Taxidea taxus	American badger	Mammals	AMAJF04010	559	3	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, lone formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood,

												Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Trifolium hydrophilum	saline clover	Dicots	PDFAB400R5	49	1	None	None	G2	S2	1B.2	null	Marsh & swamp, Valley & foothill grassland, Vernal pool, Wetland
Tropidocarpum capparideum	caper-fruited tropidocarpum	Dicots	PDBRA2R010	18	1	None	None	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Valley & foothill grassland
Valley Sink Scrub	Valley Sink Scrub	Scrub	CTT36210CA	29	2	None	None	G1	S1.1	null	null	Chenopod scrub
Vulpes macrotis mutica	San Joaquin kit fox	Mammals	AMAJA03041	1017	1	Endangered	Threatened	G4T2	S2	null	null	Chenopod scrub, Valley & foothill grassland

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C.3 - CNPS Inventory Results

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Plant List


Inventory of Rare and Endangered Plants

1 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B], FESA = Endangered, CESA = Endangered, Found in Quad 3712166

[Modify Search Criteria](#)
[Export to Excel](#)
[Modify Columns](#)
[Modify Sort](#)
[Remove Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank	Photo
Chloropyron palmatum	palmete-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	1B.1	S1	G1	

2007 John Game

Suggested Citation

California Native Plant Society, Rare Plant Program. 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 04 October 2018].

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Questions and Comments

rareplants@cnps.org

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C.4 - Wetland Delineation

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SCHMIDIG/LAM Property Wetland Delineation Report

LIVERMORE, ALAMEDA COUNTY, CALIFORNIA

Prepared for:

LD – Fund III Livermore Land LLC
2551 San Ramon Valley Blvd, Ste 224
San Ramon, CA 94583

WRA Contact:

Leslie Lazarotti
lazarotti@wra-ca.com

Date:

December 2017

WRA Project No. 24323-13



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- Appendix D – List of All Plant Species Observed within the Study Area

LIST OF ACRONYMS

CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CFGF	California Fish and Game Code
CFR	Code of Federal Regulations
Corps	United States Army Corps of Engineers
CWA	Clean Water Act
EPA	Environmental Protection Agency
FAC	Facultative plant species
FACU	Facultative Upland plant species
FACW	Facultative Wetland plant species
NL/UPL	Not Listed/Upland plant species
NRCS	National Resources Conservation Service
OBL	Obligate plant species
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
TOB	Top of Bank
WRA	WRA, Inc.

1.0 INTRODUCTION

1.1 Study Background

This report presents the results of a delineation of waters of the U.S. under Section 404 of the Clean Water Act (CWA) and waters of the State under Section 401 of the CWA, section 1602 of the California Fish and Game Code (CFGC), and the Porter-Cologne Water Quality Control Act, within the SCHMIDIG/LAM property in northern Livermore, Alameda County, California (Study Area; Figure 1). The delineation was conducted on November 15, 2017.

1.2 Regulatory Background

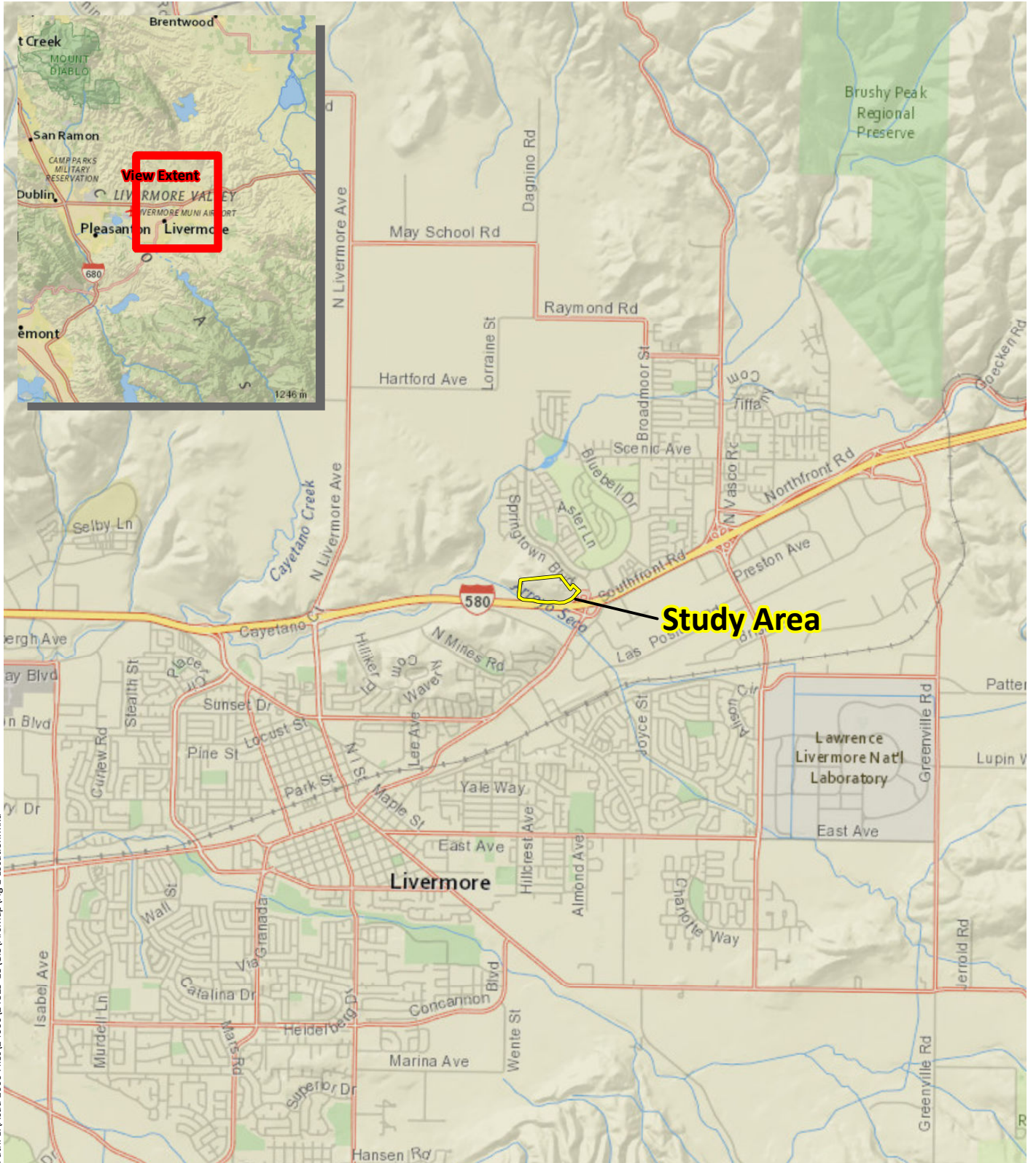
1.2.1 Clean Water Act Section 404

Section 404 of the Clean Water Act gives the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) regulatory and permitting authority regarding discharge of dredged or fill material into “navigable waters of the United States”. Section 502(7) of the Clean Water Act defines navigable waters as “waters of the United States, including territorial seas.” Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines the term “waters of the United States” as it applies to the jurisdictional limits of the authority of the Corps under the Clean Water Act. A summary of this definition of “waters of the U.S.” in 33 CFR 328.3 includes (1) waters used for commerce; (2) interstate waters and wetlands; (3) “other waters” such as intrastate lakes, rivers, streams, and wetlands; (4) impoundments of waters; (5) tributaries to the above waters; (6) territorial seas; and (7) wetlands adjacent to waters. Therefore, for purposes of the determining Corps jurisdiction under the Clean Water Act, “navigable waters” as defined in the Clean Water Act are the same as “waters of the U.S.” defined in the Code of Federal Regulations above.

The limits of Corps jurisdiction under Section 404 as given in 33 CFR Section 328.4 are as follows: (a) *Territorial seas*: 3 nautical miles in a seaward direction from the baseline; (b) *Tidal waters of the U.S.*: high tide line or to the limit of adjacent non-tidal waters; (c) *Non-tidal waters of the U.S.*: ordinary high water mark or to the limit of adjacent wetlands; (d) *Wetlands*: to the limit of the wetland. A discussion of the methodology used to delineate wetlands and waters is presented in Section 3.1.

1.2.2 CWA Section 401 and Porter-Cologne Water Quality Control Act

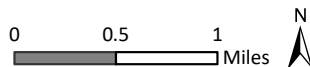
The Porter-Cologne Water Quality Control Act defines the term “waters of the State” as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Waters of the State are regulated by the Regional Water Quality Control Board (RWQCB) under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the CWA and under the Porter-Cologne Act. The RWQCB protects all waters of the State within its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and may not be systematically protected by other programs. Regional Water Quality Control Board jurisdiction includes “isolated” wetlands and non-wetland waters that may not be regulated by the Corps under Section 404 of the CWA. Projects that require a Corps permit, or that 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



Sources: National Geographic, WRA | Prepared By: czumwalt, 11/21/2017

Figure 1. Study Area Location Map

1910 Main Street
Walnut Creek, California



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.

1.2.3 California Fish and Game Code Section 1602

Streams and lakes, as habitat for aquatic species, are subject to jurisdiction by the California Department of Fish and Wildlife (CDFW) under Sections 1602 of CFGC. Alterations to or work within or adjacent to streambeds or lakes generally require a Section 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72).

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; “riparian” is defined as “on, or pertaining to, the banks of a stream” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW. All streams within the Study Area were considered to fall under the jurisdiction of CDFW.

2.0 SUMMARY OF POTENTIAL JURISDICTIONAL AREAS

The extent of Corps, RWQCB, and CDFW jurisdiction within the Study Area was based on a wetland delineation conducted by WRA, Inc. (WRA) on November 15, 2017. Appendix A depicts the extent of Corps, RWQCB, and CDFW jurisdiction within the Study Area. The acreage and length of potential jurisdictional areas are summarized below in Table 1.

Table 1. Summary of Potential Jurisdictional Features within the Study Area

Feature Type (FGDC 2013)	Extent of Potential Jurisdiction			Total
	Corps Jurisdiction (Section 404) (acres) [linear feet]	RWQCB Jurisdiction (Section 401/Porter- Cologne) (acres) [linear feet]	CDFW Jurisdiction (Section 1602) (acres) [linear feet]	
Wetland				
Willow Wetland (PFO1)	0.12	0.12	0.12	
Non-wetland Waters				
Perennial Stream (R2US1)	0.15 [287]	0.36 [287]	0.36 [287]	
TOTAL JURISDICTIONAL AREAS	0.27 [287]	0.48 [287]	0.48 [287]	

The Study Area contains approximately 0.12 acre meeting wetland criteria, and 0.36 acre (287 linear feet) meeting the criteria for non-wetland waters, for a total of approximately 0.48 acre (287 linear feet) of potential wetlands and non-wetland waters. Approximately 0.27 acres (287 linear feet) of wetlands and non-wetland waters delineated within the Study Area are considered to be potential jurisdictional features by the Corps under CWA Section 404. Approximately 0.36 acres

(287 linear feet) of wetlands and non-wetland waters delineated within the Study Area are considered to be potential jurisdictional features by the RWQCB under CWA Section 401 and the Porter-Cologne Water Quality Control Act and the CDFW under Section 1602 of the CFGC.

3.0 METHODS

Prior to conducting field surveys, available reference materials were reviewed, including soil survey data for the Study Area (CSRL 2017), the U.S. Geological Survey 7.5-minute quadrangle map for Altamont (USGS 2015), the U.S. Fish and Wildlife Service National Wetland Inventory (USFWS 2017), rainfall data (UCANR 2017), WETS precipitation data (USDA 2017), and available aerial photographs of the site (Google Earth 2017, NETR 2017). Following the background data search, WRA biologists performed a focused evaluation of indicators of wetlands and waters at the Study Area on November 15, 2017.

The methods used in this study to delineate jurisdictional wetlands and non-wetland waters are based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* ("Corps Manual"; Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* ("Arid West Supplement"; Corps 2008a), and *A Field Guide to Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States* ("OHWM Guide;" Corps 2008b). The routine method for wetland delineation described in the Corps Manual was used to identify areas potentially subject to Corps Section 404 jurisdiction within the Study Area.

A general description of the Study Area, including the on-site vegetation communities, topography, and land use was also generated during site visits. The methods for evaluating the presence of wetlands and non-wetland waters employed during the delineation are described in detail below.

3.1 Potential Section 404 Waters of the United States

3.1.1 Wetlands

The Study Area was evaluated for the presence or absence of indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and the Arid West Supplement (Corps 2008a).

Section 328.3 of the Federal Code of Regulations defines wetlands as:

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

EPA, 40 CFR 230.3 and CE, 33 CFR 328.3 (b)

The three parameters used to delineate wetlands are the presence of: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. According to the Corps Manual, for areas not considered "problem areas" or "atypical situations":

"...[E]vidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination."

Data on vegetation, hydrology, and soils collected at sample points during the delineation site visits were reported on Arid West Supplement data forms. Once an area was determined to be a potential jurisdictional wetland, its boundaries were delineated using Global Positioning System equipment and mapped on a topographic map. The areas of potential jurisdictional wetlands were measured digitally using ArcGIS software. Indicators described in the Arid West Supplement were used to make wetland determinations at each sample point in the Study Area and are summarized below.

Vegetation

Plant nomenclature follows the Jepson Flora Project (2017). Plant species identified on the Study Area were assigned a wetland status according to the National Wetland Plant List (Lichvar et al. 2016). This wetland classification system is based on the expected frequency of occurrence in wetlands as follows:

OBL:	Obligate species	Almost always a hydrophyte, rarely in uplands
FACW:	Facultative Wetland species	Usually a hydrophyte, but occasionally found in uplands
FAC:	Facultative species	Commonly either a hydrophyte or non-hydrophyte
FACU:	Facultative Upland species	Occasionally a hydrophyte, but usually found in uplands
NL/UPL:	Upland/Not Listed species	Rarely a hydrophyte, almost always in uplands

The presence of hydrophytic vegetation was then determined based on indicator tests described in the Arid West Supplement. The Arid West Supplement requires that a three-step process be conducted to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the "50/20 rule" (Indicator 1; Dominance Test) described in the manual. To apply the "50/20 rule", dominant species are chosen independently from each stratum of the community. Dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point. Dominants are the most abundant species that individually or collectively account for more than 50 percent of the total vegetative cover in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total vegetative cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails Indicator 1 and both hydric soils and wetland hydrology are not present, then the sample point does not meet the hydrophytic vegetation criterion, unless the site is a problematic wetland situation. However, if the sample point fails Indicator 1 but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is known as the Prevalence Index. The Prevalence Index is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5). Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that is present in more than one stratum.

The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where A equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion.

Soils

The Natural Resource Conservation Service (NRCS) defines a hydric soil as follows:

“A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.”

Federal Register July 13, 1994,
U.S. Department of Agriculture, NRCS

Soils formed over long periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (rotten egg) odor, low chroma matrix color, generally designated 0, 1, or 2, used to identify them as hydric, presence of redox concentrations, gleyed or depleted matrix, or high organic matter content.

Specific indicators that can be used to determine whether a soil is hydric for the purposes of wetland delineation are provided in the NRCS *Field Indicators of Hydric Soils in the U.S.* (USDA 2010). The Arid West Supplement provides a list of 23 of these hydric soil indicators which are known to occur in the Arid West region. Soil samples were collected and described according to the methodology provided in the Arid West Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil color chart (Munsell Color 2009).

Hydric soils were determined to be present if any of the soil samples met one or more of the 23 hydric soil indicators described in the Arid West Supplement.

Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (a minimum of 14 consecutive days in the Arid West region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, and salt crusts, or secondary indicators such as the FAC-neutral test, presence of a shallow aquitard, or crayfish burrows. The Arid West Supplement contains 16 primary hydrology indicators and 10 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion; however, if secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology.

The presence or absence of the primary or secondary indicators described in the Arid West Supplement was utilized to determine if sample points within the Study Area met the wetland hydrology criterion.

3.1.2 Non-wetland Waters

This study also evaluated the presence of “waters of the U.S.” other than wetlands potentially subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean Water Act. Other areas, besides wetlands, subject to Corps jurisdiction include lakes, rivers and streams (including intermittent streams) in addition to all areas below the high tide line in areas subject to tidal influence. Jurisdiction in non-tidal areas extends to the OHWM defined as:

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

Federal Register Vol. 51, No. 219,
Part 328.3 (e). November 13, 1986

Identification of the ordinary high water mark followed the OHWM Guide (Corps 2008b).

3.2 Potential Section 401 Waters of the State

Waters of the State are more broadly defined under the Porter-Cologne Act compared to the CWA and include “any surface water or groundwater, including saline waters, within the boundaries of the state.” Because there is no separate manual for delineating Waters of the State under the Porter-Cologne Act, potential Waters of the State were identified as those areas that met the criteria required for federal jurisdiction, plus grassy swales that lacked indicators of an OHWM as well as hydrophytic vegetation and hydric soils. In addition, whereas the limit of federal jurisdiction is the OHWM, state jurisdiction typically extends beyond the ordinary high water mark to the top-of-bank.

3.3 Potential Section 1602 Streams and Riparian Areas

As described in Section 1.2.2, Section 1602 of CDFW Code protects streams that support plants and animals. As a part of the Section 1602 process, it is necessary to define the exact areas that qualify for this protection from CDFW. Standard guidance on these issues is provided in *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code* (“handbook”; CDFG 1994).

The handbook states that:

“Biologic components of a stream may include aquatic and riparian vegetation, all aquatic animals including fish, amphibians, reptiles, invertebrates, and terrestrial species which derive benefits from the stream system.”

For streams that support aquatic wildlife and/or vegetation that derives a benefit from the stream system, the handbook provides the following information for defining the lateral extent of the stream system or riparian area for CDFW jurisdictional purposes:

“The outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats and is therefore a reasonable and identifiable boundary for the lateral extent of a stream. In most cases, the use of this criterion should result in protecting the fish and wildlife resources at risk.

...Most streams have a natural bank which confines flows to the bed or channel except during flooding. In some instances, particularly on smaller streams or dry washes with little or no riparian habitat, the bank should be used to mark lateral extent of a stream.”

Thus, field guidance for CDFW Section 1602 jurisdiction is typically understood to include all streams and to extend laterally to the top of bank (TOB). If riparian vegetation is present within the top-of-bank, then CDFW jurisdiction extends to the outer dripline of such vegetation. Additionally, seasonal or perennial wetlands, immediately adjacent to the top of bank of a stream are considered riparian wetlands and thus are included within CDFW jurisdiction.

4.0 SITE DESCRIPTION

4.1 Location

The Study Area consists of approximately 35 acres of undeveloped property immediately north of Highway 580 and west of Springtown Boulevard, near the terminus of Lassen Road, in Livermore. With the exception of a small, fenced area immediately south of Lassen Road, the entirety of the Study Area is grazed by livestock, primarily cattle. Approximately 287 linear feet of perennial stream, Arroyo Seco, is located in the southwest portion of the Study Area. The topography is characterized by open, generally south-facing hillslopes of gentle to moderate steepness. Elevations range from approximately 598 to 505 feet above sea level.

4.2 Vegetation

Vegetation within the Study Area was composed almost entirely of non-native annual grassland characterized by species typical of upland habitat. A small section of a perennial stream (Arroyo Seco) is present in the southwestern portion of the Study Area and is characterized by generally sparse vegetation with a small patch of willows (*Salix* spp.). The eastern, fenced portion of the Study Area had been disced prior to the site visit and was sparsely vegetated. Species assemblages throughout the site were typical of sites used for livestock grazing in central California.

Non-native annual upland grassland occurs throughout the Study Area on all aspects and slopes. It is dominated by a mix of non-native annual species such as slim oat (*Avena barbata*; NL), soft chess (*Bromus hordeaceus*; FACU), Italian ryegrass (*Festuca perennis*; FAC), and yellow star-thistle (*Centaurea solstitialis*; NL).

The ruderal biological community is comprised of the disced, eastern portion of the Study Area. Though vegetation was sparse as a result of the discing, based on fallen vegetation present and standing vegetation along the fringes of the fencing, the area is dominated by non-native annual species such as slim oat, soft chess, Italian ryegrass, and black mustard (*Brassica nigra*; NL).

A single wetland is present within the Arroyo Seco channel, and Arroyo Seco is the only non-wetland waters present within the Study Area. The Arroyo Seco channel was classified based on duration of flow, OHWM, and TOB. Wetland and non-wetland waters features are described further in Section 5.1. A list of all plant species observed within the Study Area during the field surveys is provided in Appendix D.

4.3 Soils

The online soil survey of the Study Area (CSRL 2017) indicates that the Study Area has three native soil mapping units, composed of three soil series (Figure 2). The soil series that make up these mapping units are described below.

Azule Series.

The Azule series consists of moderately deep, well drained soils on hills with slopes of 9 to 75 percent. They formed in material weathered from consolidated alluvium and from soft shale and fine grained sandstone and have medium to rapid runoff and slow permeability. In a typical profile, the surface layer is very dark grayish brown (2.5Y 3/2) slightly acid clay loam, 6 inches thick. This is underlain by very dark grayish brown to light yellowish brown (2.5Y 6/4) slightly acid clay to 25 inches. From 25 to 40 inches, the soil consist of light olive brown (2.5Y 5/4) consolidated sediment.

Clear Lake Series.

The Clear Lake series consists of clays that formed under poorly drained conditions. These soils are underlain by alluvium from basic and sedimentary rock. They are on plains and flat basin areas. In a typical profile, the surface layer is black (N 4/0) or very dark gray (10YR 3/1) clay, about 39 inches thick. This is underlain by a dark-gray moderately alkaline clay that has light gray mottles, black (10YR 2/1) when moist. At a depth of about 46 inches, it is gray and light brownish-gray, moderately alkaline clay. At a depth of about 60 inches, it is light gray to white, mildly alkaline sandy clay loam.

Linne Series.

The Linne series consists of moderately deep, well drained soils on hills with slopes of 5 to 75 percent. They formed in material weathered from fairly soft shale and sandstone and have medium to very rapid runoff and moderately slow permeability. In a typical profile, the surface layer is composed of black (10YR 2/1), moderately alkaline clay loam to 9 inches in depth. This is underlain by black to very dark gray (10YR 3/1), moderately alkaline clay loam to 29 inches. From 29 to 32 inches, the soil is composed of gray and light brownish gray (10YR 5/1 and 6/2), moderately alkaline sandy clay loam. From 32 to 36 inches, the soil is composed of very pale brown and white (10YR 7/2 and 8/2) moderately alkaline fine sandy loam. And from 36 to 51 inches, the soil is comprised of light gray and pale yellow (2.5Y 7/2 and 8/4) moderately alkaline mudstone.

4.4 Hydrology

Arroyo Seco is a perennial stream that originates in the Altamont Hills southeast of the Study Area. Within the Study Area, the primary hydrological source for Arroyo Seco is from its upstream watershed, though rainfall, surface runoff and subsurface input from the adjacent lands within the Study Area likely provide some input. Rainwater provides a water source for the entire site during the winter and spring months, but outside of the Arroyo Seco channel, the site dries out entirely after the spring months.



Figure 2. Study Area Soils Map

Predominantly, precipitation occurs as rainfall within the Study Area. The annual average rainfall for the Livermore climate station, approximately 1.25 miles southwest of the Study Area, is 14.64 inches (USDA 2017). WETS analysis for the Livermore climate station and closest suitable weather station (Pleasanton, CIMIS #191), which is located 7.75 miles west of the Study Area, was performed for the 3-month period preceding the site visit. A total of 1.37 inches of precipitation occurred, which is above normal for this period of time. In October, 0.61 inch of precipitation occurred (normal); 0.34 inch occurred in September (above normal), and 0.42 inch occurred in August (above normal) (UCANR 2017).

5.0 RESULTS

Areas within the Study Area that are potentially jurisdictional under Section 404 and 401 of the CWA, the Porter-Cologne Act, and Section 1602 of the CFGC are summarized in Table 1 and depicted in Appendix A. Standard Corps Arid West wetland delineation data forms are included in Appendix B. Photographs of representative portions of the Study Area and sample points are presented in Appendix C. A list of all plant species observed during the site visits is included in Appendix D.

5.1 Potential Section 404 Waters of the U.S.

5.1.1 Wetlands

The Study Area contains one wetland category, as illustrated in Appendix A. The entirety of the 0.12 acre of wetlands mapped and presented in this report is likely to be considered jurisdictional by the Corps as it is located within the channel of Arroyo Seco, which ultimately drains to the San Francisco Bay, a navigable waterway.

Willow Wetland (PFO1) (located within Arroyo Seco)

Within the Study Area, a single willow wetland is located in the southwestern portion of the Study Area within the Arroyo Seco channel. The overstory is a mix of red willow (*Salix laevigata*; FACW) and arroyo willow (*S. lasiolepis*; FACW). The understory is relatively sparse, and commonly observed species include watercress (*Nasturtium officinale*; OBL), slender willow herb (*Epilobium ciliatum*; FACW), and Italian ryegrass (*Festuca perennis*; FAC). The soil was dark grey to very dark greenish gray gravelly clay loam, and it met the Loamy Gleyed Matrix (F2) and Depleted Matrix (F3) hydric soil indicators. The Surface Water (A1), High Water Table (A2), and Saturation (A3) primary wetland hydrology indicators were met.

5.1.2 Non-wetland Waters

The Study Area contains one non-wetland waters category, as illustrated in Appendix A. The entirety of the 0.15 acre (287 linear feet) of non-wetland waters mapped and presented in this report is likely to be considered jurisdictional by the Corps, as it ultimately drains to the San Francisco Bay, a navigable waterway.

Perennial Stream (R2US1)

A single perennial stream, Arroyo Seco, is present within the southwestern portion of the Study Area. Arroyo Seco is shown as a dashed blue-line stream on the USGS Altamont 7.5-minute quadrangle (USGS 2015). The stream is deeply incised, has a small bend, and flows from southeast to northwest. Approximately 0.15 acre (287 linear feet) of the stream are below OHWM.

OHWL indicators present include bed and bank, scouring, and sediment sorting. Below OHWM, vegetation is generally sparse and includes watercress, cattail (*Typha* sp.; OBL), tall nutsedge (*Cyperus eragrostis*; FACW), and Bermuda grass (*Cynodon dactylon*; FACU). Approximately 0.36 acres (287 linear feet) of the stream are below TOB. Vegetation between OHWM and TOB is more similar to non-native annual grassland, but scattered coyote brush (*Baccharis pilularis* ssp. *consanguinea*; NL) individuals are present at low cover. Common herbaceous species include Italian ryegrass, Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*; NL), prickly lettuce (*Lactuca serriola*; FACU), and black mustard. The perennial stream would only be potentially jurisdictional by the Corps up to and below OHWM.

5.2 Potential Section 401 Jurisdictional Features

All of the delineated features within the Study Area, including the perennial stream up to and below TOB, would be considered jurisdictional by the RWQCB under the Section 401 of the CWA and the Porter-Cologne Act, for a total of 0.12 acre of wetlands and 0.36 acre and 287 linear feet of non-wetland waters (Appendix A).

5.3 Potential 1602 CDFW Jurisdictional Features

All of the delineated features within the Study Area, including the perennial stream up to TOB, would be considered jurisdictional by the CDFW under the Section 1602 of the CFGC, for a total of 0.12 acre of wetlands and 0.36 acre and 287 linear feet of stream (Appendix A).

6.0 SUMMARY OF POTENTIAL JURISDICTIONAL AREAS

The conclusions of this report are based on conditions observed at the time of the field delineation conducted November 15, 2017. Based on the findings of the wetland delineation, the Study Area contains approximately 0.12 acre of potentially jurisdictional wetlands and 0.15 acres (287 linear feet) of potentially jurisdictional non-wetland waters as Waters of the United States under Section 404 of the Clean Water Act. In addition, the Study Area contains approximately 0.12 acre of potentially jurisdictional wetlands and 0.36 acre (287 linear feet) of potentially jurisdictional non-wetland waters as Waters of the State by the RWQCB under the Section 401 of the CWA and the Porter-Cologne Act. The Study Area also contains approximately 0.12 acre of potentially jurisdictional wetlands and 0.36 acre (287 linear feet) of potentially jurisdictional stream by the CDFW under section 1602 of the CFGC.

Areas mapped as wetlands were dominated by hydrophytic vegetation, with FAC, FACW and OBL classified plants, and also met hydric soil and wetland hydrology indicators. Wetlands were distinguished from non-wetland waters by the presence of greater than 5 percent absolute cover of hydrophytic vegetation. The single wetland type delineated within the Study Area is willow wetland.

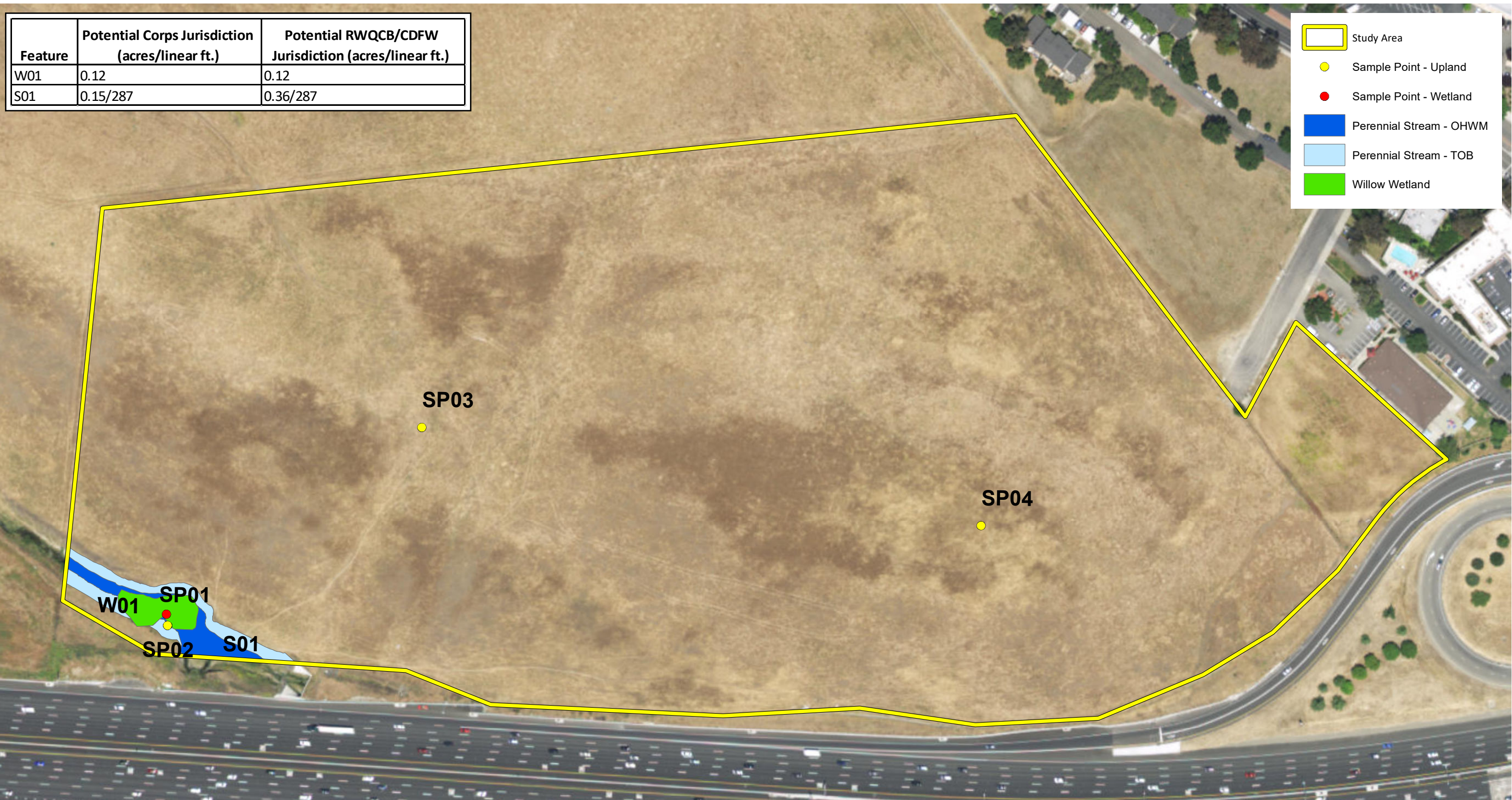
Non-wetland waters were determined based on the presence of an OHWM and TOB; the one type of non-wetland waters delineated within the Study Area is perennial stream.

7.0 REFERENCES

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APPENDIX A -- Preliminary Jurisdictional Determination Map



Feature	Potential Corps Jurisdiction (acres/linear ft.)	Potential RWQCB/CDFW Jurisdiction (acres/linear ft.)
W01	0.12	0.12
S01	0.15/287	0.36/287

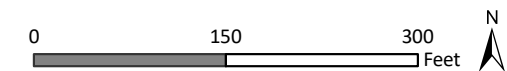
- Study Area
- Sample Point - Upland
- Sample Point - Wetland
- Perennial Stream - OHWM
- Perennial Stream - TOB
- Willow Wetland

Path: L:\Acad\2000 Files\24000\24323-13\GIS\ArcMap\Appendix A Jurisdictional Area.mxd

Sources: Esri Streaming - NAIP 2016, WRA | Prepared By: czumwalt, 11/30/2017

Appendix A. Potential Jurisdictional Areas

SCHMIDIG/LAM Property
Livermore, Alameda County, California



APPENDIX B -- Arid West Wetland Delineation Data Sheets

Wetland Determination Data Form - Arid West Region

Project/Site Schmidig & Lam Properties City Livermore County Alameda Sampling Date 11/15/2017
 Applicant/Owner LD-Fund III Livermore Land LLC State CA Sampling Point SP01
 Investigator(s) WRA, Inc. (Scott Batiuk, Russell Andrews) Section, Township, Range T3S, R2E
 Landform (hillslope, terrace, etc.) stream channel Local Relief (concave, convex, none) convex Slope(%) 5
 Subregion(LRR) LRR C (Medit. CA) Lat: 37.703079 Long: -121.748070 Datum: WGS 84
 Soil Map Unit Name Clear Lake clay, drained, 0 to 2 percent slopes, MLRA 14 NWI classification None

Are climatic/hydrologic conditions on-site typical for this time of year? Yes No (If no, explain in remarks)
 Are any of the following significantly disturbed? Vegetation Soil Hydrology Are "Normal Circumstances" present? Yes No
 Are any of the following naturally problematic? Vegetation Soil Hydrology (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soil Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the Sampled Area within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Remarks: Wetland sample point within a small patch of willows in the channel bottom within the Arroyo Seco channel in the southwestern portion of the Study Area. Outside the patch of willows, the channel was sparsely vegetated or unvegetated. The wetland boundary was based primarily on the presence of hydrophytic vegetation. Precipitation during the 3-month period prior to the site visit was above normal. The SP01 and SP02 are paired.	

VEGETATION (use scientific names)

TREE STRATUM	Plot Size: <u>entire feature</u>	Absolute % cover	Dominant Species?	Indicator Status	
1. <u>Salix laevigata</u>		40	yes	FACW	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC? <u>4</u> (A) Total number of dominant species across all strata? <u>4</u> (B) % of dominant species that are OBL, FACW, or FAC? <u>100</u> (A/B)
2. _____					
3. _____					
4. _____					
Tree Stratum Total Cover: _____					Prevalence Index Worksheet Total % cover of: _____ Multiply by: _____ OBL species _____ x1 _____ FACW species _____ x2 _____ FAC species _____ x3 _____ FACU species _____ x4 _____ UPL species _____ x5 _____ Column Totals _____ (A) _____ (B) Prevalence Index = B/A = _____
SAPLING/SHRUB STRATUM	Plot Size: <u>entire feature</u>				
1. <u>Salix lasiolepis</u>		15	yes	FACW	
2. _____					
3. _____					
4. _____					
Sapling/Shrub Stratum Total Cover: _____					
HERB STRATUM	Plot Size: <u>entire feature</u>				
1. <u>Nasturtium officinale</u>		10	yes	OBL	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is <= 3.0 ¹ <input type="checkbox"/> Morphological adaptations (provide supporting data in remarks) <input type="checkbox"/> Problematic hydrophytic vegetation ¹ (explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Festuca perennis</u>		10	yes	FAC	
3. <u>Epilobium ciliatum</u>		3	no	FACW	
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
Herb Stratum Total Cover: <u>25' radius</u>					
WOODY VINE STRATUM	Plot Size: <u>N/A</u>				
1. _____					Hydrophytic Vegetation Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. _____					
Woody Vines Total Cover: _____					
% Bare ground in herb stratum <u>75</u>		% cover of biotic crust <u>0</u>			

Remarks: The sample point meets the Dominance Test hydrophytic vegetation indicator.

SOIL

Sampling Point SP01

Profile description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ¹		
0-2	10YR 4/1	95	7.5YR 5/6	5	C	M	Gravelly clay	
2-8	GLE Y 1 3/10Y	100					Gravelly clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5)(LRR C) <input type="checkbox"/> 1cm Muck (A9)(LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<p>Indicators for Problematic Hydric Soils³:</p> <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<input type="checkbox"/> 1cm Muck (A9) (LRR C) <input type="checkbox"/> 2cm Muck (A10)(LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (explain in remarks)
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³Indicators of hydric vegetation and wetland hydrology must be present.

<p>Restrictive Layer (if present): Type: _____ Depth (inches): _____</p>	<p>Hydric Soil Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Remarks: The sample point meets the Loamy Gleyed Matrix and Depleted Matrix hydric soil indicators.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (any one indicator is sufficient)</p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)(Nonriverine) <input type="checkbox"/> Sediment Deposits (B2)(Nonriverine) <input type="checkbox"/> Drift Deposits (B3)(Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<p>Secondary Indicators (2 or more required)</p> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in PLoWed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1)(Riverine) <input type="checkbox"/> Sediment Deposits (B2)(Riverine) <input type="checkbox"/> Drift Deposits (B3)(Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
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<p>Field Observations:</p> Surface water present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depth (inches): <u>1-4</u> Water table present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depth (inches): <u>4</u> Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depth (inches): <u>0</u> (includes capillary fringe)	<p>Wetland Hydrology Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
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Describe recorded data (stream guage, monitoring well, aerial photos, etc.) if available.

Remarks: Flowing water up to 12 inches deep present outside outside of pit but within sampled feature.

The sample point meets the Surface Water, High Water Table, and Saturation wetland hydrology indicators.

Wetland Determination Data Form - Arid West Region

Project/Site Schmidig & Lam Properties City Livermore County Alameda Sampling Date 11/15/2017
 Applicant/Owner LD-Fund III Livermore Land LLC State CA Sampling Point SP02
 Investigator(s) WRA, Inc. (Scott Batiuk, Russell Andrews) Section, Township, Range T3S, R2E
 Landform (hillslope, terrace, etc.) stream channel bank Local Relief (concave, convex, none) convex Slope(%) 10
 Subregion(LRR) LRR C (Medit. CA) Lat: 37.703124 Long: -121.748071 Datum: WGS 84
 Soil Map Unit Name Clear Lake clay, drained, 0 to 2 percent slopes, MLRA 14 NWI classification None

Are climatic/hydrologic conditions on-site typical for this time of year? Yes No (If no, explain in remarks)
 Are any of the following significantly disturbed? Vegetation Soil Hydrology Are "Normal Circumstances" present? Yes No
 Are any of the following naturally problematic? Vegetation Soil Hydrology (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hydric Soil Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is the Sampled Area within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks: Upland sample point on the bank of Arroyo Seco adjacent to a small patch of willows in the southwestern portion of the Study Area. The sample point is located above the ordinary high water mark of the stream but below top of bank. The wetland boundary was based primarily on the presence of hydrophytic vegetation. Precipitation during the 3-month period prior to the site visit was above normal. SP01 and SP02 are paired.	

VEGETATION (use scientific names)

TREE STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC? <u>1</u> (A) Total number of dominant species across all strata? <u>3</u> (B) % of dominant species that are OBL, FACW, or FAC? <u>33</u> (A/B)
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
Tree Stratum Total Cover: _____					
SAPLING/SHRUB STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	Prevalence Index Worksheet Total % cover of: _____ Multiply by: _____ OBL species _____ x1 _____ FACW species _____ x2 _____ FAC species _____ x3 _____ FACU species _____ x4 _____ UPL species _____ x5 _____ Column Totals _____ (A) _____ (B) Prevalence Index = B/A = _____
1. _____	<u>N/A</u>	_____	_____	_____	
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
Sapling/Shrub Stratum Total Cover: _____					
HERB STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is <= 3.0 ¹ <input type="checkbox"/> Morphological adaptations (provide supporting data in remarks) <input type="checkbox"/> Problematic hydrophytic vegetation ¹ (explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Cynodon dactylon</u>	<u>5' radius</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Festuca perennis</u>		<u>3</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Carduus pycnocephalus ssp. pycnocephalus</u>		<u>3</u>	<u>yes</u>	<u>NL</u>	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
7. _____		_____	_____	_____	
8. _____		_____	_____	_____	
Herb Stratum Total Cover: <u>11</u>					
WOODY VINE STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1. _____	<u>N/A</u>	_____	_____	_____	
2. _____		_____	_____	_____	
Woody Vines Total Cover: _____					
% Bare ground in herb stratum <u>89</u>		% cover of biotic crust <u>0</u>			

Remarks: The vegetation was entirely seedlings.
 The sample point does not meet hydrophytic vegetation indicators.

SOIL

Sampling Point SP02

Profile description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ¹		
0-12	2.5Y 5/2	80	7.5YR 4/6	20	C	M	Clay loam	salt concentrations throughout

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5)(LRR C) <input type="checkbox"/> 1cm Muck (A9)(LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1cm Muck (A9) (LRR C) <input type="checkbox"/> 2cm Muck (A10)(LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (explain in remarks)
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³Indicators of hydric vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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Remarks: The sample point meets the Depleted Matrix hydric soil indicator. This soil horizon was above the ordinary high water mark, characterized by upland vegetation, and had no wetland hydrology indicators. As such, hydric soil indicators are likely relict, possibly the former channel bottom that no longer receives aquatic influence because of channel incision.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)(Nonriverine) <input type="checkbox"/> Sediment Deposits (B2)(Nonriverine) <input type="checkbox"/> Drift Deposits (B3)(Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in PLoWed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water Marks (B1)(Riverine) <input type="checkbox"/> Sediment Deposits (B2)(Riverine) <input type="checkbox"/> Drift Deposits (B3)(Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations: Surface water present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ Water table present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Describe recorded data (stream guage, monitoring well, aerial photos, etc.) if available.

Remarks: The sample point does not meet wetland hydrology indicators.

Wetland Determination Data Form - Arid West Region

Project/Site Schmidig & Lam Properties City Livermore County Alameda Sampling Date 11/15/2017
 Applicant/Owner LD-Fund III Livermore Land LLC State CA Sampling Point SP03
 Investigator(s) WRA, Inc. (Scott Batiuk, Russell Andrews) Section, Township, Range T3S, R2E
 Landform (hillslope, terrace, etc.) hillslope Local Relief (concave, convex, none) concave Slope(%) 2
 Subregion(LRR) LRR C (Medit. CA) Lat: 37.703972 Long: -121.746694 Datum: WGS 84
 Soil Map Unit Name Linne clay loam, 3 to 15 percent slopes NWI classification None

Are climatic/hydrologic conditions on-site typical for this time of year? Yes No (If no, explain in remarks)
 Are any of the following significantly disturbed? Vegetation Soil Hydrology Are "Normal Circumstances" present? Yes No
 Are any of the following naturally problematic? Vegetation Soil Hydrology (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hydric Soil Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is the Sampled Area within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks: Upland sample point within a slight bowl-shaped topographic area on the hillslope in non-native annual grassland. This location was sample because it seemed potentially wetter than the surrounding slopes due to its topography. Facultative vegetation dominated, but hydric soil and wetland hydrology indicators were not observed. Precipitation during the 3-month period prior to the site visit was above normal.	

VEGETATION (use scientific names)

TREE STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC? <u>2</u> (A) Total number of dominant species across all strata? <u>3</u> (B) % of dominant species that are OBL, FACW, or FAC? <u>67</u> (A/B)
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
Tree Stratum Total Cover: _____					
SAPLING/SHRUB STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Prevalence Index Worksheet Total % cover of: _____ Multiply by: _____ OBL species _____ x1 _____ FACW species _____ x2 _____ FAC species _____ x3 _____ FACU species _____ x4 _____ UPL species _____ x5 _____ Column Totals _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
Sapling/Shrub Stratum Total Cover: _____					
HERB STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. <u>Festuca perennis</u>	<u>5' radius</u>	<u>30</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is <= 3.0 ¹ <input type="checkbox"/> Morphological adaptations (provide supporting data in remarks) <input type="checkbox"/> Problematic hydrophytic vegetation ¹ (explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Hordeum marinum</u>		<u>30</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Bromus hordeaceus</u>		<u>15</u>	<u>yes</u>	<u>FACU</u>	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
7. _____		_____	_____	_____	
8. _____		_____	_____	_____	
Herb Stratum Total Cover: <u>75</u>					
WOODY VINE STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Hydrophytic Vegetation Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. _____		_____	_____	_____	
Woody Vines Total Cover: _____					
% Bare ground in herb stratum <u>5</u>		% cover of biotic crust <u>0</u>			

Remarks: Additional cover: litter, 20%
 The sample point meets the Dominance Test hydrophytic vegetation indicator.

SOIL

Sampling Point SP03

Profile description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ¹		
0-12	10YR 3/2	100						texture is gravelly clay loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5)(LRR C) <input type="checkbox"/> 1cm Muck (A9)(LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1cm Muck (A9) (LRR C) <input type="checkbox"/> 2cm Muck (A10)(LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (explain in remarks)
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³Indicators of hydric vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Remarks: The sample point does not meet hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)(Nonriverine) <input type="checkbox"/> Sediment Deposits (B2)(Nonriverine) <input type="checkbox"/> Drift Deposits (B3)(Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in PLoWed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1)(Riverine) <input type="checkbox"/> Sediment Deposits (B2)(Riverine) <input type="checkbox"/> Drift Deposits (B3)(Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface water present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ Water table present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Describe recorded data (stream guage, monitoring well, aerial photos, etc.) if available.

Remarks: The sample point does not meet wetland hydrology indicators.

Wetland Determination Data Form - Arid West Region

Project/Site Schmidig & Lam Properties City Livermore County Alameda Sampling Date 11/15/2017
 Applicant/Owner LD-Fund III Livermore Land LLC State CA Sampling Point SP04
 Investigator(s) WRA, Inc. (Scott Batiuk, Russell Andrews) Section, Township, Range T3S, R2E
 Landform (hillslope, terrace, etc.) hillslope Local Relief (concave, convex, none) convex Slope(%) 5
 Subregion(LRR) LRR C (Medit. CA) Lat: 37.703520 Long: -121.743042 Datum: WGS 84
 Soil Map Unit Name Linne clay loam, 3 to 15 percent slopes NWI classification None

Are climatic/hydrologic conditions on-site typical for this time of year? Yes No (If no, explain in remarks)
 Are any of the following significantly disturbed? Vegetation Soil Hydrology Are "Normal Circumstances" present? Yes No
 Are any of the following naturally problematic? Vegetation Soil Hydrology (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hydric Soil Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is the Sampled Area within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Remarks: Upland sample point in non-native annual grassland in the eastern portion of the Study Area. The sample point is representative of the portion of the Study Area. Precipitation during the 3-month period prior to the site visit was above normal.	

VEGETATION (use scientific names)

TREE STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC? <u>0</u> (A) Total number of dominant species across all strata? <u>1</u> (B) % of dominant species that are OBL, FACW, or FAC? <u>0</u> (A/B)
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
Tree Stratum Total Cover: _____					
SAPLING/SHRUB STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Prevalence Index Worksheet Total % cover of: _____ Multiply by: _____ OBL species _____ x1 _____ FACW species _____ x2 _____ FAC species _____ x3 _____ FACU species _____ x4 _____ UPL species _____ x5 _____ Column Totals _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
Sapling/Shrub Stratum Total Cover: _____					
HERB STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. <u>Avena barbata</u>	<u>5' radius</u>	<u>65</u>	<u>yes</u>	<u>NL</u>	Hydrophytic Vegetation Indicators <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is <= 3.0 ¹ <input type="checkbox"/> Morphological adaptations (provide supporting data in remarks) <input type="checkbox"/> Problematic hydrophytic vegetation ¹ (explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Festuca perennis</u>		<u>5</u>	<u>no</u>	<u>FAC</u>	
3. <u>Bromus hordeaceus</u>		<u>5</u>	<u>no</u>	<u>FACU</u>	
4. <u>Hordeum murinum</u>		<u>5</u>	<u>no</u>	<u>FACU</u>	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
7. _____		_____	_____	_____	
8. _____		_____	_____	_____	
Herb Stratum Total Cover: <u>80</u>					
WOODY VINE STRATUM	Plot Size:	Absolute % cover	Dominant Species?	Indicator Status	
1. _____	<u>N/A</u>	_____	_____	_____	Hydrophytic Vegetation Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. _____		_____	_____	_____	
Woody Vines Total Cover: _____					
% Bare ground in herb stratum <u>5</u>		% cover of biotic crust <u>0</u>			

Remarks: Additional cover: litter, 15%
 The sample point does not meet hydrophytic vegetation indicators.

SOIL

Sampling Point SP04

Profile description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ¹		
0-12	10YR 4/3	100	7.5YR 4/6	<1				texture is gravelly clay loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5)(LRR C) <input type="checkbox"/> 1cm Muck (A9)(LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 1cm Muck (A9) (LRR C) <input type="checkbox"/> 2cm Muck (A10)(LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (explain in remarks)
---	---	---

³Indicators of hydric vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	---

Remarks: The sample point does not meet hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)(Nonriverine) <input type="checkbox"/> Sediment Deposits (B2)(Nonriverine) <input type="checkbox"/> Drift Deposits (B3)(Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in PLoWed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water Marks (B1)(Riverine) <input type="checkbox"/> Sediment Deposits (B2)(Riverine) <input type="checkbox"/> Drift Deposits (B3)(Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations: Surface water present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ Water table present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	---

Describe recorded data (stream guage, monitoring well, aerial photos, etc.) if available.

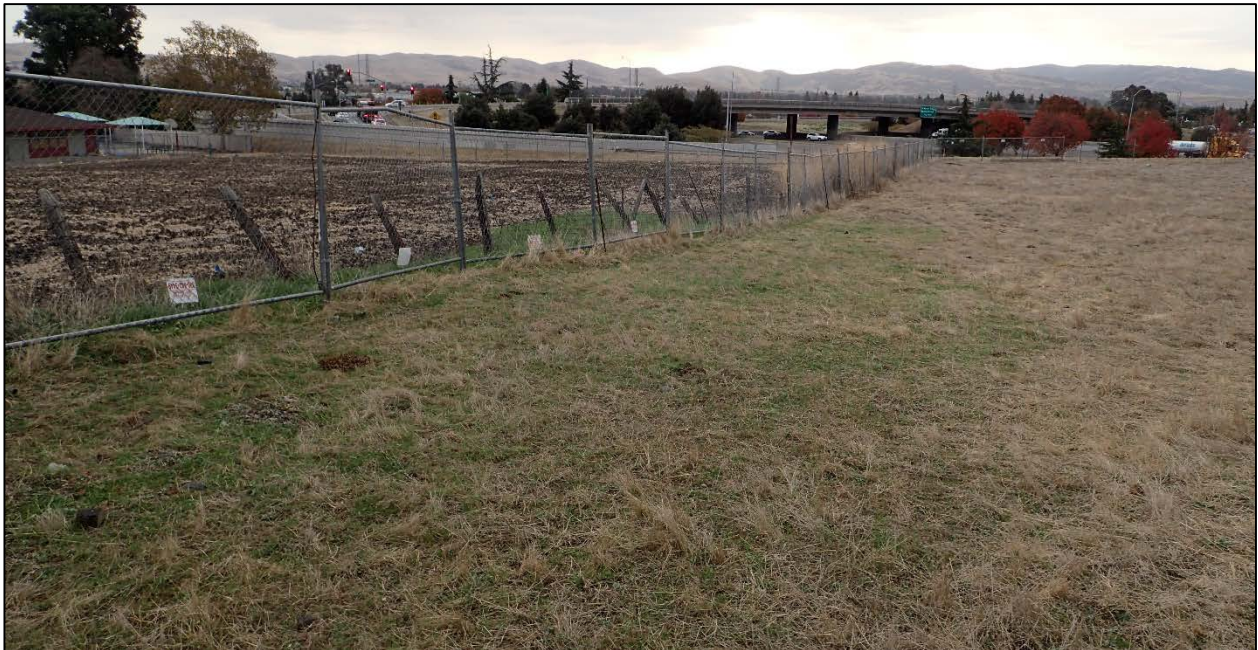
Remarks: The sample point does not meet wetland hydrology indicators.

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APPENDIX C -- Representative Photographs of the Study Area



Photograph 1. Image shows a representative example of the non-native annual grassland biological community in the northwestern portion of the Study Area. View facing northwest. Photograph taken November 15, 2017.



Photograph 2. Image shows the disced ruderal biological community (to the left of the fence) and the non-native annual grassland biological community (to the right of the fence) in the eastern portion of the Study Area. View facing southeast. Photograph taken November 15, 2017.



Photograph 3. Image shows the willow wetland feature, which is located within Arroyo Seco (a perennial stream) channel in the southwestern portion of the Study Area. View facing southeast. Photograph taken November 15, 2017.



Photograph 4. Image shows the western portion of the Arroyo Seco (a perennial stream) channel where it exits the Study Area at the southwestern boundary of the Study Area. View facing northwest. Photograph taken November 15, 2017.

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APPENDIX D -- List of All Plant Species Observed within the Study Area

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Appendix D. List of Plant Species Observed within the Study Area on November 15, 2017.

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Acacia melanoxylon</i>	Blackwood acacia	non-native (invasive)	tree	-	Limited	-
<i>Asclepias fascicularis</i>	Milkweed	native	perennial herb	-	-	FAC
<i>Avena barbata</i>	Slim oat	non-native (invasive)	annual, perennial grass	-	Moderate	-
<i>Baccharis pilularis ssp. consanguinea</i>	Coyote brush	native	shrub	-	-	-
<i>Brassica nigra</i>	Black mustard	non-native (invasive)	annual herb	-	Moderate	-
<i>Bromus diandrus</i>	Ripgut brome	non-native (invasive)	annual grass	-	Moderate	-
<i>Bromus hordeaceus</i>	Soft chess	non-native (invasive)	annual grass	-	Limited	FACU
<i>Carduus pycnocephalus ssp. pycnocephalus</i>	Italian thistle	non-native (invasive)	annual herb	-	Moderate	-

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Centaurea melitensis</i>	Tocalote	non-native (invasive)	annual herb	-	Moderate	-
<i>Centaurea solstitialis</i>	Yellow starthistle	non-native (invasive)	annual herb	-	High	-
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU
<i>Convolvulus arvensis</i>	Field bindweed	non-native	perennial herb, vine	-	-	-
<i>Croton setiger</i>	Turkey-mullein	native	perennial herb	-	-	-
<i>Cynara cardunculus ssp. flavescens</i>	Cardoon	non-native	perennial herb	-	-	-
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Cyperus eragrostis</i>	Tall cyperus	native	perennial grasslike herb	-	-	FACW
<i>Elymus glaucus</i>	Blue wildrye	native	perennial grass	-	-	FACU
<i>Elymus triticoides</i>	Beardless wild rye	native	perennial grass	-	-	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Epilobium ciliatum</i>	Slender willow herb	native	perennial herb	-	-	FACW
<i>Erigeron canadensis</i>	Canada horseweed	native	annual herb	-	-	FACU
<i>Erodium botrys</i>	Big heron bill	non-native	annual herb	-	-	FACU
<i>Festuca perennis</i>	Italian rye grass	non-native (invasive)	annual, perennial grass	-	Moderate	FAC
<i>Foeniculum vulgare</i>	Fennel	non-native (invasive)	perennial herb	-	High	-
<i>Galium aparine</i>	Cleavers	native	annual herb	-	-	FACU
<i>Geranium molle</i>	Crane's bill geranium	non-native	annual, perennial herb	-	-	-
<i>Grindelia camporum</i>	Gumweed	native	perennial herb	-	-	FACW
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Barley	non-native (invasive)	annual grass	-	Moderate	FAC

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU
<i>Juglans hindsii</i>	Northern California black walnut	native	tree	Rank 1B.1*	-	FAC
<i>Lactuca serriola</i>	Prickly lettuce	non-native	annual herb	-	-	FACU
<i>Lepidium latifolium</i>	Perennial pepperweed	non-native (invasive)	perennial herb	-	High	FAC
<i>Lotus corniculatus</i>	Bird's foot trefoil	non-native	perennial herb	-	-	FAC
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	non-native (invasive)	annual, perennial herb	-	Limited	OBL
<i>Malva</i> sp.	Mallow	non-native	annual	-	-	NL
<i>Malvella leprosa</i>	Alkali mallow	native	perennial herb	-	-	FACU
<i>Melilotus albus</i>	White sweetclover	non-native	annual, biennial herb	-	-	-
<i>Mentha</i> sp.	Mint	non-native	perennial herb	-	-	FACW

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Nasturtium officinale</i>	Watercress	native	perennial herb (aquatic)	-	-	OBL
<i>Nicotiana glauca</i>	Tree tobacco	non-native (invasive)	tree, shrub	-	Moderate	FAC
<i>Paspalum dilatatum</i>	Dallis grass	non-native	perennial grass	-	-	FAC
<i>Persicaria</i> sp.	Smartweed	unknown	annual herb	-	-	FACW/ OBL
<i>Phalaris aquatica</i>	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU
<i>Plantago major</i>	Common plantain	non-native	perennial herb	-	-	FAC
<i>Polypogon monspeliensis</i>	Annual beard grass	non-native (invasive)	annual grass	-	Limited	FACW
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Cottonwood	native	tree	-	-	FAC
<i>Raphanus sativus</i>	Jointed charlock	non-native (invasive)	annual, biennial herb	-	Limited	-
<i>Rosa</i> sp.	Rose	native	shrub	-	-	FAC/ FACU

Scientific Name	Common Name	Origin	Form	Rarity Status ¹	CAL-IPC Status ²	Wetland Status ³
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC
<i>Salix laevigata</i>	Polished willow	native	tree	-	-	FACW
<i>Salix lasiolepis</i>	Arroyo willow	native	tree, shrub	-	-	FACW
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-
<i>Sonchus oleraceus</i>	Sow thistle	non-native	annual herb	-	-	UPL
<i>Tragopogon porrifolius</i>	Salsify	non-native	perennial herb	-	-	-
<i>Trifolium hirtum</i>	Rose clover	non-native (invasive)	annual herb	-	Limited	-
<i>Typha</i> sp.	Cattail	unknown	perennial herb	-	-	OBL
<i>Xanthium strumarium</i>	Cocklebur	native	annual herb	-	-	FAC

▪ All species identified using the *Jepson eFlora* [Jepson Flora Project (eds.) 2017]; nomenclature follows *Jepson eFlora* [Jepson Flora Project (eds.) 2017]

*Special-status only within its native range. The Study Area is outside of the native range of this species.

¹Rarity Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2017)

FE: Federal Endangered
 FT: Federal Threatened
 SE: State Endangered
 ST: State Threatened
 SR: State Rare
 Rank 1A: Plants presumed extinct in California
 Rank 1B: Plants rare, threatened, or endangered in California and elsewhere

Rank 2: Plants rare, threatened, or endangered in California, but more common elsewhere

Rank 3: Plants about which we need more information – a review list

Rank 4: Plants of limited distribution – a watch list

²Invasive Status: California Invasive Plant Inventory (Cal-IPC 2017)

High: Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.

Moderate: Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically

Limited: Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically

Assessed: Assessed by Cal-IPC and determined to not be an existing current threat

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

OBL: Almost always found in wetlands; >99% frequency

FACW: Usually found in wetlands; 67-99% frequency

FAC: Equally found in wetlands and uplands; 34-66% frequency

FACU: Usually not found in wetlands; 1-33% frequency

UPL: Almost never found in wetlands; >1% frequency

NL: Not listed, assumed almost never found in wetlands; >1% frequency

NI: No information; not factored during wetland delineation

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