

**Appendix B:
Biological Resources Supporting Information**

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**DELINEATION OF POTENTIAL JURISDICTIONAL WATERS OF THE
U.S. AND WATERS OF THE STATE OF CALIFORNIA**
SPRINGTOWN SEWER TRUNKLINE PROJECT
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA



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JUNE 2022



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LIST OF ACRONYMS

APT	Antecedent Precipitation Tool
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CSRL	California Soil Resource Lab
CWA	Clean Water Act
EPA	Federal Environmental Protection Agency
FAC	Facultative Plant
FACU	Facultative Upland Plant
FACW	Facultative Wetland Plant
HUC	Hydrologic Unit Code
NL	Not Listed
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OBL	Obligate Wetland Plant
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
SWRCB	California State Water Resources Control Board
UPL	Upland Plant
USGS	U.S. Geological Survey
WRA	WRA, Inc.

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1.0 INTRODUCTION

This report presents the results of a delineation of potential waters of the U.S. as defined by the Clean Water Act (CWA) and waters of the State as defined by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (State Wetland Policy, State Water Resources Control Board [SWRCB] 2019). The Study Area for this delineation includes a 250-foot buffer around the proposed sewer alignment (the Springtown Sewer Trunkline) and a 25-foot buffer around the existing sewer alignment that will be abandoned in place, all located in the City of Livermore and unincorporated Alameda County, California (Study Area; Appendix A – Figure 1). The Study Area consists of approximately 41.85 acres

On January 13, 2021 and May 17, 2022, WRA, Inc. (WRA) conducted a delineation within the Study Area to identify wetlands and non-wetland waters potentially subject to jurisdiction by the U.S. Army Corps of Engineers (Corps) under Section 404 of the CWA. In addition, this report identifies wetlands and other features potentially subject to jurisdiction of the California SWRCB and Regional Water Quality Control Board (RWQCB) as defined in the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (State Wetland Policy, SWRCB 2019). The following sections describe the regulatory background and methods used to guide the delineation and provide a summary of wetlands and non-wetland waters within the Study Area. This delineation is considered “potential” subject to the approval of the Corps and, where appropriate, RWQCB.¹

This report depicts wetland and non-wetland waters features which are jurisdictional under the CWA and State Wetland Policy.

¹ Per the State Wetland Policy, the SWRCB or local RWQCB is required to verify any wetlands present that are not included on delineation maps verified by the Corps (Lines 77-81 of the State Wetland Policy).

2.0 REGULATORY BACKGROUND

2.1 Section 404 of the Clean Water Act

The objective of the CWA is to maintain and restore the chemical, physical, and biological integrity of the Waters of the United States (33 CFR Part 328 Section 328.4). “Waters of the U.S.” is the encompassing term for areas that qualify for federal regulation under Section 404 of the CWA. Section 404 of the CWA gives the U.S. Environmental Protection Agency (EPA) and the Corps regulatory and permitting authority regarding discharge of dredged or fill material into “navigable waters of the United States.” Section 502(7) of the CWA 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 CWA. A summary of this definition of “waters of the U.S.” in 33 CFR 328.3 includes (1) waters used for commerce and subject to tides; (2) interstate waters and wetlands; (3) “other waters” such as intrastate lakes, rivers, streams, and wetlands; (4) impoundments of waters; (5) tributaries of waters; (6) territorial seas; and (7) wetlands adjacent to waters. Therefore, for purposes of determining Corps jurisdiction under the CWA, “navigable waters” as defined in the CWA are the same as “waters of the U.S.” defined in the Code of Federal Regulations above. Waters of the U.S include non-isolated “wetlands” and “other waters of the U.S.”

2.1.1 Wetlands

Wetlands are defined in 33 CFR 328.3 (b) as:

...those areas that are inundated or saturated by surface or groundwater 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.

The basis for determining whether a given area is a wetland for the purposes of Section 404 of the CWA is outlined in the Corps *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Delineation Manual* for the respective region (Arid West or Western Mountains and Valleys for California). As defined in 33 CFR 328.4 (c), the extent of federal jurisdiction within wetlands is defined as extending to the limit of the wetland as determined using the methods outlined in the manuals.

2.1.2 Non-Wetland Waters

The limit of federal jurisdiction in non-tidal non-wetland waters extends to the ordinary high water mark (OHWM) which is defined in 33 CFR 328.3 (e) 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.

2.1.3 Rapanos v. United States and Carabell v. United States

On June 5, 2007, the Corps and the EPA issued joint guidance on implementing the June 19, 2006, U.S. Supreme Court opinions resulting from *Rapanos v. United States* and *Carabell v. United States* (*Rapanos*) cases (Corps 2007). The agencies received 66,047 public comments on the *Rapanos* Guidance (65,765 form letters, 282 non-form letters), from States, environmental and conservation organizations, regulated entities, industry associations, and the general public. EPA and the Corps jointly reviewed the comments and released a revised version of the guidance on December 2, 2008 (Corps 2008). The revised guidance states that the agencies will assert jurisdiction over:

- Non-navigable tributaries that are not relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months);
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent; and
- Wetlands adjacent to but that do not directly abut a relatively permanent non navigable tributary.

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow) and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The agencies will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters.
- Significant nexus includes consideration of hydrologic and ecologic factors.

2.1.4 Solid Waste Agency of Northern Cook County (SWANCC) v. United States

In addition to areas that may be exempt from Section 404 jurisdiction, some isolated wetlands and waters may also be considered outside of Corps jurisdiction because of the Supreme Court's decision in *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers* (531 U.S. 159 [2001]). Isolated wetlands and waters are those areas that do not have a surface or groundwater connection to and are not adjacent to a navigable "Waters of the U.S.," and do not otherwise exhibit an interstate commerce connection.

2.2 Waters of the State

The Porter-Cologne Water Quality Control Act gives the SWRCB authority to regulate discharge of dredged or fill material that may affect the quality of "waters of the state". "Waters of the State" are defined broadly as:

any surface water or groundwater, including saline waters, within the boundaries of the state.

In April 2019, the SWRCB adopted the State Wetland Policy, which provides a State wetland definition, procedures and requirements for regulation of the discharge of dredge or fill material to wetlands and non-wetland waters of the State. The State Wetland Policy also includes exemptions from regulation of dredge and fill discharges for certain types of wetland and waters features, as well as for certain classes of activities, such as activities covered by an existing RWQCB or SWRCB Order. The state wetland definition that became effective May 28, 2020 is similar to, but slightly different from that used by the Corps:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The State Wetland Definition and Procedures utilize existing Corps delineation procedures (Environmental Laboratory 1987, Corps 2008, 2010). According to the State Wetland Policy, the SWRCB and RWQCBs generally rely on the Corps for verification of wetland and waters as part of an aquatic resource report. Any potential wetland area not identified in a report verified by the Corps is required to be delineated using Corps methods for consideration as a state wetland and verification by SWRCB or RWQCB staff. This report includes wetlands and non-wetland waters meeting both the Corps and State wetland definitions. Some features mapped as non-wetland waters under the Corps wetland definition may be considered wetlands under the State definition.

This report identifies wetlands and non-wetland waters according to the Corps definitions and criteria, consistent with the State Wetland Policy's reliance of these criteria. This report also recognizes that some non-wetland waters features may meet the wetland definition of the State Wetland Policy. Regardless of how they are defined, wetlands and non-wetland waters deemed jurisdictional may be regulated by the RWQCB and/or SWRCB under the State Wetland Policy.

3.0 STUDY AREA DESCRIPTION

The approximately 41.85-acre Study Area is located partially in the City of Livermore and partially in unincorporated Alameda County, California (Appendix A – Figure 1). The Study Area can be reached from Interstate 580 eastbound by taking exit 54 (First Street / Springtown Boulevard), turning north on First Street, continuing on Springtown Boulevard, then turning left on Redwood Road, and proceeding to the terminus of Redwood Road. The Study Area is bounded by residential homes to the north, grazed fields to the east and west, and a private residence and Interstate 580 to the south. Land uses within the Study Area include livestock grazing, residential development, and roadways. The topography is characterized by open, flat fields with two incised stream channels in the central portion of the site. Elevations are approximately 500 feet above sea level.

The Study Area consists of undeveloped land dominated by herbaceous and ruderal vegetation, with scattered pockets of alkali-adapted species. Historical imagery (Google Earth 2021; Nationwide Environmental Title Research [NETR] 2021) shows an old road through the north portion of the Study Area and evidence of grazing since at least the 1940s. The Study Area includes two perennial streams: Arroyo Seco, which bisects the Study Area, and Arroyo Las Positas, in the western region of the Study Area. Both streams are heavily incised with steep banks. The confluence of these two streams is outside the Study

Area to the west. The area north of Arroyo Seco was actively grazed by cattle during the site visits and includes some infrastructure including cattle pens, soil mounds remnant of an old foundation, and fencing. There is evidence of disking in some portions of the Study Area.

3.1 Vegetation

Vegetation within the Study Area consists of grazed, non-native annual grassland dominated by ruderal herbaceous species with pockets of alkali-adapted forbs.

Upland areas of the Study Area are dominated by a mix of ruderal herbs and non-native grass species such as slim oat (*Avena barbata*; not listed [NL]), yellow starthistle (*Centaurea solstitialis*; NL), soft chess (*Bromus diandrus*; NL), and black mustard (*Brassica nigra*; NL). Scattered pockets of alkali-adapted species on the site include salt grass (*Distichlis spicata*; facultative plant [FAC]) and alkali heath (*Frankenia salina*; facultative wetland plant [FACW]). Species assemblages throughout upland areas are typical of sites used for livestock grazing in the region.

Dominant vegetation in the seasonal wetland swale includes a red willow (*Salix laevigata*; FACW) overstory and herbaceous understory dominated by Mediterranean barley (*Hordeum marinum*; FAC) and common three square (*Schoenoplectus pungens*; obligate wetland plant [OBL]).

Arroyo Seco and Arroyo Las Positas are non-wetland waters within the Study Area and were classified based on duration of flow and presence of an OHWM. The banks of Arroyo Seco and Arroyo Las Positas in the Study Area have sparse vegetation with a limited number of scattered trees and predominately characterized by ruderal species. In-stream pockets of scattered vegetation are present in both streams. Wetland and non-wetland water features are described further in Section 5.0. A list of all plant species observed within the Study Area during the site visit is provided in Appendix D.

3.2 Soils

The Soil Survey of Alameda Area, California (USDA 1966) and the California Soil Resource Lab's (CSRL) online soil viewer (CSRL 2021) list four soil mapping units within the Study Area: Clear Lake clay (drained, 0 to 2 percent slopes), Linne clay loam (3 to 15 percent slopes), Pescadero clay, and San Ysidro loam. Descriptions of each soil series are provided below. The distribution of these soil mapping units within the Study Area is depicted in Appendix A – Figure 2.

Clear Lake Series: Soils in the Clear Lake series consist of very deep, poorly drained clay formed in alluvium derived from sandstone and shale on basins and swales of drainage ways. These soils occur under grasslands, crop fields and rangeland, have negligible to high runoff with slow to very slow permeability with an intermittent perched water table very near the surface during the wet winter months. Clear Lake series is considered a hydric soil where it occurs in Alameda County (USDA 2021).

Clear Lake soils have a very dark gray (N 3/0) clay surface horizon with few fine faint redoximorphic concentrations from 0 to 13 inches below the soil surface, underlain by a very dark gray (10YR 3/0) clay subsurface horizon with no redoximorphic features from 13 to 19 inches below the soil surface.

Linne Series: The Linne series consists of moderately deep, well drained calcareous soils that formed in material weathered from light grey or white, fairly soft shale, and sandstone. Linne soils are on gentle slopes to hills that have slopes of 3 to 75 percent. These soils occur under rangeland and crop fields, have medium to very rapid runoff, and moderately slow permeability. The Linne soil series is considered a hydric soil where it occurs in Alameda County (USDA 2021).

A typical soil pedon for Linne clay loam soils consists of a moderately alkaline (pH 8.0), black (10YR 2/1) clay loam surface from 0 to 14 inches below the soil surface. This horizon is underlain by a very dark grey (10YR 3/1) clay loam with many fine filaments and nodules of lime. Those horizons are underlain by grey (10YR 5/1) sandy clay loam and below that a very pale brown (10YR 7/2) fine sandy loam that is extremely hard bottom horizon.

Pescadero Series: Soils in the Pescadero series consist of very deep, poorly drained soil that formed in alluvium from sedimentary rocks including sandstone and shale. Pescadero soils have a strongly saline-alkaline (pH 8.9) horizon (natric zone) between 3 and 26 inches are and located on nearly level basins and along the lower edge of stream terraces. These soils occur under rangeland for livestock grazing and irrigated pasture dominated by salt tolerant plant species. Pescadero soils have very slow runoff, low water holding capacity, and redoximorphic features less than 20 inches below the surface. Pescadero series is considered a hydric soil where it occurs in Alameda County (USDA 2021).

San Ysidro Series: The San Ysidro series consists of soils that are deep, moderately well-drained, fine sandy loam soils, on low fan remnants and stream terraces. They are found at elevations of 5 to 100 feet on 0 to 9 percent slopes formed in alluvium derived from sedimentary rocks. These soils have very low permeability and a low water holding capacity. San Ysidro series is considered a hydric soil where it occurs in Alameda County (USDA 2021).

San Ysidro soils consists of two A horizons underlain by two B horizons and two C horizons. The first A horizon is from 0 to 7 inches consisting of light brownish gray (10YR 6/2) fine sandy loam with distinct mottles of brownish yellow (10YR 6/6) followed by a second A horizon from 7 to 14 inches consisting of light brownish gray (10YR 6/2) fine sandy loam, also with distinct mottles of brownish yellow (10YR 6/6). Beneath these are two Bt horizons from 14 to 40 inches containing dark yellowish brown (10YR 4/4) clay and yellowish brown (10YR 5/6) sandy clay loam. These are underlain by two C horizons with yellowish brown (10YR 5/4) light sandy clay loam and yellowish brown (10YR 6/4) light clay loam from 40 to 68 inches.

3.3 Hydrology

The Study Area is located in the Arroyo Las Positas watershed, within the San Francisco Bay Hydrologic Unit Code (HUC)-8 watershed (HUC-8 18050004; Natural Resources Conservation Service [NRCS] 2021). Annual rainfall within this watershed averages 15.22 inches, with the majority of rain falling between December and March. Arroyo Seco and Arroyo Las Positas are U.S. Geological Survey (USGS) blue-line perennial streams in the Study Area. Arroyo Seco and Arroyo Las Positas originate in the Altamont Hills east of the Study Area. The primary hydrological sources for the creeks is from the upstream watersheds,

rainfall, surface runoff, and subsurface input from the adjacent lands. Outside the stream channels, the site dries out entirely after the spring months.

4.0 METHODS

WRA biologists performed a delineation of aquatic resources within the Study Area on January 13, 2021 and May 17, 2022. Prior to conducting the evaluation, WRA reviewed a range of background materials including the following: Catholic Diocese Biological Resource Assessment which covers a majority of the Study Area (First Carbon Solutions 2020); the *Soil Survey of Alameda Area* (USDA 1966); the CSRL online soil viewer (CSRL 2021); the National Wetland Inventory (NWI; USFWS 2021); the California Aquatic Resource Inventory (SFEI 2017); and the USGS Livermore 7.5-minute quadrangle map (USGS 2018). WRA also reviewed historic aerial imagery from Google Earth (Google Earth 2021).

During the on-site evaluation, WRA followed the methods outlined in 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 2008) and *A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States* (“OHWM Guide”; Lichvar and McColley 2008). Boundaries of potentially jurisdictional wetlands were mapped using the Routine Method described in the Corps Manual. The jurisdictional limits of non-wetland waters under Section 404 of the CWA were mapped based on a combination of field indicators described in the OHWM Guide.

4.1 Wetlands

4.1.1 Routine Method

WRA followed the Routine Method to evaluate the Study Area 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 2008). Data on vegetation, hydrology, and soils were collected at sample points within potential wetland communities and adjacent upland areas. Sample points that contained positive indicators for hydrophytic vegetation, hydric soils, and wetland hydrology were considered to be wetland. Sample points that lacked one or more indicators were considered to be upland. Sample point data were reported on Arid West Supplement data forms (Appendix B). Sample point locations were recorded using a handheld GPS unit with mapping grade accuracy.

4.1.2 Hydrologic Analysis

A hydrologic analysis using the Antecedent Precipitation Tool (APT; Deters 2021) was conducted to determine whether precipitation levels during the three-month periods prior to the site visits were above, below, or within the 30-year average for the region and to determine if the region was experiencing long-term drought conditions. Long-term precipitation data, as well as daily precipitation data for the three months preceding the two site visits, were obtained from the Livermore Municipal Airport weather station located approximately 3 miles west of the Study Area.

During the three-month period prior to the January 13, 2021 site visit, precipitation was below normal based on the APT output. During the three-month period prior to the May 17, 2022 site visit, precipitation was normal based on the APT outputs. The full results of the APT analysis are provided as Appendix E.

4.2 Non-Wetland Waters

Examples of non-wetland waters include lakes, rivers, and streams. The extent of non-wetland waters (e.g., perennial streams) was mapped up to the OHWM, as discussed below.

4.2.1 Ordinary High-Water Mark

This study evaluated the presence of non-wetland waters using Corps manuals and guidance for the identification of OHWM indicators (Lichvar and McColley 2008). Consistent with Corps delineation methodology, the OHWM was used to identify the limits of non-wetland waters. The location of the OHWM was determined based on a combination of indicators observed on the ground (e.g., water stains, scour marks, and sediment sorting). Where direct access to the OHWM was feasible, it was mapped in the field using a GPS unit with mapping grade accuracy. Where direct access to the OHWM was not feasible, the location of the OHWM was hand drawn in the field on topographical maps for subsequent digitizing in ArcGIS. For Arroyo Las Positas, the width between the OHWM was visually estimated in the field and recorded. For Arroyo Seco, the OHWM was mapped directly and the average width measured with ArcGIS.

5.0 RESULTS

Descriptions of all aquatic resources identified within the Study Area are provided in the following sections. As discussed above, features in this report are classified based on the Corps definition of wetlands. All features satisfying the technical criteria for wetlands and non-wetland waters are mapped as part of this report.

A map showing the sample points and location and extent of potential jurisdictional waters mapped within the Study Area is provided in Appendix A – Figure 3, and a summary of acreages is provided in Table 1, below. Photographs of the Study Area are provided as Appendix C. A list of all plant species observed during the delineation site visits is included as Appendix D. The results of the precipitation and hydrological analysis is included as Appendix E.

Table 1. Potential Waters of the U.S. and State in the Study Area

Feature Type	Classification ¹	ID	Potential Section 404 Waters of the U.S./ State	
			Acres	Linear Feet
Wetlands				
Seasonal Wetland Swale	PEM21/C	SWS-01	0.23	n/a
Total:			0.23	n/a
Non-Wetland Waters				
Perennial Stream (Arroyo Seco)	R2US1	PS-01	0.02	112
Perennial Stream (Arroyo Seco)	R2US1	PS-02	0.34	618
Perennial Stream (Arroyo Las Positas)	R2US1	PS-03	0.28	895
Total:			0.64	1,625

¹See FGDC 2013

5.1 Wetlands

Seasonal Wetland Swale

One seasonal wetland swale (SWS-01) is present in the southern portion of the Study Area. The wetland originates from a culvert in the southeastern region of the Study Area. Overstory vegetation in the seasonal wetland swale consists solely of mature red willows (FACW) with an understory dominated by herbaceous species including Mediterranean barley (FAC), common three square (OBL), Italian ryegrass (*Festuca perennis*; FAC), and curly dock (*Rumex crispus*; FAC). SP-03 was taken within the seasonal wetland swale. SP-04 was taken in uplands and is paired with SP-03. Vegetation within areas mapped as seasonal wetland swale satisfied the dominance test. The soil was a grey (2.5YR 5/1) loamy clay with concentrations and depletions in the matrix, and it met the Depleted Matrix (F3) hydric soil indicator. Primary indicators of wetland hydrology included Surface Water (A1), High Water Table (A2), and Saturation (A3); secondary indicators included the FAC-Neutral Test (D5). Wetland boundaries were determined based primarily on topography and presence of hydrophytic vegetation.

5.2 Non-Wetland Waters

Perennial Stream

Two perennial streams, Arroyo Seco (PS-01, PS-02) and Arroyo Las Positas (PS-03), are present within the Study Area. Arroyo Seco bisects the center of the Study Area and flows east to west. Arroyo Las Positas occurs along the west edge of the Study Area and flows north to south. Both streams are shown as dashed blue-line streams on the USGS Livermore and Altamont 7.5-minute quadrangles (USGS 2021a, b). Arroyo Seco and Arroyo Las Positas are deeply incised, have narrow meanders, and contain scattered pockets of riparian and in-stream vegetation. Perennial stream features were mapped up to field indicators of the OHWM. OHWM indicators that were observed in the field include bed and bank, scouring, and sediment sorting. Below OHWM, vegetation includes watercress (*Nasturtium officinale*; OBL), cattail (*Typha* sp.; OBL), cocklebur (*Xanthium strumarium*; FAC), and tule (*Schoenoplectus acutus* var. *occidentalis*; OBL). Land cover above the OHWM is non-native annual grassland, with more ruderal species including black mustard (*Brassica nigra*; NL), perennial pepperweed (*Lepidium latifolium*; FAC), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*; NL), and fennel (*Foeniculum vulgare*; NL). Scattered coyote brush (*Baccharis pilularis* ssp. *consanguinea*; NL) and a few riparian trees including red gum (*Eucalyptus camaldulensis*; FAC), tamarisk (*Tamarix parviflora*; FAC), and red willow are also present along the bank of Arroyo Seco. No trees are present along Arroyo Las Positas. The perennial streams are potentially subject to Corps and RWQCB/SWRCB jurisdiction up to the OHWM.

5.3 Additional Investigation in Upland Areas

The preliminary reconnaissance-level assessment conducted by First Carbon Solutions (2020) identified two small, potential seasonal wetlands just east of Arroyo Las Positas. During the January 13, 2021 site visit, WRA assessed these areas and determined they did not contain wetland features. There was no difference in vegetation compared to the surrounding areas, and no wetland hydrology indicators were observed. WRA reviewed aerial imagery from current and past years (Google Earth 2021), and inundation was not observed in these areas, including the March 11, 2017 aerial, which was taken during the wet season in a year with above normal precipitation. To further support the determination that wetlands are absent, on May 17, 2022, WRA collected sample point data in each of these areas (SP-05 and SP-06). Although SP-05 did satisfy the dominance test for hydrophytic vegetation due to the dominance of seaside barley (*Hordeum marinum*, FAC), this species is a generalist and is frequently observed in uplands, and as such is not a reliable indicator of wetland conditions by itself. Wetland criteria for soils and hydrology were not satisfied, and SP-05 was therefore determined to not be a wetland. SP-06 did not meet wetland criteria for vegetation, soils, or hydrology and was therefore determined to not be a wetland. As such, based on observations made and data collected on January 13, 2021, and May 17, 2022, WRA determined that the two potential wetlands identified in First Carbon's reconnaissance-level assessment were not wetlands.

During a pre-filing meeting with the RWQCB on May 4, 2022, Brian Wines of the RWQCB stated that, based on aerial signatures, there was the potential for wetland features in the field south of Arroyo Seco. At the time of WRA's January 13, 2021 site visit, this area was disked and no wetland features were identified. WRA visited this area again during the May 17, 2022 site visit and collected additional sample points (SP-07, SP-08, and SP-09). A disked fuel break was present along the perimeter and the central axis of this area, but the majority of this area was not disked. The locations of SP-07, SP-08, and SP-09 were chosen based on darker signatures visible in aerial photographs and/or shallow concavities observed on-site. SP-07, SP-08, and SP-09 did not meet wetland criteria for hydrology or soils. SP-08, which was partially located

in a disked area did meet wetland criteria for vegetation, while SP-07 and SP-09 (outside of disked areas) did not. Therefore, no additional wetland features were mapped in this area.

6.0 CONCLUSION

The results of this delineation of aquatic resources is based on conditions observed during site visits and information provided to WRA by LD – Fund III Livermore Land LLC. The delineation uses the federal methodology to determine the potential boundaries of wetlands and non-wetland features and is consistent with the approach used by the RWQCB to determine wetlands subject to the State Wetland Policy.

7.0 REFERENCES

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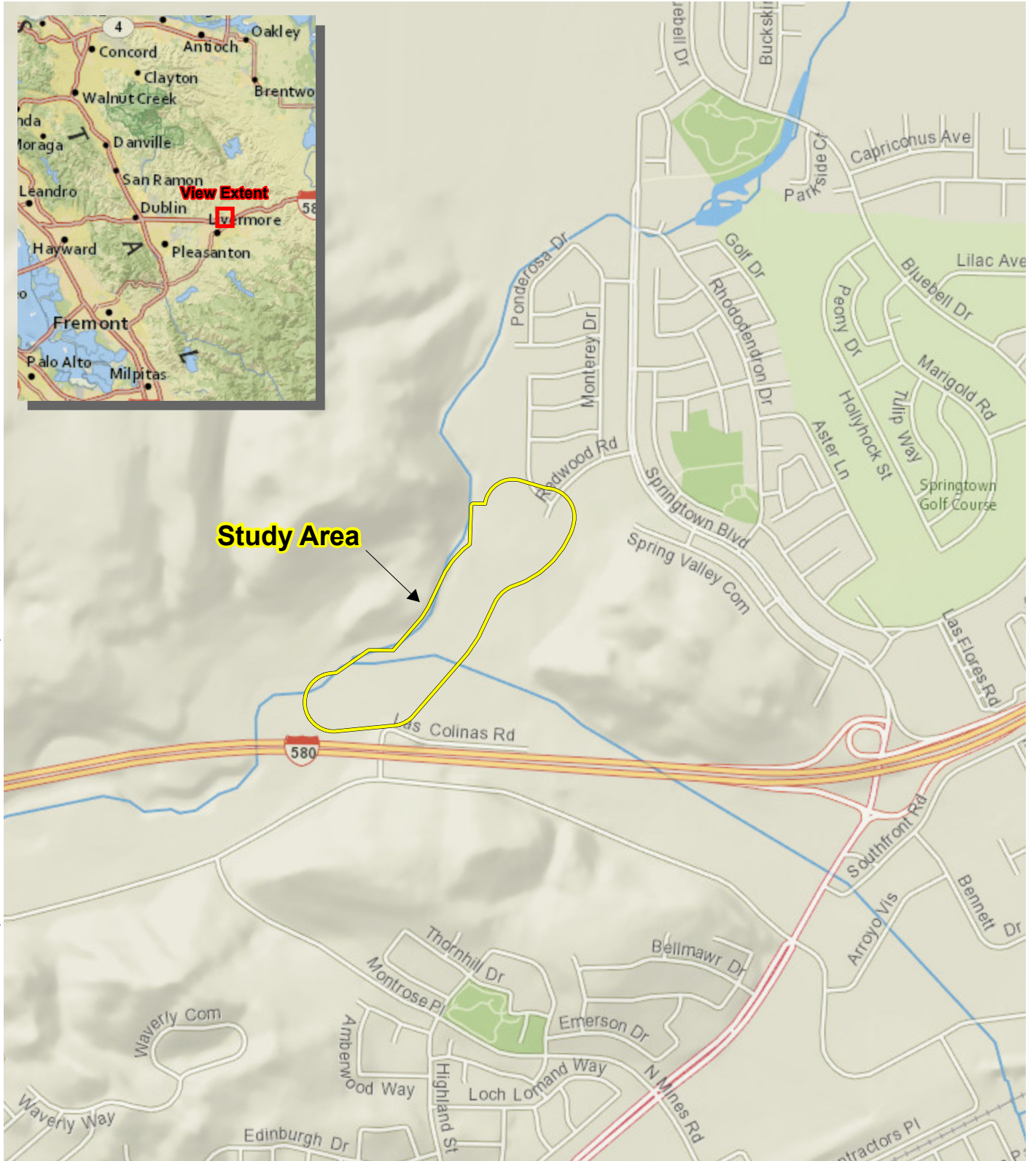
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USGS 2021b U.S. Geological Survey. 2021b. Altamont Quadrangle, California. 7.5-minute topographic map.

APPENDIX A – FIGURES

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Sources: National Geographic, WRA | Prepared By: njander, 4/18/2022

Figure 1. Study Area Location

Springtown Sewer Trunkline Project
Livermore, Alameda County, California

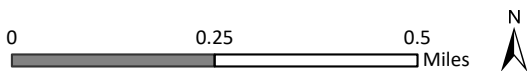







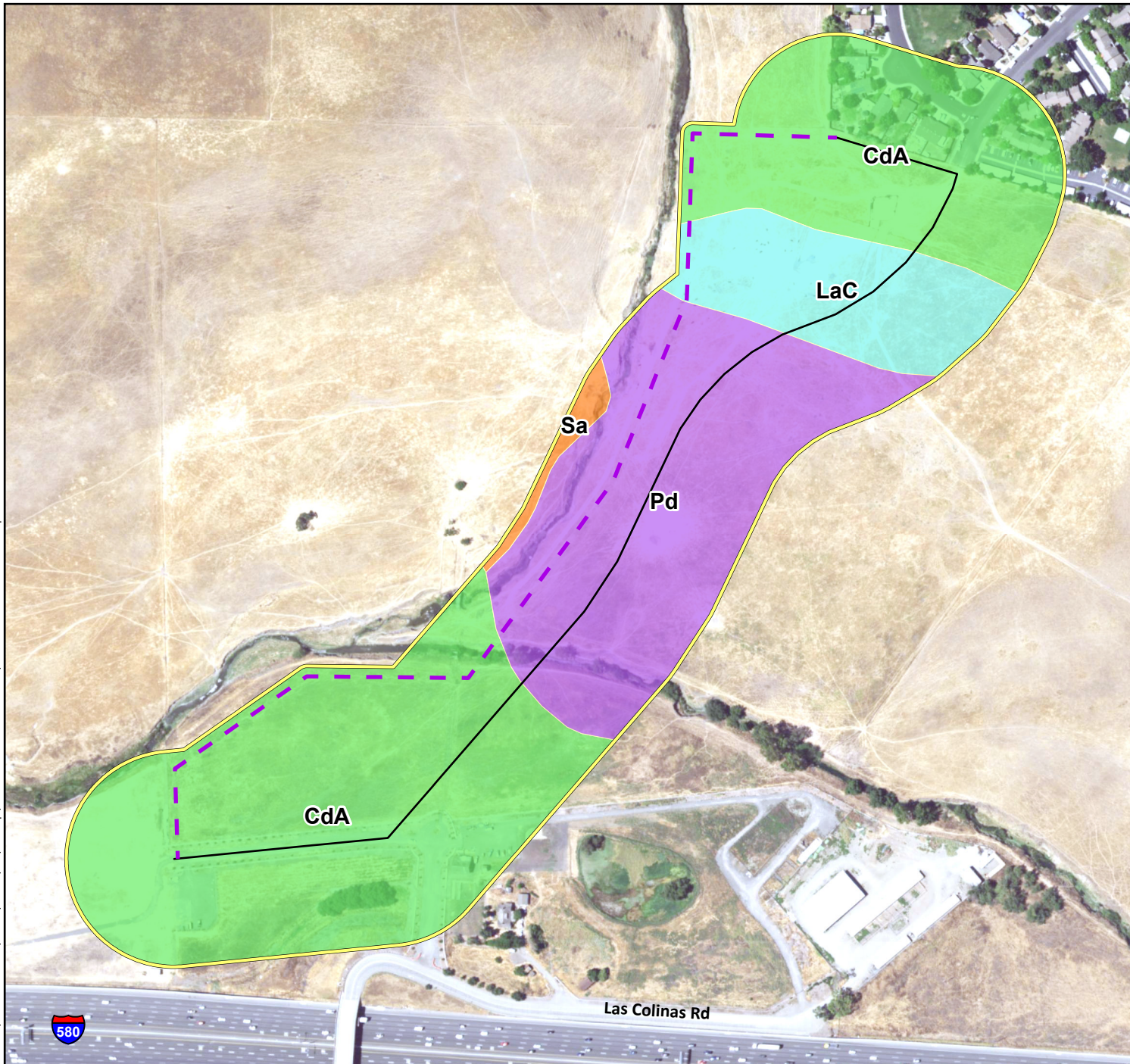
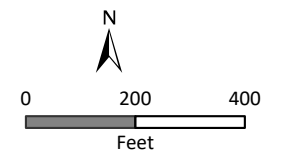


Figure 2.
Study Area Soils

Springtown Sewer Trunkline Project
Livermore, Alameda County, California

-  Study Area (41.85 ac)
 -  Proposed Trunkline Sewer
 -  Sewer Abandonment
- Soils**
-  CdA: Clear Lake clay, drained, 0 to 2 percent slopes, MLRA 14
 -  LaC: Linne clay loam, 3 to 15 percent slopes
 -  Pd: Pescadero clay
 -  Sa: San Ysidro loam




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Sources: NAIP 2018 Aerial Imagery, WRA | Prepared By: njander, 4/18/2022


Type	ID	Acres	Square Feet	Linear Feet
Perennial Stream	PS-01	0.02	827	112
Perennial Stream	PS-02	0.34	14,942	618
Perennial Stream	PS-03	0.28	12,329	895
Seasonal Wetland Swale	SWS-01	0.23	10,174	-

Figure 3.
Potential Waters of the U.S.
and State within the Study Area


Springtown Sewer Trunkline Project
 Livermore, Alameda County, California


 Study Area (41.85 ac)


Comment

 Proposed Trunkline Sewer


 Sewer Abandonment

 1-Foot Contours

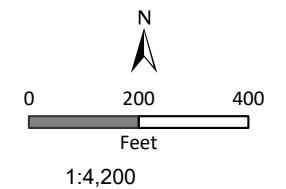
 Sample Point

 Map Reference Point

Potential Waters of the U.S. and State

 Perennial Stream up to OHWM
 (0.64 ac | 1,625 ln ft)

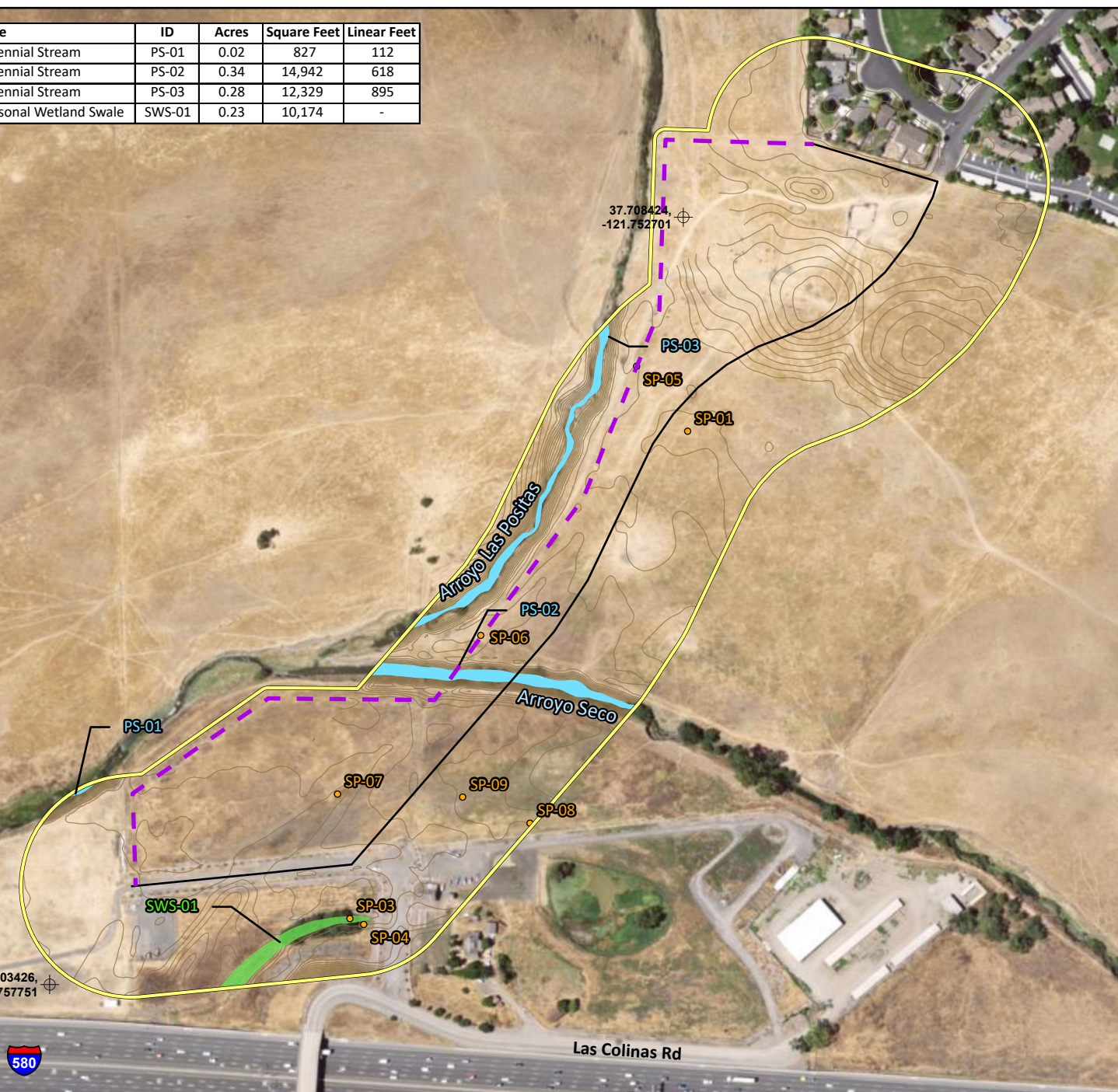
 Seasonal Wetland Swale (0.23 ac)



Path: L:\Acad 2000 Files\30000\30337\GIS\ArcMap\30337SewerDelin20220418\30337SewerDelin20220418.aprx

37.703426,
-121.757751

37.708424,
-121.752701



Sources: NAIP 2020 Aerial Imagery, 2006 Alameda County Lidar, WRA | Prepared By: njander, 5/19/2022



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APPENDIX B – WETLAND DETERMINATION DATA FORMS

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Wetland Determination Data Form - Arid West Region

Project/Site Springtown Sewer Trunkline Project City Livermore County Alameda Sampling Date 1/13/2021
 Applicant/Owner LD - Fund III Livermore Land LLC State CA Sampling Point SP-01
 Investigator(s) S. Hill, S. Cognac Section, Township, Range S4 T3S R2E
 Landform (hillslope, terrace, etc.) open field Local Relief (concave, convex, none) concave Slope(%) 2.5
 Subregion(LRR) LRR C (Medit. CA) Lat: 37.707086 Long: -121.752596 Datum: WGS 84
 Soil Map Unit Name Pescadero clay loam, 0 to 6 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 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 open, flat field. Area actively grazed with cattle. No paired point. This sample point did not meet hydrophytic vegetation, hydric soil or hydrology wetland criteria.	

VEGETATION (use scientific names)

TREE STRATUM	Plot Size: <u>-</u>	Absolute % cover	Dominant Species?	Indicator Status	
1.	_____	_____	_____	_____	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>2</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: <u>-</u>				
1.	_____	_____	_____	_____	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: <u>5' x 5'</u>				
1.	<u><i>Centaurea solstitialis</i></u>	<u>20</u>	<u>Y</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><i>Avena barbata</i></u>	<u>10</u>	<u>Y</u>	<u>NL</u>	
3.	<u><i>Erodium botrys</i></u>	<u>5</u>		<u>FACU</u>	
4.	_____	_____	_____	_____	
5.	_____	_____	_____	_____	
6.	_____	_____	_____	_____	
7.	_____	_____	_____	_____	
8.	_____	_____	_____	_____	
Herb Stratum Total Cover: <u>35</u>					
WOODY VINE STRATUM	Plot Size: <u>-</u>				
1.	_____	_____	_____	_____	Hydrophytic Vegetation Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2.	_____	_____	_____	_____	
Woody Vines Total Cover: _____					
% Bare ground in herb stratum <u>0</u>		% cover of biotic crust <u>0</u>			

Remarks: Thatch - 65%
 This sample point did not meet hydrophytic vegetation criteria.

SOIL

Sampling Point SP-01

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		
0-10	10YR 3/2	100					sandy loam	
10+	2.5YR 100						sand	abrupt change; tilled layer

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: <u>None</u> Depth (inches): _____	Hydric Soil Present ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
--	---

Remarks: This sample point did not meet hydric soil criteria.

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: This sample point did not meet hydrology criteria.

Wetland Determination Data Form - Arid West Region

Project/Site Springtown Sewer Trunkline Project City Livermore County Alameda Sampling Date 1/13/2021
 Applicant/Owner LD - Fund III Livermore Land LLC State CA Sampling Point SP-03
 Investigator(s) S. Hill, S. Cognac Section, Township, Range S4 T3S R2E
 Landform (hillslope, terrace, etc.) linear depression Local Relief (concave, convex, none) concave Slope(%) 2
 Subregion(LRR) LRR C (Medit. CA) Lat: 37.703879 Long: -121.755314 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 in linear depression along gradual slope under mature red willows. Wetland originates from culvert at east end of mapped wetland. Paired with sample point SP-04. Sample point meets wetland criteria.	

VEGETATION (use scientific names)

TREE STRATUM	Plot Size: <u>25' x 25'</u>	Absolute % cover	Dominant Species?	Indicator Status	
1. <u>Salix laevigata</u>		35	Y	FACW	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC? <u>3</u> (A) Total number of dominant species across all strata? <u>3</u> (B) % of dominant species that are OBL, FACW, or FAC? <u>100</u> (A/B)
2. _____					
3. _____					
4. _____					
Tree Stratum Total Cover:		<u>35</u>			
SAPLING/SHRUB STRATUM	Plot Size: <u>-</u>				
1. _____					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: <u>5' x 5'</u>				
1. <u>Hordeum cf. marinum</u>		15	Y	FAC	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>Schoenoplectus pungens</u>		10	Y	OBL	
3. <u>Rumex pulcher</u>		7		FAC	
4. <u>Lepidium latifolium</u>		7		FAC	
5. <u>Phalaris aquatica</u>		5		FACU	
6. _____					
7. _____					
8. _____					
Herb Stratum Total Cover:		<u>44</u>			
WOODY VINE STRATUM	Plot Size: <u>-</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>0</u> % cover of biotic crust <u>0</u>					

Remarks: Thatch/Leaves - 35%
 Ponded water - 20%
 This sample point met hydrophytic vegetation criteria.

SOIL

Sampling Point SP-03

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		
0-6	10YR 2/2	100					clay loam	many fine roots, cobbles, mulch
6-12	2.5YR 5/1	85	2.5YR 5/4	5	C	PL, M	loamy clay	abrupt change
			2.5YR 6/2	10	D	M		

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)
---	--	---

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

Restrictive Layer (if present): Type: <u>None</u> Depth (inches): _____	Hydric Soil Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Remarks: Many white-fuzzy organic-type deposits in top horizon.

Meets hydric soil indicator F3, Depleted Matrix.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<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)	<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 checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface water present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depth (inches): <u>0"</u> Water table present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depth (inches): <u>11"</u> Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depth (inches): <u>6"</u> (includes capillary fringe)	Wetland Hydrology Present ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--	--

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

Remarks: Meets primary wetland hydrology indicators A1 (Surface Water), A2 (High Water Table), A3 (Saturation) and secondary wetland hydrology indicator D5 (FAC-Neutral Test).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
 See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Springtown Sewer Trunkline Project City/County: Livermore/ Alameda Sampling Date: 1/13/2021
 Applicant/Owner: LD - Fund III Livermore Land LLC State: CA Sampling Point: SP-04
 Investigator(s): S. Hill, S. Cognac Section, Township, Range: S4 T3S R2E
 Landform (hillside, terrace, etc.): constructed berm Local relief (concave, convex, none): convex Slope (%): 5
 Subregion (LRR): LRR C Lat: 37.703824 Long: -121.755249 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 the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil X, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Paired sample point with SP-03. Area sits topographically higher than wetland point SP-03 and was chosen for convex topographical relief and sits just outside of swale berm. Soils are highly disturbed with fill/ brick/ mulch inclusions; meets hydric soils however does not meet vegetation or hydrology criteria.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1.					
2.					
3.					
4.					
					=Total Cover
Sapling/Shrub Stratum	(Plot size: <u> </u>)				
1.					
2.					
3.					
4.					
5.					
					=Total Cover
Herb Stratum	(Plot size: <u>5' x 5'</u>)				
1.	<u>Lepidium latifolium</u>	30	Yes	FAC	
2.	<u>Bromus diandrus</u>	20	Yes	UPL	
3.					
4.					
5.					
6.					
7.					
8.					
					50 =Total Cover
Woody Vine Stratum	(Plot size: <u> </u>)				
1.					
2.					
					=Total Cover
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	<u>0</u>	x 1 =		<u>0</u>
FACW species	<u>0</u>	x 2 =		<u>0</u>
FAC species	<u>30</u>	x 3 =		<u>90</u>
FACU species	<u>0</u>	x 4 =		<u>0</u>
UPL species	<u>20</u>	x 5 =		<u>100</u>
Column Totals:	<u>50</u> (A)			<u>190</u> (B)
Prevalence Index = B/A =				<u>3.80</u>

Hydrophytic Vegetation Indicators:

 Dominance Test is >50%

 Prevalence Index is ≤3.0¹

 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks:
 Thatch - 30%; Mulch 20%; This sample point did not meet hydrophytic vegetation criteria.

ENG FORM 6116-1-SG, JUL 2018

Arid West – Version 2.0

SOIL

Sampling Point: SP-04

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 ²		
0-6	10YR 3/2	85	2.5Y 5/2	5	C	M	Loam	Many cobbles and roots, fill
			2.5Y 5/2	5	C	M		Brick and mulch inclusions
6-12	2.5Y 5/4	90	2.5Y 5/6	5	C	M	Clay loam	
			2.5Y 3/2	5	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Iron-Manganese Masses (F12) **(LRR D)**
- Reduced Vertic (F18)
- Red Parent Material (F21)
- Very Shallow Dark Surface (F22)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Variable surface horizon. Multiple test pits dug in the area, all variable and indicative of disturbed fill. Sample point contained significant mulch/ brick inclusions which could have contributed to soil/ redox coloration. Sample point meets Redox Dark Surface (F6) however is considered problematic due to its disturbed nature.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

This sample point did not meet hydrology criteria. This sample point was chosen as a paired upland point for SP-03 due to sitting topographically higher than SP-03. Area surrounding sample point was not ponding like SP-03/ the nearby swale.

Project/Site: 30337-1, Springtown Sewer Trunkline Project City/County: Livermore/Alameda Sampling Date: 5/17/2022
 Applicant/Owner: LD Fund III Livermore Land LLC State: CA Sampling Point: SP-05
 Investigator(s): S. Batiuk, S. Roy Section, Township, Range: S33, T02S, R02E
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR C Lat: 37.707455 Long: -121.753051 Datum: WGS 84
 Soil Map Unit Name: Pescadero clay loam, 0 to 6 percent slopes, MLRA 14 NWI classification: none

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland sample point in a very subtle topographic low area just east of Arroyo Las Positas. Area grazed by cattle. Climatic conditions at time of delineation were severe drought.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
=Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ =Total Cover				
Herb Stratum (Plot size: <u>5' r</u>) 1. <u>Hordeum marinum</u> 74 Yes FAC 2. <u>Festuca perennis</u> 7 No FAC 3. <u>Bromus hordeaceus</u> 3 No FACU 4. <u>Cressa truxillensis</u> 1 No FACW 5. _____ 6. _____ 7. _____ 8. _____ _____ 85 =Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ =Total Cover				
% Bare Ground in Herb Stratum <u>15</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 The Dominance Test was met.

SOIL

Sampling Point: SP-05

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 ²		
0-12	2.5Y 3/2	70	7.5YR 5/6		C	M	Loamy/Clayey	Trace amount of redox
	10YR 2/1	20					Loamy/Clayey	
	5GY 4/1	10					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
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Remarks:
Soil appears to be fill and/or have been disked in the past based on the mixed matrix. Soil has abundant concentrations of salt near lower layers of soil profile. No indicators were met.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<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"/> 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? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators were met.

Project/Site: 30337-1, Springtown Sewer Trunkline Project City/County: Livermore/Alameda Sampling Date: 5/17/2022
 Applicant/Owner: LD Fund III Livermore Land LLC State: CA Sampling Point: SP-06
 Investigator(s): S. Batiuk, S. Roy Section, Township, Range: S33, T02S, R02E
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR C Lat: 37.705708 Long: -121.754285 Datum: WGS 84
 Soil Map Unit Name: Pescadero clay loam, 0 to 6 percent slopes, MLRA 14 NWI classification: none

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:
 Sample pit taken in slightly concave area on just east of the confluence of Arroyo Las Positas and Arroyo Seco. Climatic conditions at time of delineation were severe drought.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	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) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
=Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>31</u> x 3 = <u>93</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species <u>37</u> x 5 = <u>185</u> Column Totals: <u>70</u> (A) <u>286</u> (B) Prevalence Index = B/A = <u>4.09</u>
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
=Total Cover				
Herb Stratum (Plot size: <u>5' r</u>)	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 ¹ (Provide supporting data in Remarks or on a separate sheet) <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>Hordeum marinum</u>	<u>31</u>	Yes	FAC	
2. <u>Centaurea solstitialis</u>	<u>15</u>	Yes	UPL	
3. <u>Erodium cicutarium</u>	<u>15</u>	Yes	UPL	
4. <u>Avena barbata</u>	<u>5</u>	No	UPL	
5. <u>Bromus hordeaceus</u>	<u>2</u>	No	FACU	
6. <u>Trifolium hirtum</u>	<u>2</u>	No	UPL	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
=Total Cover <u>70</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
=Total Cover				
% Bare Ground in Herb Stratum <u>5</u>		% Cover of Biotic Crust <u>0</u>		

Remarks:
 25% litter present

SOIL

Sampling Point: SP-06

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 ²		
0-7	10YR 2/1	99					Loamy/Clayey	
	2.5Y 4/3	1					Loamy/Clayey	Salt Concentrations Present
7-12	10YR 2/1	25					Loamy/Clayey	
	2.5Y 4/3	75					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Remarks:
Salt concentrations in lower horizons. Rocky/gravelly clay, rocks and gravel appear to be fill. No indicators were met.

HYDROLOGY

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

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

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators were met.

Project/Site: 30337-1, Springtown Sewer Trunkline Project City/County: Livermore/Alameda Sampling Date: 5/17/2022
 Applicant/Owner: LD Fund III Livermore Land LLC State: CA Sampling Point: SP-07
 Investigator(s): S. Batiuk, S. Roy Section, Township, Range: S3, T03S R02E
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR C Lat: 37.704674 Long: -121.755428 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 the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:
 Sample point located in a long, shallow, linear concavity. Sample point is in lowest part of landscape feature. Climatic conditions at time of delineation were severe drought.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
=Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ =Total Cover				
Herb Stratum (Plot size: <u>5' r</u>) 1. <u>Hordeum marinum</u> 20 Yes FAC 2. <u>Medicago polymorpha</u> 20 Yes FACU 3. <u>Erodium cicutarium</u> 10 No UPL 4. <u>Bromus diandrus</u> 7 No UPL 5. <u>Amsinckia intermedia</u> 4 No UPL 6. <u>Bromus hordeaceus</u> 5 No FACU 7. <u>Centaurea solstitialis</u> 3 No UPL 8. <u>Festuca perennis</u> 1 No FAC _____ =Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ =Total Cover				
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 No indicators were met.

SOIL

Sampling Point: SP-07

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 ²		
0-14	10YR 2/1	60					Loamy/Clayey	
	10YR 4/3	40					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:
No indicators were met.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators were met.

Project/Site: 30337-1, Springtown Sewer Trunkline Project City/County: Livermore/Alameda Sampling Date: 5/17/2022
 Applicant/Owner: LD Fund III Livermore Land LLC State: CA Sampling Point: SP-08
 Investigator(s): S. Batiuk, S. Roy Section, Township, Range: S3, T03S R02E
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): LRR C Lat: 37.704502 Long: -121.753865 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 the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	--

Remarks:
 Sample pit taken in shallow depression in a flat field within an area that has a darker aerial signature. The depression is partly disked. Climatic conditions at time of delineation were severe drought.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
=Total Cover				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
=Total Cover				
Herb Stratum (Plot size: <u>5' r</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Hordeum marinum</u>	80	Yes	FAC	<input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <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>Lepidium latifolium</u>	10	No	FAC	
3. <u>Festuca perennis</u>	10	No	FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
100 =Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
=Total Cover				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 The Dominance test was met.

SOIL

Sampling Point: SP-08

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 ²		
0-14	10YR 2/1	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:
No indicators were met.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators were met. The sampled depression is partly disked, but undisked areas have no biotic crust or other wetland hydrology indicators.

Project/Site: 30337-1, Springtown Sewer Trunkline Project City/County: Livermore/Alameda Sampling Date: 5/17/2022
 Applicant/Owner: LD Fund III Livermore Land LLC State: CA Sampling Point: SP-09
 Investigator(s): S. Batiuk, S. Roy Section, Township, Range: S3, T03S R02E
 Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): LRR C Lat: 37.704665 Long: -121.754414 Datum: WGS 84
 Soil Map Unit Name: borm NWI classification: none

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	--

Remarks:
 Upland sample point in an undisturbed flat area in the central portion of a field south of Arroyo Seco. Sample pit taken in shallow depression within dark areal signature. Climatic conditions at time of delineation were severe drought. Representative of area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
=Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ =Total Cover				
Herb Stratum (Plot size: <u>5' r</u>) 1. <u>Bromus diandrus</u> 60 Yes UPL 2. <u>Centaurea solstitialis</u> 26 Yes UPL 3. <u>Erodium cicutarium</u> 2 No UPL 4. <u>Convolvulus arvensis</u> 2 No UPL 5. _____ 6. _____ 7. _____ 8. _____ _____ 90 =Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ =Total Cover				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u>0</u>				

Remarks:
 No indicators were met.

SOIL

Sampling Point: SP-09

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 ²		
0-14	10YR 2/1	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR D)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:
No indicators were met.

HYDROLOGY

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

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators were met.

APPENDIX C – STUDY AREA PHOTOGRAPHS

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Photograph 1. Photo taken January 13, 2021. Seasonal wetland swale (SWS-01) within the southern portion of the Study Area.



Photograph 2. Photo taken January 13, 2021. Close up view of wetland sample point SP-03 and hydric soil indicator F3, depleted matrix, within the soil profile.



Photograph 3. Photo taken January 13, 2021. View of deeply incised banks of Arroyo Seco, the perennial stream within the Study Area that runs east to west. Water was observed in the stream during the January 13, 2021 and May 17, 2022, site visits.



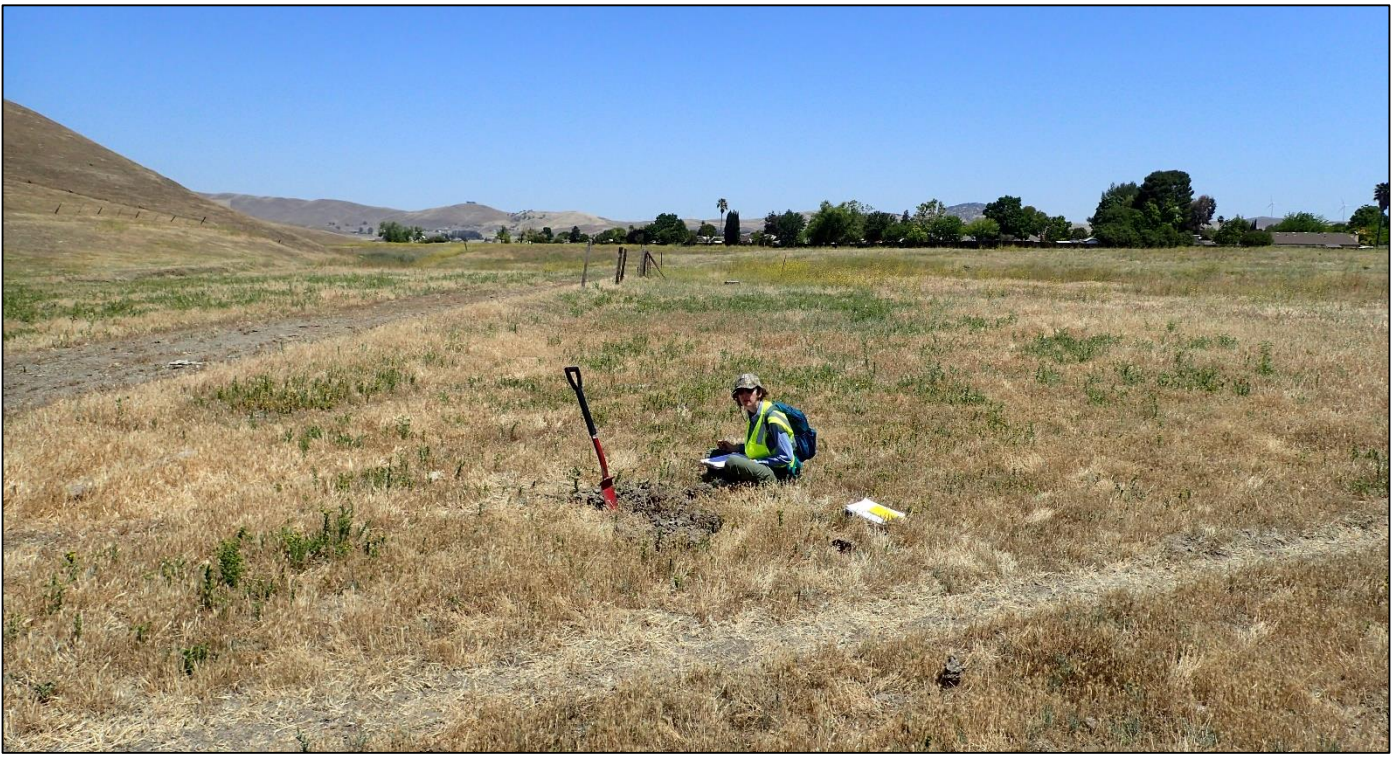
Photograph 4. Photo taken January 13, 2021. View of upland sample point SP-01 in the non-native grassland within the Study Area.



Photograph 5. Photo taken October 7, 2021. View of Arroyo Las Positas facing west, the perennial stream within the Study Area that runs north to south along the western boundary of the Study Area. Water was observed in the stream during the January 13, 2021, and May 17, 2022, site visits.



Photograph 6. Photo taken October 7, 2021. View of Arroyo Las Positas facing south. Scattered wetland vegetation was observed within the stream channel in some areas of the Study Area.



Photograph 7. Photo taken May 17, 2022. View of upland sample point SP-05. This area was mapped as a potential wetland by First Carbon Solutions in 2020, but it was determined by WRA to be an upland after collecting sample data.



Photograph 8. Photo taken May 17, 2022. View of upland sample point SP-06. This area was mapped as a potential wetland by First Carbon Solutions in 2020, but it was determined by WRA to be an upland after collecting sample data.



Photograph 9. Photo taken May 17, 2022. View of upland sample point SP-09, in a shallow linear concavity in a flat field south of Arroyo Seco. View facing northeast.



Photograph 10. Photo taken May 17, 2022. View of upland sample point SP-09, in a flat field south of Arroyo Seco. View facing east.

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APPENDIX D – PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

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Appendix D. Plant species observed in the Study Area on January 13 , 2021, and May 17, 2022

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Achyrachaena mollis</i>	Blow wives	native	annual herb	-	-	FAC	
<i>Allenrolfea occidentalis</i>	Iodine bush	native	shrub	-	-	FACW	C
<i>Amsinckia intermedia</i>	Common fiddleneck	native	annual herb	-	-	-	
<i>Amsinckia lycopsoides</i>	Tarweed fiddleneck	native	annual herb	-	-	-	B
<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>	Coyote brush	native	shrub	-	-	-	
<i>Bellardia trixago</i>	Mediterranean linseed	non-native (invasive)	annual herb	-	Limited	-	
<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>Bromus madritensis</i>	Foxtail brome	non-native	annual grass	-	-	UPL	
<i>Capsella bursa-pastoris</i>	Shepherd's purse	non-native	annual herb	-	-	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>Centromadia pungens</i> ssp. <i>pungens</i>	Common tarweed	native	annual herb	-	-	FAC	
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU	
<i>Conium maculatum</i>	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW	
<i>Convolvulus arvensis</i>	Field bindweed	non-native	perennial herb, vine	-	-	-	
<i>Crepis</i> sp.	Hawksbeard	non-native	annual herb	-	-	-	
<i>Cressa truxillensis</i>	Alkali weed	native	annual herb	-	-	FAC	
<i>Cynara cardunculus</i>	Cardoon	non-native (invasive)	perennial herb	-	Moderate	-	

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU	
<i>Distichlis spicata</i>	Salt grass	native	perennial grass	-	-	FAC	
<i>Dittrichia graveolens</i>	Stinkwort	non-native (invasive)	annual herb	-	Moderate	-	
<i>Elymus ponticus</i>	Tall wheat grass	non-native	perennial grass	-	-	-	
<i>Erodium cicutarium</i>	Red stemmed filaree	non-native (invasive)	annual herb	-	Limited	-	
<i>Erodium botrys</i>	Big heron bill	non-native	annual herb	-	-	FACU	
<i>Erodium moschatum</i>	Whitestem filaree	non-native	annual herb	-	-	-	
<i>Eucalyptus camaldulensis</i>	Red gum	non-native (invasive)	tree	-	Limited	FAC	
<i>Eschscholzia californica</i>	California poppy	native	annual, perennial herb	-	-	-	
<i>Extriplex joaquinana</i>	San Joaquin spearscale	native	annual herb	Rank 1B.2	-	FACU	*A2
<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>Frankenia salina</i>	Alkali heath	native	perennial herb	-	-	FACW	
<i>Galium</i> sp.	Bedstraw	-	-	-	-	-	
<i>Geranium dissectum</i>	Cutleaf geranium	non-native	annual, biennial herb	-	Limited	-	
<i>Geranium molle</i>	Crane's bill geranium	non-native	annual, perennial herb	-	-	-	
<i>Grindelia camporum</i>	Gumweed	native	perennial herb	-	-	FACW	
<i>Heliotropium curassavicum</i> var. <i>oculatum</i>	Seaside heliotrope	native	perennial herb	-	-	FACU	
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC	
<i>Holocarpha virgata</i>	Narrow tarplant	native	annual herb	-	-	-	

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Hordeum brachyantherum</i>	Meadow barley	native	perennial grass	-	-	FACW	B? (not identified to subspecies)
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley	non-native (invasive)	annual grass	-	Moderate	FAC	
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU	
<i>Juglans hindsii</i>	Northern California black walnut	native	tree	-	-	FAC	
<i>Juncus mexicanus</i>	Mexican rush	native	perennial grasslike herb	-	-	FACW	C
<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>Lupinus bicolor</i>	Miniature lupine	native	annual, perennial herb	-	-	-	
<i>Lupinus nanus</i>	Sky lupine	native	annual herb	-	-	-	
<i>Malva neglecta</i>	Dwarf mallow	non-native	annual, perennial herb	-	-	-	
<i>Malvella leprosa</i>	Alkali mallow	native	perennial herb	-	-	FACU	
<i>Marah fabacea</i>	California man-root	native	perennial herb, vine	-	-	-	
<i>Marrubium vulgare</i>	White horehound	non-native (invasive)	perennial herb	-	Limited	FACU	
<i>Medicago polymorpha</i>	Bur clover	non-native (invasive)	annual herb	-	Limited	FACU	
<i>Melilotus indicus</i>	Annual yellow sweetclover	non-native	annual herb	-	-	FACU	
<i>Nasturtium officinale</i>	Watercress	native	perennial herb (aquatic)	-	-	OBL	
<i>Nicotiana glauca</i>	Tree tobacco	non-native (invasive)	tree, shrub	-	Moderate	FAC	
<i>Plantago coronopus</i>	Cut leaf plantain	non-native	annual herb	-	-	FAC	
<i>Phalaris aquatica</i>	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU	
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Cottonwood	native	tree	-	-	FAC	

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Raphanus sativus</i>	Wild radish	non-native (invasive)	annual, biennial herb	-	Limited	-	
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC	
<i>Salix laevigata</i>	Red willow	native	tree	-	-	FACW	
<i>Salix lasiolepis</i>	Arroyo willow	native	tree, shrub	-	-	FACW	
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	Tule	native	perennial grasslike herb	-	-	OBL	
<i>Schoenoplectus californicus</i>	California bulrush	native	perennial grasslike herb	-	-	OBL	
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-	
<i>Sisymbrium irio</i>	London rocket	non-native (invasive)	annual herb	-	Moderate	-	
<i>Sonchus oleraceus</i>	Common sow thistle	non-native	annual herb	-	-	UPL	
<i>Stellaria media</i>	Chickweed	non-native	annual herb	-	-	FACU	
<i>Tamarix parviflora</i>	Tamarisk	non-native (invasive)	tree, shrub	-	High	FAC	
<i>Trifolium hirtum</i>	Rose clover	non-native (invasive)	annual herb	-	Limited	-	
<i>Triteleia laxa</i>	Ithuriel's spear	native	perennial herb	-	-	-	
<i>Typha</i> sp.	Cattail	-	perennial herb	-	-	OBL	
<i>Urtica urens</i>	Annual stinging nettle	non-native	annual herb	-	-	-	
<i>Vicia sativa</i>	Spring vetch	non-native	annual herb, vine	-	-	FACU	
<i>Vicia villosa</i>	Hairy vetch	non-native	annual herb, vine	-	-	-	
<i>Xanthium strumarium</i>	Cocklebur	native	annual herb	-	-	FAC	

▪ All species identified using the Jepson eFlora [Jepson Flora Project (eds.) 2022]; nomenclature follows Jepson eFlora [Jepson Flora Project (eds.) 2022]

¹ California Native Plant Society. 2022. Inventory of Rare and Endangered Plants (online edition, v9-01 1.5). Sacramento, California. Online at: <http://rareplants.cnps.org/>; most recently accessed: May 2022.

FE: Federal Endangered

FT: Federal Threatened

SE: State Endangered

ST: State Threatened

SR: State Rare
 Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
 Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
 (*Rank 1B: Rare in native stands only)
 Rank 2A: Plants presumed extirpated in California, but more common elsewhere
 Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
 Rank 3: Plants about which we need more information – a review list
 Rank 4: Plants of limited distribution – a watch list

² **California Invasive Plant Council. 2022. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: <http://www.cal-ipc.org/paf/>; most recently accessed: May 2022.**

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

³ **U.S. Army Corps of Engineers. 2020. National Wetland Plant List, version 3.5. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. Online at: <http://wetland-plants.usace.army.mil/>; most recently accessed: May 2022.**

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

⁴ **Lake, D [compiler]. 2022. Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties (web application). Berkeley, California: East Bay Chapter of the California Native Plant Society. Online at: <https://ruspdb.ebcnps.org/cgi-bin/ebrare/ebrare.cgi>; most recently accessed: May 2022.**

A1: Locally Rare Species. Species occurring in two or fewer regions in Alameda and Contra Costa counties
 A1x: Locally Rare Species. Species presumed extirpated from Alameda and Contra Costa counties
 A1?: Locally Rare Species. Species possibly occurring in Alameda and Contra Costa counties. Identification or location is uncertain
 A2: Locally Rare Species. Plants occurring in three to five regions or are otherwise threatened in Alameda and Contra Costa counties.
 B: High Priority Watch List. Plants occurring in six to nine regions in Alameda and Contra Costa counties.
 C: Second Priority Watch List. Plants occurring in ten to fifteen regions in Alameda and Contra Costa counties.
 *: Ranks preceded by an asterisk (e.g. “*A1”) also have a statewide rarity ranking
 #: Ornamental plantings are not considered locally rare. The individuals in the Project Area are ornamental plantings

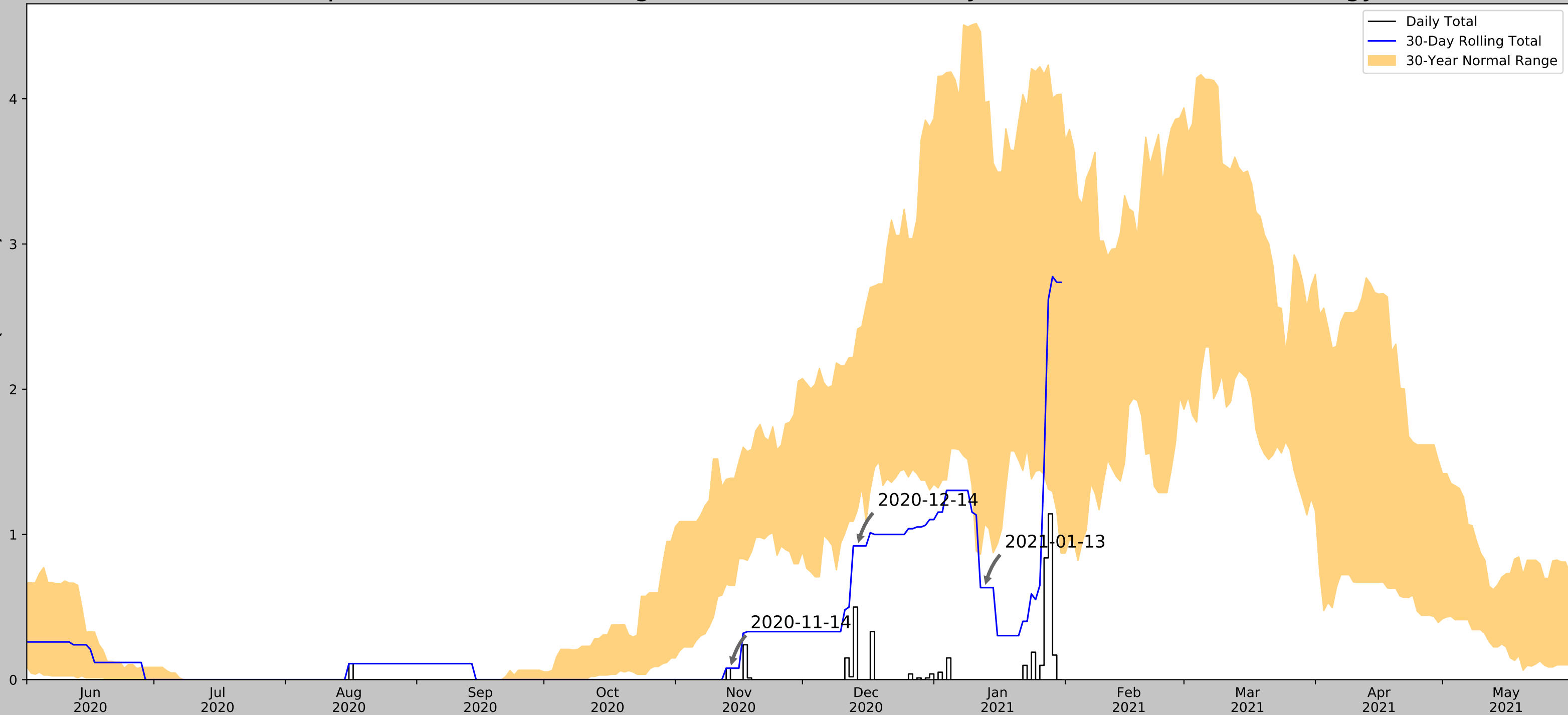
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APPENDIX E – ANTECEDENT PRECIPITATION TOOL ANALYSIS

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Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Rainfall (Inches)



Coordinates	37.705935, -121.752931
Observation Date	2021-01-13
Elevation (ft)	496.12
Drought Index (PDSI)	Not available
WebWIMP H ₂ O Balance	Wet Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-01-13	1.072047	3.974016	0.633858	Dry	1	3	3
2020-12-14	1.171654	2.414961	0.92126	Dry	1	2	2
2020-11-14	0.649213	1.387402	0.07874	Dry	1	1	1
Result							Drier than Normal - 6

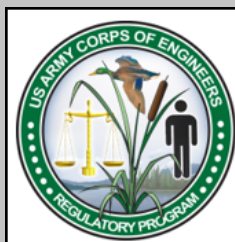
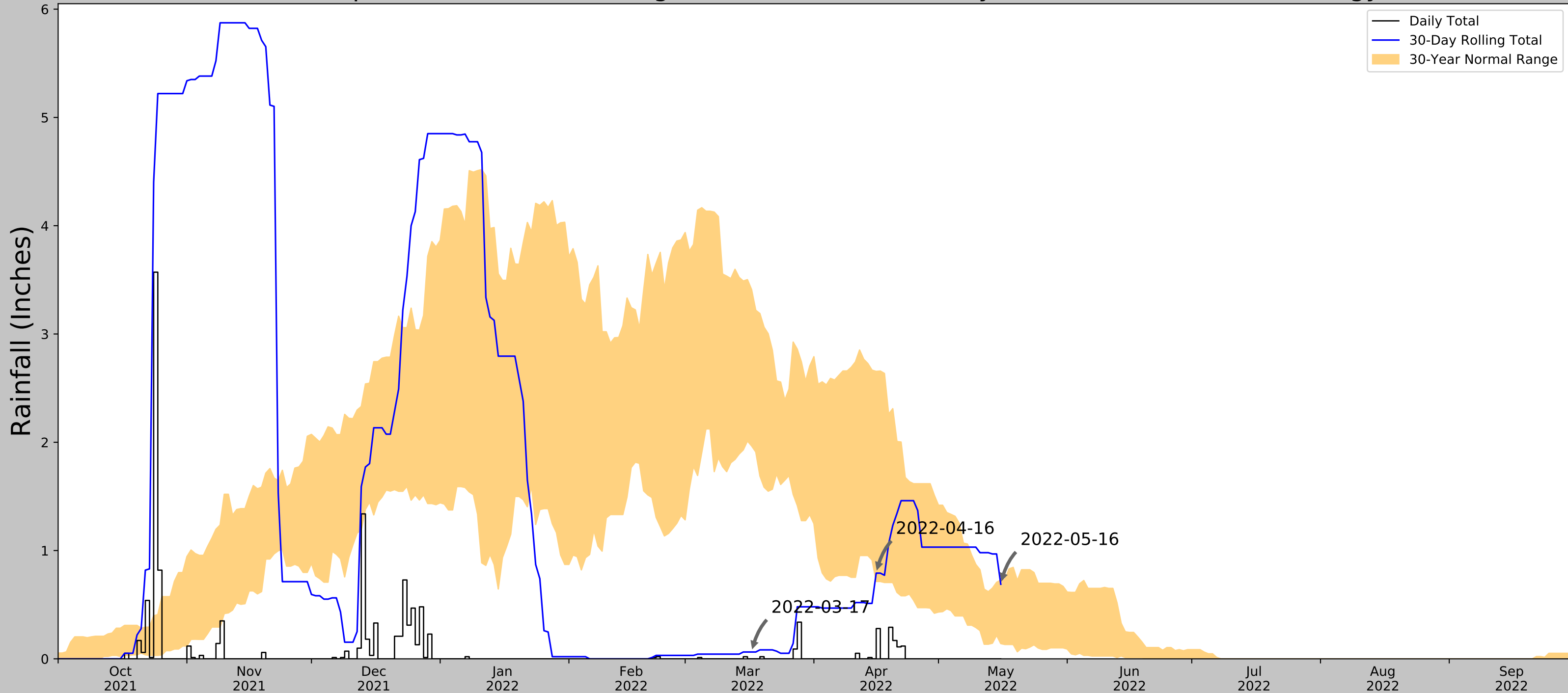


Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
LIVERMORE MUNI AP	37.6928, -121.8144	393.045	3.481	103.075	1.925	8209	90
LIVERMORE	37.6928, -121.8144	393.045	3.481	103.075	1.925	3114	0
TRACY PUMPING PLT	37.7958, -121.5831	61.024	11.164	435.096	9.881	30	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.706326, -121.75357
Observation Date	2022-05-16
Elevation (ft)	496.12
Drought Index (PDSI)	Severe drought (2022-04)
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-05-16	0.140551	0.728346	0.688976	Normal	2	3	6
2022-04-16	0.714173	2.654724	0.791339	Normal	2	2	4
2022-03-17	1.966142	3.410236	0.062992	Dry	1	1	1
Result							Normal Conditions - 11

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days (Normal)	Days (Antecedent)
LIVERMORE MUNI AP	37.6928, -121.8144	393.045	3.454	103.075	1.91	8574	89
LIVERMORE	37.6928, -121.8144	393.045	3.454	103.075	1.91	2749	0
PLEASANTON 1.8 SSE	37.6483, -121.8745	351.05	7.733	145.07	4.602	0	1
TRACY PUMPING PLT	37.7958, -121.5831	61.024	11.178	435.096	9.894	30	0

BIOLOGICAL RESOURCES TECHNICAL REPORT

ARROYO LAS POSITAS TRAIL PROJECT AND SPRINGTOWN SEWER TRUNKLINE PROJECT

LIVERMORE, ALAMEDA COUNTY, CALIFORNIA



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UPDATED AUGUST 2022



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LIST OF ACRONYMS

CCR	California Code of Regulations
CBH	Circumference at breast height
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGF	California Fish and Game Code
CFP	California Fully Protected Species
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
County	County of Alameda
Corps	U.S. Army Corps of Engineers
CRLF	California Red-legged Frog
CSRL	California Soils Resources Lab
CTS	California Tiger Salamander
CWA	Clean Water Act
DBH	Diameter at breast height
EACCS	East Alameda County Conservation Strategy
ESA	Federal Endangered Species Act
HDPE	High density polyethylene
NMFS	National Marine Fisheries Service
NRCS	Natural Resource Conservation Service
OHWM	Ordinary High-Water Mark
Rank	California Rare Plant Ranks
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SWRCB	State Water Resource Control Board
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WBWG	Western Bat Working Group
WPT	Western pond turtle
WRA	WRA, Inc.

1.0 INTRODUCTION

This Biological Resources Technical Report evaluates existing biological resources for two related projects that share a similar alignment: the Arroyo Las Positas Trail Project and the Springtown Sewer Trunkline Project, both located in the City of Livermore and unincorporated Alameda County, California (Figure 1, Appendix A). An approximately 72-acre Study Area was evaluated that covers both project alignments including an approximately 250-foot buffer around the new sewer and trail alignments and a 25-foot buffer around the sewer abandonment. The purpose of this report is to provide regulatory background information and discuss existing biological conditions in the Study Area that pertains to both projects. An analysis of potential impacts and recommended avoidance, minimization, and mitigation measures will be provided in separate reports.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations.

2.1 Federal and State Regulatory Setting

2.1.1 Vegetation and Aquatic Communities

The California Environmental Quality Act (CEQA) provides protections for particular vegetation types defined as sensitive by the California Department of Fish and Game (CDFW), and aquatic communities protected by laws and regulations administered by the U.S Army Corps of Engineers (Corps), State Water Resources Control Board (SWRCB), and Regional Water Quality Control Boards (RWQCB). The laws and regulations that provide protection for these resources are summarized below.

Sensitive Natural Communities: Sensitive natural communities include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" (CDFW 2022a) and keeps records of their occurrences in its California Natural Diversity Database (CNDDDB; CDFW 2022b). Vegetation alliances are ranked 1 through 5 in the CNDDDB based on NatureServe's (2022) 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 U.S. Fish and Wildlife Service (USFWS) must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). In addition, this general class includes oak woodlands that are protected by local ordinances under the Oak Woodlands Protection Act.

Waters of the United States, Including Wetlands: The Corps regulates "Waters of the U.S." under Section 404 of the Clean Water Act (CWA). Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as including the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, such as tributaries, lakes and ponds, impoundments of Waters of the U.S., and wetlands that are hydrologically connected with these navigable features (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Unvegetated waters including lakes, rivers, and streams may also be subject to Section

404 jurisdiction and are characterized by an ordinary high-water mark (OHWM) identified based on field indicators such as the lack of vegetation, sorting of sediments, and other indicators of flowing or standing water. The placement of fill material into Waters of the U.S. generally requires a permit from the Corps under Section 404 of the CWA.

The Corps also regulates construction in navigable waterways of the U.S. through Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403). Section 10 of the RHA requires Corps approval and a permit for excavation or fill, or alteration or modification of the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable Water of the U.S. Section 10 requirements apply only to navigable waters themselves, and are not applicable to tributaries, adjacent wetlands, and similar aquatic features not capable of supporting interstate commerce.

Waters of the State, Including Wetlands: 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 SWRCB and nine RWQCB protect waters within this broad regulatory scope through many different regulatory programs. Waters of the State in the context of a CEQA Biological Resources evaluation include wetlands and other surface waters protected by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019). The SWRCB and RWQCB issue permits for the discharge of fill material into surface waters through the State Water Quality Certification Program, which fulfills requirements of Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a CWA permit are also required to obtain a Water Quality Certification. If a project does not require a federal permit but does involve discharge of dredge or fill material into surface waters of the State, the SWRCB and RWQCB may issue a permit in the form of Waste Discharge Requirements.

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

2.1.2 Special-status Species

Endangered and Threatened Plants, Fish, and Wildlife. Specific species of plants, fish, and wildlife species may be designated as threatened or endangered by the federal Endangered Species Act (ESA), or the California Endangered Species Act (CESA). Specific protections and permitting mechanisms for these species differ under each of these acts, and a species’ designation under one law does not automatically provide protection under the other.

The ESA (16 USC 1531 et seq.) is implemented by the USFWS and the National Marine Fisheries Service (NMFS). The USFWS and NMFS maintain lists of endangered and threatened plant and animal species (referred to as "listed species"). "Proposed" or "candidate" species are those that are being considered for listing and are not protected until they are formally listed as threatened or endangered. Under the ESA, authorization must be obtained from the USFWS or NMFS prior to take of any listed species. "Take" under the ESA is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Take under the ESA includes direct injury or mortality to individuals, disruptions in normal behavioral patterns resulting from factors such as noise and visual disturbance and impacts to habitat for listed species. Actions that may result in take of an ESA-listed species may obtain a permit under ESA Section 10, or via the interagency consultation described in ESA Section 7. Federally listed plant species are only protected when take occurs on federal land.

The ESA also provides for designation of critical habitat, which are specific geographic areas containing physical or biological features "essential to the conservation of the species". Protections afforded to designated critical habitat apply only to actions that are funded, permitted, or carried out by federal agencies. Critical habitat designations do not affect activities by private landowners if there is no other federal agency involvement.

The CESA (CFGF 2050 et seq.) prohibits a take of any plant and animal species that the CFGC determines to be an endangered or threatened species in California. CESA regulations include take protection for threatened and endangered plants on private lands, as well as extending this protection to candidate species which are proposed for listing as threatened or endangered under CESA. The definition of a "take" under CESA ("hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") only applies to direct impact to individuals, and does not extend to habitat impacts or harassment. CDFW may issue an Incidental Take Permit under CESA to authorize take if it is incidental to otherwise lawful activity and if specific criteria are met. Take of these species is also authorized if the geographic area is covered by a Natural Community Conservation Plan (NCCP), as long as the NCCP covers that activity.

Fully Protected Species and Designated Rare Plant Species. This category includes specific plant and wildlife species that are designated in the CFGC as protected even if not listed under CESA or ESA. Fully Protected Species includes specific lists of birds, mammals, reptiles, amphibians, and fish designated in CFGC. Fully protected species may not be taken or possessed at any time. No licenses or permits may be issued for take of fully protected species, except for necessary scientific research and conservation purposes. The definition of "take" is the same under the California Fish and Game Code and the CESA. By law, CDFW may not issue an Incidental Take Permit for Fully Protected Species. Under the California Native Plant Protection Act (CNPPA), CDFW has listed 64 "rare" or "endangered" plant species, and prevents "take", with few exceptions, of these species. CDFW may authorize take of species protected by the NPPA through the Incidental Take Permit process, or under a NCCP.

Special Protections for Nesting Birds and Bats. The federal Bald and Golden Eagle Protection Act provides relatively broad protections to both of North America's eagle species (bald eagle [*Haliaeetus leucocephalus*] and golden eagle [*Aquila chrysaetos*]) that in some regards are similar to those provided by the ESA. In addition to regulations for special-status species, most native birds in the United States, including non-status species, have baseline legal protections under the Migratory Bird Treaty Act of 1918 and CFGC, i.e., sections 3503, 3503.5 and 3513. Under these laws/codes, the intentional harm or collection of adult birds as well as the intentional collection or destruction of active nests, eggs, and young is illegal. For bat species, the Western Bat Working Group (WBWG) designates conservation status for species of bats, and those with a high or medium-high priority are typically given special consideration under CEQA.

Species of Special Concern, Movement Corridors, and Other Special-status Species under CEQA. To address additional species protections afforded under CEQA, CDFW has developed a list of special species as “a general term that refers to all of the taxa the CNDDDB is interested in tracking, regardless of their legal or protection status.” This list includes lists developed by other organizations, including for example, the Audubon Watch List Species, the Bureau of Land Management Sensitive Species, and USFWS Birds of Special Concern. Plant species on the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (Inventory) with California Rare Plant Ranks (Rank) of 1 and 2, as well as some with a Rank of 3, are also considered special-status plant species and must be considered under CEQA. Some Rank 3 species and all Rank 4 species are typically only afforded protection under CEQA when such species are particularly unique to the locale (e.g., range limit, low abundance/low frequency, limited habitat) or are otherwise considered locally rare. Additionally, any species listed as sensitive within local plans, policies and ordinances (i.e. focal species in the East Alameda County Conservation Strategy [EACCS]) are likewise considered sensitive. Movement and migratory corridors for native wildlife (including aquatic corridors) as well as wildlife nursery sites are given special consideration under CEQA. The *Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties (web application)* (Lake 2022) is a database produced by the East Bay Chapter of the CNPS that lists plant taxa which are considered locally rare, unusual, or significant in Alameda and Contra Costa counties. Species that occur in two or fewer regions in Alameda and Contra Costa counties are ranked “A1.” Species that occur in five or fewer regions in the two counties, or are otherwise threatened, are ranked “A2.” Species that are only known from the area historically and are presumed to have been extirpated from the East Bay during the last 100 years are ranked “A1x.” A-ranked species receive consideration under sections 15380 and 15125(c) of CEQA and are considered “locally rare” for the purposes of this report. Any locally rare species observed in the Study Area are discussed in this report.

2.2 Local Plans and Policies

City of Livermore General Plan. The City of Livermore General Plan contains goals and objectives pertaining to the following biological resources categories:

- Maintain biodiversity (Objective OSC-1.1)
- Alkali sinks, riparian habitat, wetlands, and woodland forest (Objective OSC-1.2)
- Native Livermore trees and vegetation (Objective OSC-1.3)
- Conservation of waterways, tributaries, and riparian habitat (Goal OSC-2)

Alameda County General Plan. The Alameda County General Plan contains a Conservation Element and an Open Space Element pertaining to identifying natural resources, development of goals and policies for resources conservation, and the establishment of programs and legislation for dealing with the preservation and enhancement of open space within the County.

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 of 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 protected trees 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:

1. Any tree located on private property occupied by single-family residential development that meets the following criteria:
 - a. Any tree with a CBH of 60 inches or more; or
 - b. Any California native tree having a CBH of 24 inches or more
2. Any tree located on private property occupied by commercial, industrial, institutional (i.e., religious, public agency, hospital, care facilities, etc.), mixed-use or multi-use or multifamily residential (two or more units) development with a CBH of 24 inches of more; or
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 CBH of 18 inches or more; or
4. Any tree in an open space, riparian, or habitat area with a CBH of 18 inches or more; or
5. Any tree approved as part of a site plan approval, or required as a condition of approval for a development project, zoning use permit, use permit or other site development review; or
6. Any tree designated by the City Council as determined to be an ancestral tree; and/ or
7. Any tree listed on the City's ancestral tree inventory; or
8. Any tree required to be planted as mitigation for unlawfully removed trees.

The Tree Preservation 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's survey, a "Tree Action Permit", including 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.

Alameda County Tree Ordinance. The County Board of Supervisors finds that the preservation of trees within the County right-of-way enhances the natural scenic beauty, sustains the long term potential increase in property values, protects the surrounding area from soil erosion, moderates the effects of extreme weather conditions and temperatures, improves air quality including increasing the oxygen output of the area which is needed to combat air pollution, creates the identity and quality of the County's businesses and residences, and improves the attractiveness of the County to visitors. The protection of trees under the Alameda County Tree Ordinance (Section 12.11.120) preserves trees within the County right-of-way as defined as any woody perennial plant characterized by having a single trunk or multi-trunk structure at least ten feet high and having a major trunk that is at least two inches in diameter at breast height (DBH) taken at 4.5 feet from the ground.

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 provides a framework to protect, enhance, and restore natural resources in eastern Alameda County, while improving and guiding the environmental permitting process for impacts resulting from infrastructure and development projects. 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 take coverage for threatened or endangered species similar to that provided by a Habitat Conservation Plan.

Compliance with the EACCS is voluntary but doing so can provide measures and mitigation ratio suggestions that may streamline the regulatory permitting process.

3.0 ASSESSMENT METHODOLOGY

Over four separate site visits (January 13, 2021, October 7, 2021, April 8, 2022, and May 17, 2022), WRA, Inc. (WRA) visited the Study Area to map vegetation, aquatic communities, unvegetated land cover types, document plant and wildlife species present, and evaluate on-site habitat for the potential to support special-status species as defined by CEQA. Prior to the site visits, WRA biologists reviewed literature resources and performed database searches to assess the potential for sensitive biological communities (e.g., wetlands) and special-status species (e.g., endangered plants and wildlife), including:

- Soil Survey of Alameda County, California (USDA 1981)
- Altamont 7.5-minute U.S. Geological Survey (USGS) quadrangle (USGS 2015a)
- Livermore 7.5-minute USGS quadrangle (USGS 2015b)
- Contemporary aerial photographs (Google Earth 2022)
- Historical aerial photographs (NETR 2022)
- National Wetlands Inventory (USFWS 2022a)
- California Aquatic Resources Inventory (SFEI 2022)
- CNDDDB (CDFW 2022b)
- CNPS Online Inventory of Rare and Endangered Plants in California (CNPS 2022a)
- USFWS List of Federal Endangered and Threatened Species (USFWS 2022b)
- eBird Online Database (eBird 2022)
- CDFW Publication, California Bird Species of Special Concern in California (Shuford and Gardali 2008)
- CDFW and University of California Press publication California Amphibian and Reptile Species of Special Concern (Thomson et al. 2016)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- A Manual of California Vegetation, Online Edition (CNPS 2022b)
- Preliminary Descriptions of the Terrestrial Natural Communities (Holland 1986)
- California Natural Community List (CDFW 2022a)

Database searches (i.e., CNDDDB, CNPS) for special-status species focused on the Livermore, Altamont, Byron Hot Springs, Mendenhall Springs, Tassajara, Diablo, Dublin, Niles, and La Costa Valley USGS 7.5-minute quadrangles.

Following the remote assessment, WRA biologists completed field reviews to document: (1) land cover types (e.g., terrestrial communities, aquatic resources); (2) existing conditions and to determine if such provide suitable habitat for any special-status plant or wildlife species; (3) if and what type of aquatic natural communities (e.g., wetlands) are present; and (4) if special-status species are present. The on-site assessments included a wetland delineation and protocol-level rare plant surveys.

3.1 Vegetation Communities and Other Land Cover Types

During the site visits, WRA evaluated the species composition and area occupied by distinct vegetation communities, aquatic communities, and other land cover types. Mapping of these classifications utilized

a combination of aerial imagery and ground surveys. In most instances, communities are characterized and mapped based on distinct shifts in plant assemblage (vegetation) and follow the California Natural Community List (CDFW 2022a) and A Manual of California Vegetation, Online Edition (CNPS 2022b). These resources cannot anticipate every component of every potential vegetation assemblage in California, and so in some cases, it is necessary to identify other appropriate vegetative classifications based on best professional judgment of WRA biologists. When undescribed variants are used, it is noted in the description. Vegetation alliances (natural communities) with a CDFW Rank of 1 through 3 (globally critically imperiled [S1/G1], imperiled [S2/G2], or vulnerable [S3/G3]) (CDFW 2022a), were evaluated as sensitive as part of this evaluation.

The site was reviewed for the presence of wetlands and other aquatic resources according to the methods described in the Corps Manual (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West/Western Mountains and Valleys Region* (Arid West; Corps 2008/Western Mountains and Valleys Supplement; Corps 2010), *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Regions of the United States* (Mersel and Lichvar 2014), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). Areas meeting these indicators were mapped as aquatic resources and categorized using the vegetation community classification methods described above. The presence of riparian habitat was evaluated based on woody plant species meeting the definition of riparian provided in *A Field Guide to Lake and Streambed Alteration Agreements, Section 1600-1607, California Fish and Game Code* (CDFG 1994) and based on best professional judgement of biologists completing the field surveys.

3.2 Special-status Species

3.2.1 General Assessment

Potential occurrences of special-status species in the Study Area were evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database review as described above. Presence of suitable habitat for special-status species was evaluated during the site visit based on physical and biological conditions of the site as well as the professional expertise of the investigating biologists.

Species determined to have potential suitable habitat in the Study Area are discussed in Section 5.2. If a more thorough assessment was deemed necessary, a targeted or protocol-level assessment or survey was conducted or recommended as a future study. If a special-status species was observed during the site visit, its presence was recorded and discussed below in Section 5.2. If designated critical habitat is present for a species, the extent of critical habitat present and an evaluation of critical habitat elements is provided as part of the species discussions below.

3.2.2 Special-status Plants

Protocol-level special-status plant surveys were conducted within the Study Area following regulatory agency and CNPS survey protocols (CDFW 2018, CNPS 2001, USFWS 1996) on October 7, 2021, April 8, 2022, and May 17, 2022 by qualified WRA botanists proficient in identifying special-status plant species in the Livermore area, including areas nearby and adjacent to the Study Area. The surveys focused on plants that were identified to have potential to occur within the Study Area; those species being bent flowered fiddleneck (*Amsinckia lunaris*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*),

Livermore tarplant (*Deinandra bacigalupii*), and San Joaquin spearscale (*Extriplex joaquinana*). The surveys were conducted by taking meandering transects throughout the entire Study Area. Prior to the surveys, reference sites for each of the above four species were visited to ensure that the timing of the surveys was appropriate. All species were observed to be blooming, evident, and identifiable at the reference sites. A hydrologic analysis using the Antecedent Precipitation Tool (Deters 2022) was conducted to determine whether precipitation levels during the 3-month periods preceding each plant survey were above, below, or within the 30-year average for the region. The results of the hydrologic analysis indicate precipitation was below normal for the 3-month periods preceding the first two plant surveys (October 7, 2021 and April 8, 2022). Precipitation was within the normal range for the 3-month period preceding the May 17, 2022 site visit.

3.3 Wildlife Corridors and Native Wildlife Nursery Sites

To account for potential impacts to wildlife movement/migratory corridors, biologists reviewed maps and habitat connectivity data from the California Essential Connectivity Project available through the CDFW Biogeographic Information and Observation System (CDFW and Caltrans 2022). Additionally, aerial imagery (Google 2022) for the local area was referenced to assess if local core habitat areas were present within, or connected to the Study Area. This assessment was refined based on observations of on-site physical and/or biological conditions, including topographic and vegetative factors that can facilitate wildlife movement, as well as on-site and off-site barriers to connectivity.

The potential presence of native wildlife nursery sites is evaluated as part of the site visit and discussion of individual wildlife species below. Examples of native wildlife nursery sites include nesting sites for native bird species (particularly colonial nesting sites), marine mammal pupping sites, and colonial roosting sites for other species (such as for monarch butterfly [*Danaus plexippus*]).

4.0 ECOLOGICAL SETTING

The approximately 72-acre combined Study Area is located in the City of Livermore and portions of unincorporated Alameda County. It includes non-native annual grassland, developed areas, and aquatic resources. The Study Area contains two deeply incised perennial streams, Arroyo Seco and Arroyo Las Positas. Most of the Study Area is grazed by livestock with some infrastructure present including cattle pens, soil mounds, agricultural infrastructure, and fencing. Elevations in the Study Area are approximately 500 feet above sea level.

4.1 Soils and Topography

The Soil Survey of Alameda County, California (USDA 1981) and the California Soil Resource Lab's online soil viewer ([CSRL] California Soil Resource Lab 2022) list five soil mapping units within the Study Area: Clear Lake clay (drained, 0 to 2 percent slopes), Linne clay loam (3 to 15 percent slopes), Linne clay loam (15 to 30 percent slopes), Pescadero clay, and San Ysidro loam. Descriptions of each soil series are provided below. The distribution of these soil mapping units within the Study Area is depicted on Figure 2 (Appendix A).

Clear Lake Series: Soils in the Clear Lake series consist of very deep, poorly drained clay formed in alluvium derived from sandstone and shale on basins and swales of drainage ways. These soils occur under grasslands, crop fields and rangeland, have negligible to high runoff with slow to very

slow permeability with an intermittent perched water table very near the surface during the wet winter months. Clear Lake series is considered a hydric soil where it occurs in Alameda County (USDA 1981).

Clear Lake soils have a very dark gray (N 3/0) clay surface horizon with few fine faint redoximorphic concentrations from 0 to 13 inches below the soil surface, underlain by a very dark gray (10YR 3/0) clay subsurface horizon with no redoximorphic features from 13 to 19 inches below the soil surface.

Linne Series: The Linne series consists of moderately deep, well drained calcareous soils that formed in material weathered from light grey or white, fairly soft shale, and sandstone. Linne soils are on gentle slopes to hills that have slopes of 3 to 75 percent. These soils occur under rangeland and crop fields, have medium to very rapid runoff, and moderately slow permeability. The Linne soil series is considered a hydric soil where it occurs in Alameda County (USDA 1981).

A typical soil pedon for Linne clay loam soils consists of a moderately alkaline (pH 8.0), black (10YR 2/1) clay loam surface from 0 to 14 inches below the soil surface. This horizon is underlain by a very dark grey (10YR 3/1) clay loam with many fine filaments and nodules of lime. Those horizons are underlain by grey (10YR 5/1) sandy clay loam and below that a very pale brown (10YR 7/2) fine sandy loam that is extremely hard bottom horizon.

Pescadero Series: Soils in the Pescadero series consist of very deep, poorly drained soil that formed in alluvium from sedimentary rocks including sandstone and shale. Pescadero soils have a strongly saline-alkaline (pH 8.9) horizon (natric zone) between 3 and 26 inches and are located on nearly level basins and along the lower edge of stream terraces. These soils occur under rangeland for livestock grazing and irrigated pasture dominated by salt tolerant plant species. Pescadero soils have very slow runoff, low water holding capacity, and redoximorphic features less than 20 inches below the surface. Pescadero series is considered a hydric soil where it occurs in Alameda County (USDA 1981).

San Ysidro Series: The San Ysidro series consists of soils that are deep, moderately well-drained, fine sandy loam soils, on low fan remnants and stream terraces. They are found at elevations of 5 to 100 feet on 0 to 9 percent slopes formed in alluvium derived from sedimentary rocks. These soils have very low permeability and a low water holding capacity. San Ysidro series is considered a hydric soil where it occurs in Alameda County (USDA 1981).

San Ysidro soils consists of two A horizons underlain by two B horizons and two C horizons. The first A horizon is from 0 to 7 inches consisting of light brownish gray (10YR 6/2) fine sandy loam with distinct mottles of brownish yellow (10YR 6/6) followed by a second A horizon from 7 to 14 inches consisting of light brownish gray (10YR 6/2) fine sandy loam, also with distinct mottles of brownish yellow (10YR 6/6). Beneath these are two Bt horizons from 14 to 40 inches containing dark yellowish brown (10YR 4/4) clay and yellowish brown (10YR 5/6) sandy clay loam. These are underlain by two C horizons with yellowish brown (10YR 5/4) light sandy clay loam and yellowish brown (10YR 6/4) light clay loam from 40 to 68 inches.

4.2 Climate and Hydrology

The Study Area is located in the northern portion of the City of Livermore with the western portions of the Study Area falling within unincorporated Alameda County. The average monthly maximum temperature in the area is 75 degrees Fahrenheit, while the average monthly minimum temperature is 48 degrees Fahrenheit. Predominantly, precipitation falls as rainfall between November and March with an annual average precipitation of 13 inches (USDA 2022).

The Study Area is located in the Arroyo Las Positas watershed, within the San Francisco Bay Hydrologic Unit Code (HUC)-8 watershed (HUC-8 18050004). Annual rainfall within this watershed averages 15.22 inches, with the majority of rain falling between December and March. Arroyo Seco and Arroyo Las Positas are USGS blue-line perennial streams in the Study Area. Arroyo Seco and Arroyo Las Positas originate in the Altamont Hills east of the Study Area. The primary hydrological sources for the creeks is from the upstream watersheds, rainfall, surface runoff, and subsurface input from the adjacent lands within the Study Area. Outside the stream channels, the site dries out entirely after the spring months. Additional descriptions of aquatic resources are provided in Section 5.1 below.

4.3 Land-use

The Study Area consists mostly of undeveloped grazed land. The Study Area is dominated by non-native annual grassland and includes two perennial streams, Arroyo Las Positas and Arroyo Seco. Most of the site is grazed by livestock with some infrastructure including cattle pens, soil mounds and fencing. Developed areas include Interstate 580, gravel and paved roads, and residential development. Vegetation community descriptions are provided in Section 5.1 below, and a list of all observed plant species is provided in Appendix B. Surrounding land uses include grazed land and residential developments (Google Earth 2022). Historically, the Study Area was predominately open space with agricultural infrastructure within the southern, western and northern portions of the Study Area. Las Colinas Road, Interstate 580, and roads associated with agricultural infrastructure have been present within the Study Area prior to 1949. The residential development in the northern portion of the Study Area was built between 1987 and 1993. Agricultural infrastructure to the west and north were abandoned between 1993 and 2002, leaving scattered concrete structure fragments throughout the Study Area. The Study Area and surrounding area has remained relatively unchanged since 2002 (NETR 2022).

5.0 ASSESSMENT RESULTS

5.1 Vegetation Communities and Other Land Cover

WRA observed four land cover types within the Study Area: developed, non-native annual grassland, perennial stream, and seasonal wetland swale. Land cover types within the Study Area are shown on Figure 3 (Appendix A). The non-sensitive land cover types in the Study Area include non-native grasslands and developed areas, while the sensitive communities include perennial stream and seasonal wetland.

TABLE 1. VEGETATION COMMUNITY AND LAND COVER TYPES

COMMUNITY/LAND COVERS	SENSITIVE STATUS	RARITY RANKING	ACRES WITHIN STUDY AREA
<i>Terrestrial Community/Land Cover</i>			
Non-native Annual Grassland	Non-sensitive	None	60.53
Developed	Non-sensitive	None	10.11
<i>Aquatic Resources</i>			
Perennial Stream	Sensitive	N/A	1.19
Seasonal Wetland Swale	Sensitive	N/A	0.23

5.1.1 Terrestrial Land Cover

Non-native Annual Grassland

Non-native annual grassland is the dominant habitat type present across the Study Area. Non-native annual grassland habitat present in the Study Area is generally flat with some small topographic rises. Grassland habitat in the Study Area is grazed by cattle and disked in some areas. Dominant plant species observed in non-native annual grasslands include slim oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), foxtail barley (*Hordeum murinum*), and Mediterranean barley (*H. marinum* ssp. *gussoneanum*). Unlike the alkali sink community (as described in the EACCS), which is a sensitive community and is dominated by perennial native herbs such as salt grass (*Distichlis spicata*) and creeping wild rye (*Elymus triticoides*), non-native annual grassland in the Study Area is dominated by non-native annual grasses and forbs. Although some native species that are indicative of alkaline conditions are present in non-native annual grassland in the Study Area, such as alkali mallow (*Malvella leprosa*), alkali weed (*Cressa truxillensis*), alkali heath (*Frankenia salina*), and common tarweed (*Centromadia pungens* ssp. *pungens*), these species are present at low cover and are never dominant. Given the dominance of non-native annual species, non-native annual grassland is not considered a sensitive land cover type; however, it provides potentially suitable habitat to special-status wildlife species (see Section 5.2.2) and contains occurrences of the special-status plant species San Joaquin spearscale (see Section 5.2.1).

Developed

Developed areas in the northern portion of the Study Area include a residential development and associated roads. Developed areas in the southern portion of the Study Area include a portion of Highway 580, Las Colinas Road, paved and gravel roads, various agricultural properties and structures, and landscaped areas. Developed area is not a sensitive land cover type.

5.1.2 Aquatic Resources

Perennial Stream

Areas mapped as perennial stream within the Study Area include Arroyo Seco and Arroyo Las Positas. Arroyo Seco is located within the southern region of the Study Area and flows east to west. Arroyo Las Positas occurs along the west edge of the Study Area and flows north to south. Arroyo Seco and Arroyo Las Positas are deeply incised, have narrow meanders, and contain scattered pockets of riparian and in-stream vegetation. Below the OHWM, vegetation includes watercress (*Nasturtium officinale*; OBL), cattail (*Typha* sp.; OBL), cocklebur (*Xanthium strumarium*; FAC), and tule (*Schoenoplectus acutus* var. *occidentalis*; OBL). Land cover above the OHWM is non-native annual grassland, with more ruderal species including black mustard (*Brassica nigra*; NL), perennial pepperweed (*Lepidium latifolium*; FAC), Italian thistle (NL), and fennel (*Foeniculum vulgare*; NL). Scattered coyote brush (*Baccharis pilularis* ssp. *consanguinea*; NL) and riparian trees including red gum (*Eucalyptus camaldulensis*; FAC), tamarisk (*Tamarix parviflora*; FAC), and red willow are also present along the bank of Arroyo Seco. No trees are present along Arroyo Las Positas. Perennial stream is a sensitive aquatic resource, potentially subject to CDFW, Corps, and RWQCB jurisdiction.

Seasonal Wetland Swale

A seasonal wetland swale is present in the southern portion of the Study Area. The swale follows a linear depression that receives hydrological input from a high-density polyethylene (HDPE) corrugated culvert that runs under the developed roadway that borders the swale to the east. Seasonal wetland swale overstory is dominated by red willow (*Salix laevigata*, FACW) with knotweed (*Rumex pulcher*, FAC) and perennial pepperweed dominating the understory. Seasonal wetland swale is a sensitive aquatic resource, potentially subject to Corps and RWQCB jurisdiction.

5.2 Special-status Species

5.2.1 Special-status Plants

Based upon a review of a 9-quad search in the CNDDDB (CDFW 2022b) and the CNPS databases (CNPS 2022a), a total of four special-status plant species that have been previously recorded within the vicinity of the Study Area were determined to have moderate or high potential to occur within the Study Area (Appendix C). The remaining species documented from the greater vicinity are unlikely or have no potential to occur for one or more of the following reasons:

- 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; or
- Very unique pH characteristics, such as those found in alkali scalds, are absent from the Study Area.

Species known to occur in the vicinity of the Study Area which were determined to have moderate or high potential habitat within the Study Area are summarized below. WRA biologists conducted protocol-level surveys during the blooming periods for bent flowered fiddleneck (Rank 1B.2), Congdon’s tarplant (Rank 1B.1), Livermore tarplant (State Endangered, Rank 1B.1), and San Joaquin spearscale (Rank 1B.2). Bent flowered fiddleneck, Congdon’s tarplant, and Livermore tarplant were not observed during the protocol-level surveys and are assumed absent from the Study Area. San Joaquin spearscale (Rank 1B.2) was observed during the April 8 and May 17, 2022 protocol-level rare plant surveys and is discussed below.

TABLE 2. POTENTIAL SPECIAL-STATUS PLANTS

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	POTENTIAL HABITAT IN THE STUDY AREA
<i>Formally Listed Plants (FESA, CESA, CNPPA)</i>			
<i>Amsinckia lunaris</i>	Bent-flowered fiddleneck	Rank 1B.2	Presumed Absent. This species was not observed during the protocol-level rare plant surveys, and is not discussed further.
<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Congdon’s tarplant	Rank 1B.1, EACCS Focal Species	Presumed Absent. This species was not observed during the protocol-level rare plant surveys, and is not discussed further.
<i>Deinandra bacigalupii</i>	Livermore tarplant	State Endangered, Rank 1B.1, EACCS Focal Species	Presumed Absent. This species was not observed during the protocol-level rare plant surveys, and is not discussed further.
<i>Extriplex joaquinana</i>	San Joaquin spearscale	Rank 1B.2 EACCS Focal Species	Present. This species was observed during the April 8, 2022 and May 17, 2022 protocol-level rare plant surveys.

Rank 1B.1 – Plants rare, threatened or endangered in California and elsewhere, seriously threatened in California
 Rank 1B.2 – Plants rare, threatened or endangered in California and elsewhere, moderately threatened in California

San Joaquin spearscale was observed in clay soils in the northern region of the Study Area during the April 8 and May 17, 2022 protocol-level rare plant surveys. In the vicinity of Arroyo Las Positas, plants occurred on both sides of the creek channel, primarily scattered in small groups in flat areas, but occasionally on the upper banks of the channel. Additionally, a larger population (342 individuals) occurred on the steep slope west of the creek. South of the residential development in the vicinity of Redwood Road, a large population (approximately 15,000 individuals) was mapped in a broad, flat area. This population borders a disked fuel break along the fence line of the residential area, and some plants were observed growing in the disked area. A small number of scattered individuals were mapped west of this large population, occurring in weedy grassland or in disturbed areas next to a corral. An estimated total of 15,686 San Joaquin spearscale plants were observed within the areas identified on Figure 4 (Appendix A). Associated species included Mediterranean barley, yellow starthistle (*Centaurea solstitialis*), alkali heath, alkali weed, alkali mallow, common tarplant, soft chess, Italian ryegrass (*Festuca perennis*), and red-stemmed filaree (*Erodium cicutarium*). Within the Study Area, San Joaquin spearscale occurred in topography ranging from flat to slightly concave to steeply sloped, and the dominant species where it occurred were non-native annual grasses and forbs.

5.2.2 Special-status Wildlife

Of the 30 special-status wildlife species documented in the vicinity of the Study Area, most are excluded from the Study Area based on a lack of habitat features. Features not found within the Study Area that are required to support special-status wildlife species include:

- Vernal pools
- Tidal marsh areas
- Deciduous or coniferous forest
- Riparian woodland
- Scrub
- Estuary or freshwater marsh
- Caves, mine shafts, or abandoned buildings

The absence of such habitat features eliminates components critical to the survival or movement of most special-status species found in the vicinity.

Ten special-status species have potential to occur in the immediate vicinity of or in portions of the Study Area: California red-legged frog (CRLF; *Rana draytonii*), California tiger salamander (CTS; *Ambystoma californiense*), western pond turtle (WPT; *Emys marmorata*), American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), and yellow warbler (*Setophaga petechia*). These species and potential habitat are summarized in Table 3 and are discussed in greater detail below.

TABLE 3. POTENTIAL SPECIAL-STATUS WILDLIFE

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	POTENTIAL HABITAT IN THE STUDY AREA
<i>Formally Listed Wildlife (FESA, CESA)</i>			
<i>Rana draytonii</i>	California red-legged frog (CRLF)	Federal Threatened, SSC, EACCS Focal Species	Water within perennial streams within the Study Area may provide non-breeding aquatic habitat. Annual grassland within the Study Area is potential upland aestivation or dispersal habitat.
<i>Ambystoma californiense</i>	California tiger salamander (CTS)	Federal Threatened, State Threatened, EACCS Focal Species	Documented breeding ponds are present within 1 mile of the Study Area. Annual grassland within the Study Area is potential upland habitat.
<i>Other Special-status Wildlife (CEQA, EACCS focal species)</i>			
<i>Emys marmorata</i>	Western pond turtle	SSC	Perennial stream within the Study Area may serve as dispersal habitat and annual grassland within the Study Area may serve as potential nesting habitat.
<i>Taxidea taxus</i>	American badger	SSC, EACCS Focal Species	Annual grassland within the Study Area may provide suitable denning or foraging habitat.
<i>Athena cunicularia</i>	Burrowing owl	SSC, EACCS Focal Species	Annual grassland with presence of ground squirrel burrows may provide suitable nesting or wintering habitat.
<i>Ammodramus savannarum</i>	Grasshopper sparrow	SSC	Annual grassland within the Study Area may provide suitable nesting and foraging habitat.
<i>Lanius ludovicianus</i>	Loggerhead shrike	SSC	Open grassland foraging habitat is available within the Study Area and the Study Area contains trees and dense vegetation that may support nesting.
<i>Circus hudsonius</i>	Northern harrier	SSC	Annual grassland within the Study Area may provide suitable nesting and foraging habitat.
<i>Elanus leucurus</i>	White-tailed kite	SSC, CFP	Annual grassland within the Study Area provide open foraging habitat, and trees along Arroyo Seco may support nesting.
<i>Setophaga petechia</i>	Yellow warbler	SSC	Willows along Arroyo Seco may provide suitable nesting habitat for this species.

SSC – CDFW Species of Special Concern
 CFP – California Fully Protected Species

Formally Listed Species

California red-legged frog (*Rana draytonii*), Federal Threatened Species, CDFW Species of Special Concern, EACCS Focal Species, High Potential. 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.

This species has been documented in Arroyo Las Positas approximately 0.25 mile north of the Study Area (CDFW 2022b). The four physical and biological features required for CRLF include: aquatic breeding habitat; non-breeding aquatic habitat; upland habitat; and dispersal habitat (USFWS 2010). Waters of Arroyo Seco and Arroyo Las Positas are both perennial streams. An observation of CRLF was recorded on Arroyo Las Positas approximately 800 feet outside of the Study Area and noted juveniles and adults present in an area directly adjacent to a small seasonal stock pond (CDFW 2022b). The occurrence of the species on this perennial stream in January indicates the stream is most likely used as non-breeding aquatic habitat while the adjacent stock pond (outside of the Study Area) may serve as breeding habitat. In addition, the USFWS critical habitat description describes uplands within 300 feet of aquatic habitats (non-breeding and breeding) as being potential upland habitat which may be occupied by CRLF for prolonged periods of time, at all times of year (USFWS 2010). Therefore, uplands within the Study Area that are also within 300 feet of Arroyo Seco or Arroyo Las Positas may serve as upland habitat for CRLF. Lastly, CRLF can move through grasslands during dispersal events that coincide with rains in the winter and spring months. Grasslands within the Study Area may serve as dispersal habitats in winter or spring but they do not serve as dispersal habitat in the summer and fall when the Project is scheduled.

California tiger salamander (*Ambystoma californiense*), Federal Threatened, State Threatened, EACCS Focal Species, Moderate Potential. 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.

This species has been documented within 1 mile of the Study Area (CDFW 2022b). Although the Study Area does not contain seasonal wetlands that would support CTS breeding, there are several stock ponds within 1 mile of the Study Area that may be suitable. 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. CTS may therefore disperse through annual grassland within the Study Area following rain events and may find refugia in burrows within the Study Area. Disking in portions of the Study Area reduces suitability of upland habitat within the Study Area by eliminating burrow openings and disrupting access to subterranean refugia. However, given the proximity of the Study Area to potential breeding habitats and the presence of grassland with burrows that can support aestivation, annual grassland within the Study Area is potential upland habitat for this species. This species is presumed present year-round.

Other Special-status Wildlife (CEQA or EACCS focal species)

Western pond turtle (*Emys 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). When in uplands turtles require duff and thick leaf litter to hide their presence (Holland 1994). Although upland habitat is utilized for refuge and nesting, this species preferentially utilizes aquatic and riparian corridors for movement and dispersal.

This species has been documented in Arroyo Las Positas approximately 0.1 mile downstream of the Study Area, and may use the creek within the Study Area. While access to annual grasslands within the Study Area for breeding may be limited by the very steep banks and incised channel, this may not fully exclude the species from occurring in annual grasslands during nesting periods. Because the species is known to occur in the vicinity, and potential aquatic as well as annual grassland habitats are present, the species has a moderate potential to occur.

American badger (*Taxidea taxus*), CDFW Species of Special Concern, EACCS Focal Species, Moderate Potential. 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).

The Study Area contains grassland habitat with a prey base (ground squirrels) that may support this species. In addition, the Study Area connects to larger areas of open, undeveloped land to the west. However, this species has a relatively large home range, and the proximity of the Study Area to dense urban development and a high level of anthropogenic disturbance (including disking in some areas) reduces suitability of the Study Area. There was no indication of badger use or occupancy in burrows (claw marks, prey remains, etc.) observed within the Study Area at the time of the site visit. Given the presence of grassland within the Study Area where badgers may construct burrows in the future, the proximity to larger tracts of undeveloped land where badgers may migrate from, and the presence of potential prey, this species has a moderate potential to occur.

Burrowing owl (*Athene cunicularia*), CDFW Species of Special Concern, EACCS Focal Species, Moderate Potential. 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. 2011). 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 and small vertebrates. Breeding typically takes place from March to July.

This species is known to occur in the vicinity with several documented occurrences nearby in the past 20 years (CDFW 2022b). The Study Area contains short grassland vegetation (due to grazing), and potentially suitable ground squirrel burrow were observed within the Study Area during the site visit. However, there are no recent documented occurrences of burrowing owl within 1 mile of the Study Area, and no indication of use (i.e. pellets, whitewash, or feathers) was observed during site visits. Disking in some areas also reduces suitability of habitat within the Study Area. Given the presence of annual grassland within the Study Area and the presence of ground squirrels, as well as their ability to quickly reestablish burrows after disking, burrowing owl species has a moderate potential to occur.

Grasshopper sparrow (*Ammodramus savannarum*), CDFW Species of Special Concern, Moderate Potential. The grasshopper sparrow is a summer resident in California, wintering in Mexico and Central America. This species occurs in open grassland and prairie-like habitats with short- to moderate-height vegetation, and often scattered shrubs (Shuford and Gardali 2008). Both perennial and annual (non-native) grasslands are used. Nests are placed on the ground and well concealed, often adjacent to grass clumps (Shuford and Gardali 2008). Grasshopper sparrows are secretive and generally detected by voice. Insects comprise the majority of the diet.

This species has been observed in the vicinity (eBird 2022). The Study Area contains grasslands which may be used by this species for foraging and nesting. While ranching activities such as grazing and disking reduce the quantity and quality of habitat, the species may still find small patches of habitat within the Study Area to support nesting.

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

The Study Area contains willows along Arroyo Seco dense enough to support nesting, although habitat quality is reduced due to the high level of anthropogenic disturbance from the adjacent freeway.

Northern harrier (*Circus hudsonius [cyaneus]*), CDFW Species of Special Concern, Moderate Potential. The northern harrier occurs as a resident and winter visitor in open habitats throughout most of California, including freshwater and brackish marshes, grasslands and fields, agricultural areas, and deserts. Harriers typically nest in treeless areas within patches of dense, relatively tall, vegetation, the composition of which is highly variable; nests are placed on the ground and often located near water or within wetlands (Shuford and Gardali 2008). Harriers are birds of prey and subsist on a variety of small mammals and other vertebrates.

This species has been observed in the vicinity of the Study Area (eBird 2022). The Study Area contains grasslands with small mammal burrows such as vole, gopher, and ground squirrel. While ranching

practices such as grazing and disking manage the height of grasses, the species may still find isolated pockets of suitable grasses immediately adjacent to the Study Area where they may nest.

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 potential nesting sites in the trees along Arroyo Seco and adjacent open grassland which may provide suitable foraging habitat.

Yellow warbler (*Setophaga petechia*), 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 (Jennings and Hayes 1994). 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.

The Study Area contains willows along Arroyo Seco dense enough to support nesting, although habitat quality is reduced due to the high level of anthropogenic disturbance from the adjacent freeway. This species has a moderate potential to nest within the trees along Arroyo Seco within the Study Area.

Federal Listed and EACCS Focal Species Unlikely to Occur in the Study Area

Longhorn fairy shrimp (*Branchinecta longiantenna*), Federal Endangered, EACCS Focal Species, Unlikely.
Vernal pool fairy shrimp (*Branchinecta lynchi*), Federal Threatened, EACCS Focal Species, Unlikely. Potential habitat for longhorn fairy shrimp and vernal pool fairy shrimp is mapped within the Study Area in the EACCS (ICF 2010) and suitable habitat for branchiopods was further identified as part the development of the City of Livermore's Stream Maintenance Program. In 2017, ESA conducted presence/absence surveys for vernal pool crustaceans on five streams and three basin systems in the City of Livermore, encompassing the Study Area that is evaluated in this Biological Assessment (ESA 2017). Within the Study Area, they sampled a small depression consisting of vehicle tire ruts located within the ranch road on the western edge of the Study Area (ESA 2017). No vernal pool crustaceans of any species were encountered during ESA's wet season survey within the Study Area. The 2017 follow-up dry season survey within the Study Area noted a "low" abundance of *Branchinecta* cysts were present. Although cysts belonging to the genus *Branchinecta* are not identifiable to species, the location of the Study Area, the habitats on-site, and the results of the wet season survey conducted in the area suggest the cysts most likely are those of the versatile fairy shrimp (*Branchinecta lindahli*) and not listed *Branchinecta* species. WRA's delineation of potential Waters of the U.S. in the Study Area determined that the tire rut sampled by ESA in 2017 did not constitute a wetland, supporting the determination that there is insufficient hydrology for listed vernal pool crustaceans to occur within in the Study Area (WRA 2022). The one wetland feature mapped within the Study Area by WRA is a swale that also does not hold water for a

sufficient time to support vernal pool species. Therefore, it is unlikely that any listed vernal pool branchiopods would occur within the Study Area.

San Joaquin Kit Fox (*Vulpes macrotis mutica*), Federal Endangered, State Threatened, EACCS Focal Species, Unlikely. The Study Area is located in a portion of Alameda County where observations of San Joaquin kit fox have not been noted for more than 20 years and all observations are at least 5 miles from the Study Area (CDFW 2022b). The nearest occurrence of the species is separated from the Study Area by the City of Livermore to the southeast and I-580. These are notable barriers to the species and are the types of barriers responsible for fragmentation of habitats. The nearest observation was recorded in 1989 (CDFW 2022b, Occ 43), making it more than 30 years since an animal was recorded to the southeast of the Study Area. The most recent USFWS species status report (USFWS 2020a) notes that a study of kit fox in this area in approximately 2003 produced no positive sightings. Further, the separation between the 1989 occurrence and the Study Area makes it infeasible that animals in this location, if still extant, could act as a source for the Study Area. The next closest observation is 5.1 miles to the northeast (CDFW 2022b, Occ 58), but it is also separated from the Study Area by the northern section of the City of Livermore. While this observation is approximately 20 years old, it is located in an undeveloped section of the foothills where numerous other observations, including more recent observations of the species have been documented, indicating that there is likely a population in that remote portion of Alameda County. However, the distance between that population center and the Study Area, the dense urban development in between, and a total lack of observations near the City of Livermore indicates that this species has not expanded outside of the undeveloped portions of the foothills of Eastern Alameda County. Further, reviews of this species presence in the area, including numerous assessments specific to San Joaquin kit fox, confirmed that it is likely established in the Altamont Hills; however, it has not expanded westward of the Altamont Hills in the areas north of I-580 where the Study Area is located (Duke et al 2007, Sproul and Flett 1993). In 2020 the USFWS reviewed San Joaquin kit fox throughout its range and found that the Livermore Area had no known population of San Joaquin kit fox (USFWS 2020a). Given that the Study Area is isolated on two of three sides by impassible barriers including dense urban housing developments and a major highway (I-580) and that the species is not considered present or established in the vicinity, it is unlikely to be present within the Study Area.

Callippe Silverspot Butterfly (*Speyeria callippe callippe*), Federal Endangered, EACCS Focal Species, Unlikely. No observations of the species have been recorded within 5 miles of the Study Area in the past 10 years (CDFW 2022b). The USFWS considers populations in Alameda County to be extirpated and does not show a current population of this species within the Livermore area (USFWS 2020b, USFWS 2022a). Because this species is considered extirpated, it is unlikely to be present within the Study Area.

5.3 Wildlife Corridors and Native Wildlife Nursery Sites

No critical habitat or native wildlife nursery sites are present in the Study Area.

Wildlife movement between suitable habitat areas can occur via open space areas lacking substantial barriers. The terms “landscape linkage” and “wildlife corridor” are often used when referring to these areas. The key to a functioning corridor or linkage is that it connects two larger habitat blocks, also referred to as core habitat areas (Beier and Loe 1992; Soulé and Terbough 1999). It is useful to think of a “landscape linkage” as being valuable in a regional planning context, a broad scale mapping of natural habitat that functions to join two larger habitat blocks. The term “wildlife corridor” is useful in the context of smaller, local area planning, where wildlife movement may be facilitated by specific local biological habitats or passages and/or may be restricted by barriers to movement. Above all, wildlife corridors must

link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat (Hilty et al. 2019).

The Study Area is not within a designated wildlife corridor based on the Essential Connectivity Areas geospatial dataset, which uses habitat modelling to identify areas of land with value as wildlife corridors (CDFW and Caltrans 2022). The site is located within a larger tract of development, including I-580 to the south and dense residential development to the east which serve as barriers to movement for terrestrial species. However, the Study Area is connected to a larger tract of lightly developed and undeveloped land to the west and terrestrial wildlife species may therefore be present incidentally within the Study Area. In addition, perennial streams within the Study Area may provide local dispersal habitat for aquatic species. Such species may be present year-round or may disperse through streams during seasonal rain events. The Project is scheduled to occur during the dry season when streams are less likely to function for dispersal and corridor movement, as opposed to aquatic habitat for species with aquatic requirements (e.g. CRLF used as non-breeding aquatic habitat). As such the Study Area does not provide corridor functions beyond connecting similar lightly developed land parcels in local surrounding areas.

6.0 SUMMARY

The approximately 72-acre Study Area evaluated in this report covers the proposed alignment for the Arroyo Las Positas Trail Project and the Springtown Sewer Trunkline Project. The Study Area is comprised of non-native annual grassland, developed areas, perennial stream, and a seasonal wetland swale. One special-status plant species (San Joaquin spearscale) was observed in the northern region of the Study Area during the April 8 and May 17, 2022 protocol-level rare plant surveys. Ten special-status wildlife species have potential to occur in the immediate vicinity of or in portions of the Study Area: CTS, CRLF, WPT, American badger, burrowing owl, grasshopper sparrow, loggerhead shrike, northern harrier, white-tailed kite and yellow warbler. An evaluation of impacts to sensitive habitats and species, and recommended avoidance, minimization, and mitigation measures will be provided in separate reports.

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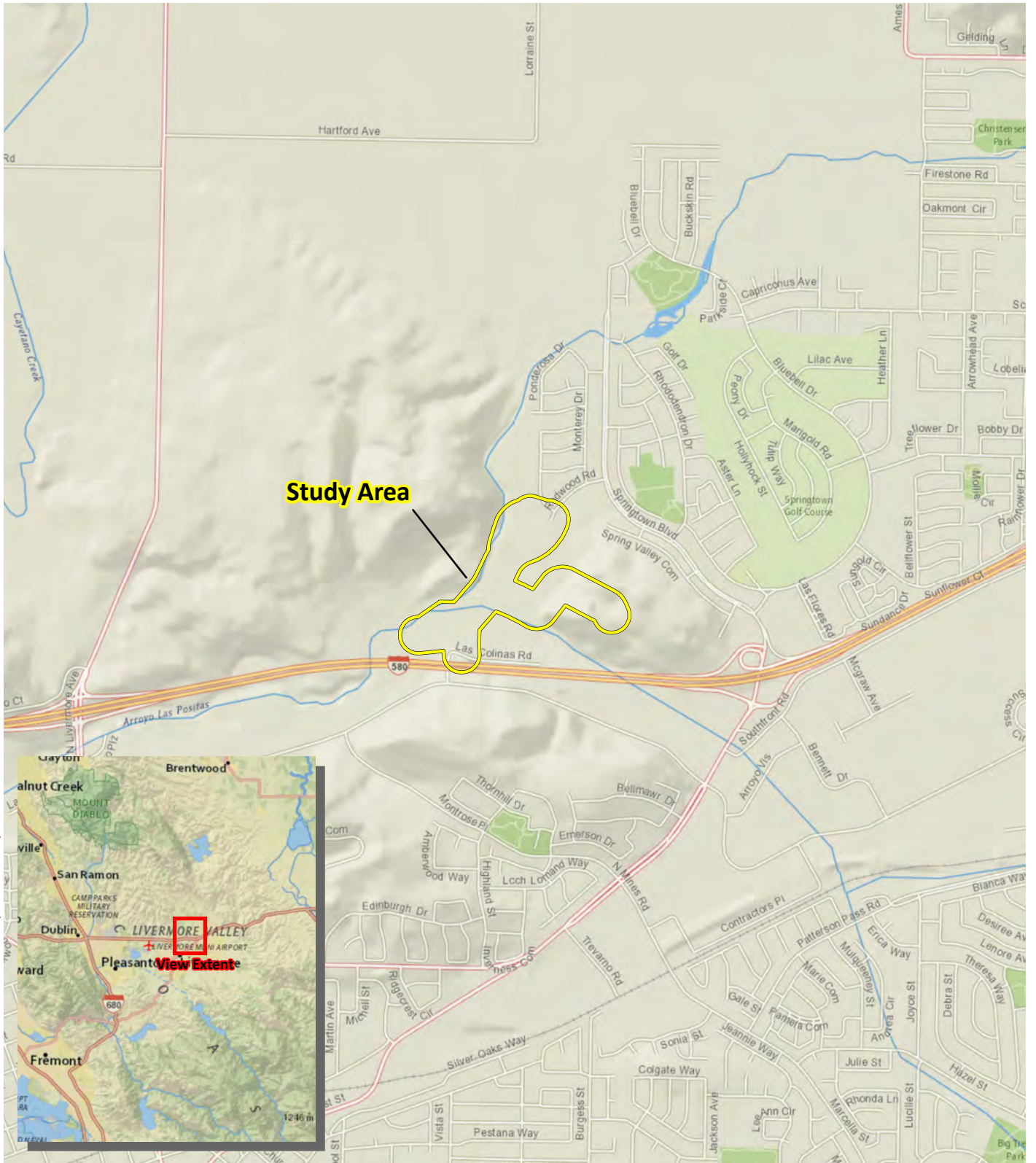
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APPENDIX A – FIGURES

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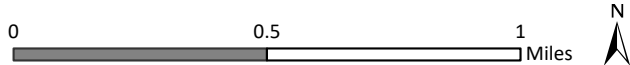


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Sources: National Geographic, WRA | Prepared By: njander, 4/18/2022

Figure 1. Study Area Regional Location Map

Arroyo Las Positas Trail and Springtown Sewer Trunkline Projects
Livermore, Alameda County, California



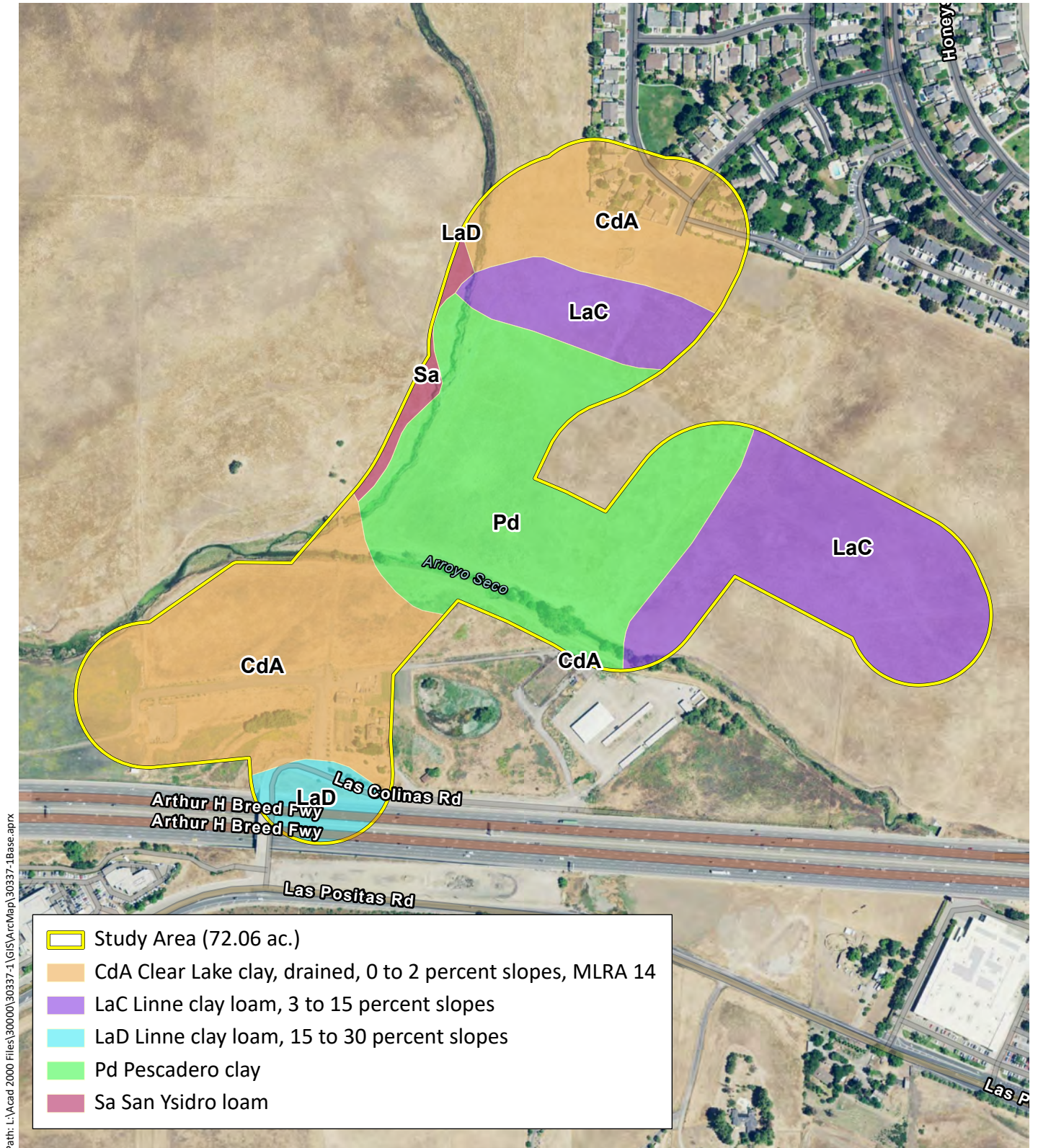
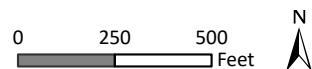


Figure 2. Study Area Soils

Arroyo Las Positas Trail and
Springtown Sewer Trunkline Projects
Livermore, Alameda County, California



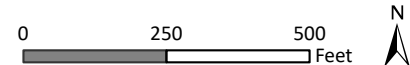


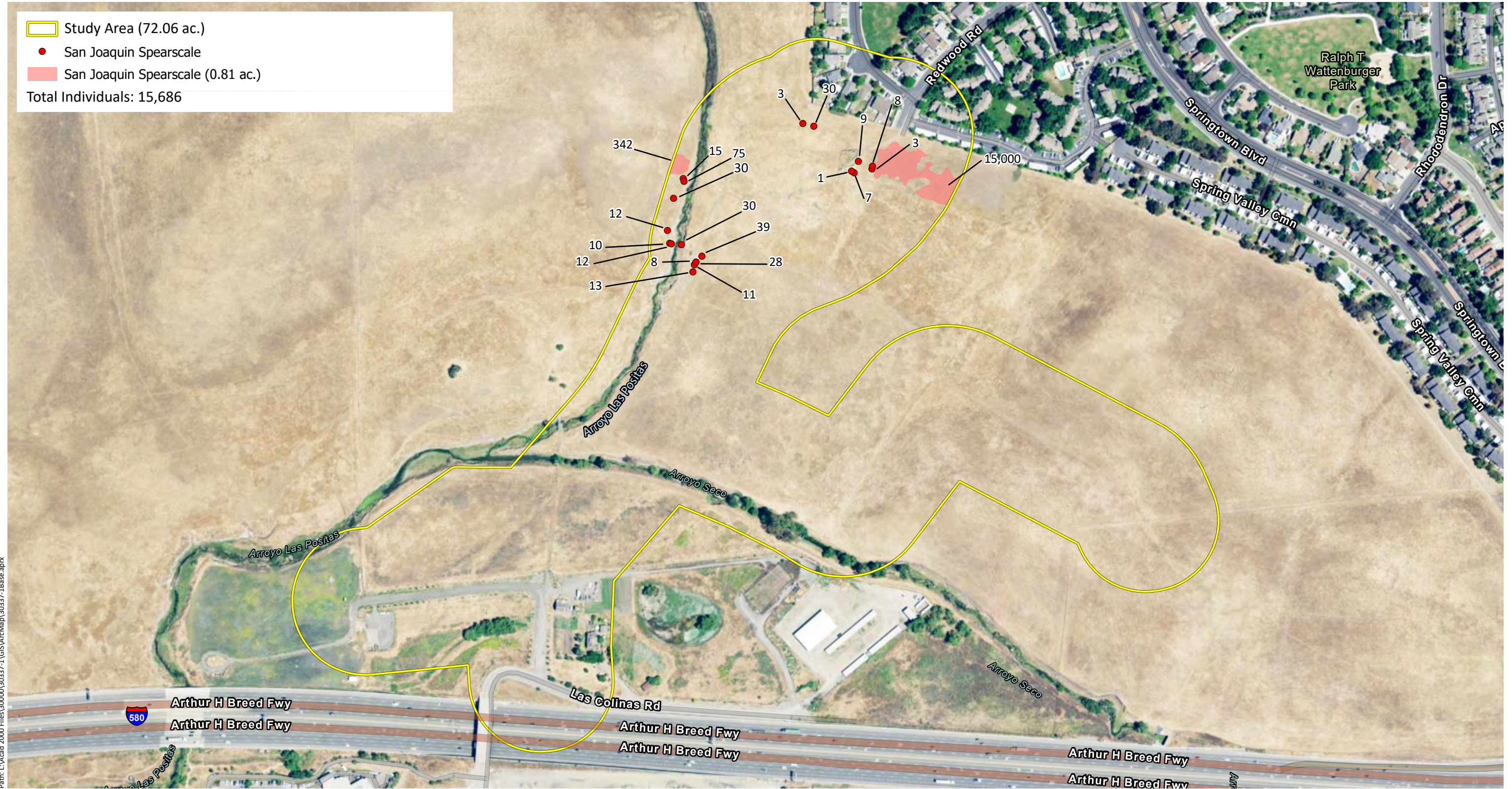
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Sources: USDA NAIP Imagery 2020, WRA | Prepared By: njander, 8/17/2022

Figure 3. Natural Communities and Land Cover within the Study Area

Springtown Sewer Trunkline Project Livermore, Alameda County, California



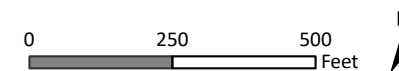


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Sources: USDA NAIP Imagery 2020, WRA | Prepared By: njander, 8/17/2022

Figure 4. Rare Plants

Springtown Sewer Trunkline Project Livermore, Alameda County, California



APPENDIX B – PLANTS DOCUMENTED WITHIN THE STUDY AREA

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Appendix B. Plant species observed in the Study Area on January 13 and October 7, 2021, and April 8 and May 17, 2022

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Achyrachaena mollis</i>	Blow wives	native	annual herb	-	-	FAC	
<i>Allenrolfea occidentalis</i>	Iodine bush	native	shrub	-	-	FACW	C
<i>Amsinckia intermedia</i>	Common fiddleneck	native	annual herb	-	-	-	
<i>Amsinckia lycopsoides</i>	Tarweed fiddleneck	native	annual herb	-	-	-	B
<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>	Coyote brush	native	shrub	-	-	-	
<i>Bellardia trixago</i>	Mediterranean linseed	non-native (invasive)	annual herb	-	Limited	-	
<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>Bromus madritensis</i>	Foxtail brome	non-native	annual grass	-	-	UPL	
<i>Capsella bursa-pastoris</i>	Shepherd's purse	non-native	annual herb	-	-	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>Centromadia pungens</i> ssp. <i>pungens</i>	Common tarweed	native	annual herb	-	-	FAC	
<i>Cirsium vulgare</i>	Bullthistle	non-native (invasive)	perennial herb	-	Moderate	FACU	
<i>Conium maculatum</i>	Poison hemlock	non-native (invasive)	perennial herb	-	Moderate	FACW	
<i>Convolvulus arvensis</i>	Field bindweed	non-native	perennial herb, vine	-	-	-	
<i>Crepis</i> sp.	Hawksbeard	non-native	annual herb	-	-	-	
<i>Cressa truxillensis</i>	Alkali weed	native	annual herb	-	-	FAC	
<i>Cynara cardunculus</i>	Cardoon	non-native (invasive)	perennial herb	-	Moderate	-	

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Cynodon dactylon</i>	Bermuda grass	non-native (invasive)	perennial grass	-	Moderate	FACU	
<i>Distichlis spicata</i>	Salt grass	native	perennial grass	-	-	FAC	
<i>Dittrichia graveolens</i>	Stinkwort	non-native (invasive)	annual herb	-	Moderate	-	
<i>Elymus ponticus</i>	Tall wheat grass	non-native	perennial grass	-	-	-	
<i>Erodium cicutarium</i>	Red stemmed filaree	non-native (invasive)	annual herb	-	Limited	-	
<i>Erodium botrys</i>	Big heron bill	non-native	annual herb	-	-	FACU	
<i>Erodium moschatum</i>	Whitestem filaree	non-native	annual herb	-	-	-	
<i>Eucalyptus camaldulensis</i>	Red gum	non-native (invasive)	tree	-	Limited	FAC	
<i>Eschscholzia californica</i>	California poppy	native	annual, perennial herb	-	-	-	
<i>Extriplex joaquinana</i>	San Joaquin spearscale	native	annual herb	Rank 1B.2	-	FACU	*A2
<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>Frankenia salina</i>	Alkali heath	native	perennial herb	-	-	FACW	
<i>Galium sp.</i>	Bedstraw	-	-	-	-	-	
<i>Geranium dissectum</i>	Cutleaf geranium	non-native	annual, biennial herb	-	Limited	-	
<i>Geranium molle</i>	Crane's bill geranium	non-native	annual, perennial herb	-	-	-	
<i>Grindelia camporum</i>	Gumweed	native	perennial herb	-	-	FACW	
<i>Heliotropium curassavicum</i> var. <i>oculatum</i>	Seaside heliotrope	native	perennial herb	-	-	FACU	
<i>Helminthotheca echioides</i>	Bristly ox-tongue	non-native (invasive)	annual, perennial herb	-	Limited	FAC	
<i>Holocarpha virgata</i>	Narrow tarplant	native	annual herb	-	-	-	

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Hordeum brachyantherum</i>	Meadow barley	native	perennial grass	-	-	FACW	B? (not identified to subspecies)
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley	non-native (invasive)	annual grass	-	Moderate	FAC	
<i>Hordeum murinum</i>	Foxtail barley	non-native (invasive)	annual grass	-	Moderate	FACU	
<i>Juglans hindsii</i>	Northern California black walnut	native	tree	-	-	FAC	
<i>Juncus mexicanus</i>	Mexican rush	native	perennial grasslike herb	-	-	FACW	C
<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>Lupinus bicolor</i>	Miniature lupine	native	annual, perennial herb	-	-	-	
<i>Lupinus nanus</i>	Sky lupine	native	annual herb	-	-	-	
<i>Malva neglecta</i>	Dwarf mallow	non-native	annual, perennial herb	-	-	-	
<i>Malvella leprosa</i>	Alkali mallow	native	perennial herb	-	-	FACU	
<i>Marah fabacea</i>	California man-root	native	perennial herb, vine	-	-	-	
<i>Marrubium vulgare</i>	White horehound	non-native (invasive)	perennial herb	-	Limited	FACU	
<i>Medicago polymorpha</i>	Bur clover	non-native (invasive)	annual herb	-	Limited	FACU	
<i>Melilotus indicus</i>	Annual yellow sweetclover	non-native	annual herb	-	-	FACU	
<i>Nasturtium officinale</i>	Watercress	native	perennial herb (aquatic)	-	-	OBL	
<i>Nicotiana glauca</i>	Tree tobacco	non-native (invasive)	tree, shrub	-	Moderate	FAC	
<i>Plantago coronopus</i>	Cut leaf plantain	non-native	annual herb	-	-	FAC	
<i>Phalaris aquatica</i>	Harding grass	non-native (invasive)	perennial grass	-	Moderate	FACU	
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Cottonwood	native	tree	-	-	FAC	

Scientific Name	Common Name	Life Form	Origin	Rare Status ¹	Invasive Status ²	Wetland Indicator ³	Locally Rare ⁴
<i>Raphanus sativus</i>	Wild radish	non-native (invasive)	annual, biennial herb	-	Limited	-	
<i>Rumex crispus</i>	Curly dock	non-native (invasive)	perennial herb	-	Limited	FAC	
<i>Salix laevigata</i>	Red willow	native	tree	-	-	FACW	
<i>Salix lasiolepis</i>	Arroyo willow	native	tree, shrub	-	-	FACW	
<i>Schoenoplectus acutus</i> var. <i>occidentalis</i>	Tule	native	perennial grasslike herb	-	-	OBL	
<i>Schoenoplectus californicus</i>	California bulrush	native	perennial grasslike herb	-	-	OBL	
<i>Silybum marianum</i>	Milk thistle	non-native (invasive)	annual, perennial herb	-	Limited	-	
<i>Sisymbrium irio</i>	London rocket	non-native (invasive)	annual herb	-	Moderate	-	
<i>Sonchus oleraceus</i>	Common sow thistle	non-native	annual herb	-	-	UPL	
<i>Stellaria media</i>	Chickweed	non-native	annual herb	-	-	FACU	
<i>Tamarix parviflora</i>	Tamarisk	non-native (invasive)	tree, shrub	-	High	FAC	
<i>Trifolium hirtum</i>	Rose clover	non-native (invasive)	annual herb	-	Limited	-	
<i>Triteleia laxa</i>	Ithuriel's spear	native	perennial herb	-	-	-	
<i>Typha</i> sp.	Cattail	-	perennial herb	-	-	OBL	
<i>Urtica urens</i>	Annual stinging nettle	non-native	annual herb	-	-	-	
<i>Vicia sativa</i>	Spring vetch	non-native	annual herb, vine	-	-	FACU	
<i>Vicia villosa</i>	Hairy vetch	non-native	annual herb, vine	-	-	-	
<i>Xanthium strumarium</i>	Cocklebur	native	annual herb	-	-	FAC	

▪ All species identified using the Jepson eFlora [Jepson Flora Project (eds.) 2022]; nomenclature follows Jepson eFlora [Jepson Flora Project (eds.) 2022]

¹ California Native Plant Society. 2022. Inventory of Rare and Endangered Plants (online edition, v9-01 1.5). Sacramento, California. Online at: <http://rareplants.cnps.org/>; most recently accessed: May 2022.

FE: Federal Endangered

FT: Federal Threatened

SE: State Endangered

ST: State Threatened

SR: State Rare
 Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
 Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
 (*Rank 1B: Rare in native stands only)
 Rank 2A: Plants presumed extirpated in California, but more common elsewhere
 Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
 Rank 3: Plants about which we need more information – a review list
 Rank 4: Plants of limited distribution – a watch list

² **California Invasive Plant Council. 2022. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: <http://www.cal-ipc.org/paf/>; most recently accessed: May 2022.**

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

³ **U.S. Army Corps of Engineers. 2020. National Wetland Plant List, version 3.5. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. Online at: <http://wetland-plants.usace.army.mil/>; most recently accessed: May 2022.**

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

⁴ **Lake, D [compiler]. 2022. Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties (web application). Berkeley, California: East Bay Chapter of the California Native Plant Society. Online at: <https://ruspdb.ebcnps.org/cgi-bin/ebrare/ebrare.cgi>; most recently accessed: May 2022.**

A1: Locally Rare Species. Species occurring in two or fewer regions in Alameda and Contra Costa counties
 A1x: Locally Rare Species. Species presumed extirpated from Alameda and Contra Costa counties
 A1?: Locally Rare Species. Species possibly occurring in Alameda and Contra Costa counties. Identification or location is uncertain
 A2: Locally Rare Species. Plants occurring in three to five regions or are otherwise threatened in Alameda and Contra Costa counties.
 B: High Priority Watch List. Plants occurring in six to nine regions in Alameda and Contra Costa counties.
 C: Second Priority Watch List. Plants occurring in ten to fifteen regions in Alameda and Contra Costa counties.
 *: Ranks preceded by an asterisk (e.g. “*A1”) also have a statewide rarity ranking
 #: Ornamental plantings are not considered locally rare. The individuals in the Project Area are ornamental plantings

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APPENDIX C – SPECIAL-STATUS SPECIES DATABASE OUTPUTS

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Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Livermore (3712167) OR Altamont (3712166) OR Byron Hot Springs (3712176) OR Mendenhall Springs (3712156) OR Tassajara (3712177) OR Diablo (3712178) OR Dublin (3712168) OR Niles (3712158) OR La Costa Valley (3712157))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Amsinckia grandiflora</i> large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
<i>Anomobryum julaceum</i> slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
<i>Arctostaphylos auriculata</i> Mt. Diablo manzanita	PDERI04040	None	None	G2	S2	1B.3
<i>Arctostaphylos manzanita ssp. laevigata</i> Contra Costa manzanita	PDERI04273	None	None	G5T2	S2	1B.2
<i>Astragalus tener var. tener</i> alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
<i>Atriplex cordulata var. cordulata</i> heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
<i>Atriplex depressa</i> brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
<i>Atriplex minuscula</i> lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
<i>Balsamorhiza macrolepis</i> big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
<i>Blepharizonia plumosa</i> big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
<i>Calochortus pulchellus</i> Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
<i>Campanula exigua</i> chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
<i>Centromadia parryi ssp. congdonii</i> Congdon's tarplant	PDAST4R0P1	None	None	G3T1T2	S1S2	1B.1
<i>Chloropyron molle ssp. hispidum</i> hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
<i>Chloropyron palmatum</i> palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
<i>Clarkia concinna ssp. automixa</i> Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
<i>Deinandra bacigalupii</i> Livermore tarplant	PDAST4R0V0	None	Endangered	G1	S1	1B.1
<i>Delphinium californicum ssp. interius</i> Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Delphinium recurvatum</i> recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
<i>Eriogonum truncatum</i> Mt. Diablo buckwheat	PDPGN085Z0	None	None	G1	S1	1B.1
<i>Eryngium jepsonii</i> Jepson's coyote-thistle	PDAP10Z130	None	None	G2	S2	1B.2
<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
<i>Extriplex joaquinana</i> San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
<i>Fritillaria agrestis</i> stinkbells	PMLIL0V010	None	None	G3	S3	4.2
<i>Fritillaria liliacea</i> fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
<i>Helianthella castanea</i> Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
<i>Hesperolinon breweri</i> Brewer's western flax	PDLIN01030	None	None	G2	S2	1B.2
<i>Legenere limosa</i> legenere	PDCAM0C010	None	None	G2	S2	1B.1
<i>Malacothamnus hallii</i> Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
<i>Monolopia gracilens</i> woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
<i>Phacelia phacelioides</i> Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G2	S2	1B.2
<i>Plagiobothrys glaber</i> hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
<i>Polemonium carneum</i> Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
<i>Puccinellia simplex</i> California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
<i>Senecio aphanactis</i> chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
<i>Spergularia macrotheca var. longistyla</i> long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
<i>Streptanthus albidus ssp. peramoenus</i> most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
<i>Streptanthus hispidus</i> Mt. Diablo jewelflower	PDBRA2G0M0	None	None	G2	S2	1B.3



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Stuckenia filiformis ssp. alpina</i> northern slender pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
<i>Suaeda californica</i> California seablite	PDCHE0P020	Endangered	None	G1	S1	1B.1
<i>Trifolium hydrophilum</i> saline clover	PDFAB400R5	None	None	G2	S2	1B.2
<i>Triquetrella californica</i> coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
<i>Tropidocarpum capparideum</i> caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
<i>Viburnum ellipticum</i> oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 45



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Query Criteria: Quad (Livermore (3712167) OR Altamont (3712166) OR Byron Hot Springs (3712176) OR Mendenhall Springs (3712156) OR Tassajara (3712177) OR Diablo (3712178) OR Dublin (3712168) OR Niles (3712158) OR La Costa Valley (3712157)) AND Taxonomic Group (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Accipiter striatus</i> sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3	S3	WL
<i>Ammodramus savannarum</i> grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G4	S3	SSC
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Ardea herodias</i> great blue heron	ABNGA04010	None	None	G5	S4	
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	None	G2G3	S1	
<i>Branchinecta longiantenna</i> longhorn fairy shrimp	ICBRA03020	Endangered	None	G1	S1S2	
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
<i>Branchinecta mesovallensis</i> midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
<i>Buteo regalis</i> ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Circus hudsonius</i> northern harrier	ABNKC11011	None	None	G5	S3	SSC



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
<i>Dipodomys heermanni berkeleyensis</i> Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S1	
<i>Efferia antiochi</i> Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Eremophila alpestris actia</i> California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
<i>Falco mexicanus</i> prairie falcon	ABNKD06090	None	None	G5	S4	WL
<i>Falco peregrinus anatum</i> American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<i>Gonidea angulata</i> western ridged mussel	IMBIV19010	None	None	G3	S1S2	
<i>Haliaeetus leucocephalus</i> bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
<i>Helminthoglypta nickliniana bridgesi</i> Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
<i>Hygrotus curvipes</i> curved-foot hygrotus diving beetle	IICOL38030	None	None	G1	S1	
<i>Lanius ludovicianus</i> loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
<i>Lasiurus cinereus</i> hoary bat	AMACC05030	None	None	G3G4	S4	
<i>Laterallus jamaicensis coturniculus</i> California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
<i>Lepidurus packardi</i> vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
<i>Linderiella occidentalis</i> California linderiella	ICBRA06010	None	None	G2G3	S2S3	
<i>Masticophis flagellum ruddocki</i> San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S2?	SSC
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
<i>Melospiza melodia pusillula</i> Alameda song sparrow	ABPBXA301S	None	None	G5T2?	S2S3	SSC
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
<i>Oncorhynchus mykiss irideus pop. 8</i> steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Rana draytonii</i> California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 47

CNPS Rare Plant Inventory



Search Results

59 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3712167:3712166:3712176:3712156:3712177:3712178:3712168:3712158:3712157]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK
<u><i>Acanthomintha lanceolata</i></u>	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2
<u><i>Amsinckia grandiflora</i></u>	large-flowered fiddleneck	Boraginaceae	annual herb	(Mar)Apr-May	FE	CE	G1	S1	1B.1
<u><i>Androsace elongata</i> ssp. <i>acuta</i></u>	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5?T3T4	S3S4	4.2
<u><i>Anomobryum julaceum</i></u>	slender silver moss	Bryaceae	moss		None	None	G5?	S2	4.2
<u><i>Arctostaphylos auriculata</i></u>	Mt. Diablo manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar	None	None	G2	S2	1B.3
<u><i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i></u>	Contra Costa manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar(Apr)	None	None	G5T2	S2	1B.2
<u><i>Astragalus tener</i> var. <i>tener</i></u>	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2
<u><i>Atriplex cordulata</i> var. <i>cordulata</i></u>	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2
<u><i>Atriplex coronata</i> var. <i>coronata</i></u>	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2
<u><i>Atriplex depressa</i></u>	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2
<u><i>Atriplex minuscula</i></u>	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1
<u><i>Balsamorhiza macrolepis</i></u>	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2
<u><i>Blepharizonia plumosa</i></u>	big tarplant	Asteraceae	annual herb	Jul-Oct	None	None	G1G2	S1S2	1B.1
<u><i>Calandrinia breweri</i></u>	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	None	None	G4	S4	4.2
<u><i>Calochortus pulchellus</i></u>	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G2	S2	1B.2
<u><i>Calochortus umbellatus</i></u>	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G3?	S3?	4.2
<u><i>Campanula exigua</i></u>	chaparral harebell	Campanulaceae	annual herb	May-Jun	None	None	G2	S2	1B.2
<u><i>Centromadia parryi</i> ssp. <i>congdonii</i></u>	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	None	None	G3T1T2	S1S2	1B.1
<u><i>Chloropyron molle</i> ssp. <i>hispidum</i></u>	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	G2T1	S1	1B.1

<u>Cnidoropyron palmatum</u>	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1
<u>Clarkia concinna ssp. automixa</u>	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	None	None	G5?T3	S3	4.3
<u>Convolvulus simulans</u>	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2
<u>Deinandra bacigalupii</u>	Livermore tarplant	Asteraceae	annual herb	Jun-Oct	None	CE	G1	S1	1B.1
<u>Delphinium californicum ssp. interius</u>	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	None	None	G3T3	S3	1B.2
<u>Delphinium recurvatum</u>	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2
<u>Eriogonum truncatum</u>	Mt. Diablo buckwheat	Polygonaceae	annual herb	Apr-Sep(Nov-Dec)	None	None	G1	S1	1B.1
<u>Eriogonum umbellatum var. bahiiforme</u>	bay buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G5T3	S3	4.2
<u>Eriophyllum jepsonii</u>	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3
<u>Eryngium jepsonii</u>	Jepson's coyote-thistle	Apiaceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2
<u>Eschscholzia rhombipetala</u>	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1
<u>Extriplex joaquinana</u>	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2
<u>Fritillaria agrestis</u>	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2
<u>Fritillaria liliacea</u>	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2
<u>Galium andrewsii ssp. gatense</u>	phlox-leaf serpentine bedstraw	Rubiaceae	perennial herb	Apr-Jul	None	None	G5T3	S3	4.2
<u>Helianthella castanea</u>	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2
<u>Hesperovax caulescens</u>	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2
<u>Hesperolinon breweri</u>	Brewer's western flax	Linaceae	annual herb	May-Jul	None	None	G2	S2	1B.2
<u>Lathenia ferrisiae</u>	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2
<u>Legenere limosa</u>	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1
<u>Leptosiphon acicularis</u>	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	None	None	G4?	S4?	4.2
<u>Leptosiphon ambiguus</u>	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2

<i>Malacothamnus hallii</i>	Hall's bush-mallow	Malvaceae	perennial deciduous shrub	CNPS Rare Plant Inventory Search Results (Apr)May-Sep(Oct)	None	None	G2	S2	1B.2	
<i>Monolopia gracilens</i>	woodland woollythreads	Asteraceae	annual herb	(Feb)Mar-Jul	None	None	G3	S3	1B.2	
<i>Navarretia heterandra</i>	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3	
<i>Navarretia prostrata</i>	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	
<i>Phacelia phacelioides</i>	Mt. Diablo phacelia	Hydrophyllaceae	annual herb	Apr-May	None	None	G2	S2	1B.2	
<i>Plagiobothrys glaber</i>	hairless popcornflower	Boraginaceae	annual herb	Mar-May	None	None	GX	SX	1A	
<i>Polemonium carneum</i>	Oregon polemonium	Polemoniaceae	perennial herb	Apr-Sep	None	None	G3G4	S2	2B.2	
<i>Puccinellia simplex</i>	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G3	S2	1B.2	
<i>Senecio aphanactis</i>	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2	
<i>Spergularia macrotheca</i> var. <i>longistyla</i>	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	None	None	G5T2	S2	1B.2	
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	None	None	G2T2	S2	1B.2	
<i>Streptanthus hispidus</i>	Mt. Diablo jewelflower	Brassicaceae	annual herb	Mar-Jun	None	None	G2	S2	1B.3	
<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	northern slender pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	None	None	G5T5	S2S3	2B.2	
<i>Suaeda californica</i>	California seablite	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	FE	None	G1	S1	1B.1	
<i>Trifolium hydrophilum</i>	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	
<i>Triquetrella californica</i>	coastal triquetrella	Pottiaceae	moss		None	None	G2	S2	1B.2	
<i>Tropidocarpum capparideum</i>	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	
<i>Viburnum ellipticum</i>	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	None	None	G4G5	S3?	2B.3	

Showing 1 to 59 of 59 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website <https://www.rareplants.cnps.org> [accessed 2 March 2022].

CONTACT US

Send questions and comments to rareplants@cnps.org.

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CONTRIBUTORS

[The Calflora Database](#)
[The California Lichen Society](#)

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APPENDIX D – STUDY AREA PHOTOGRAPHS

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Photograph 1. Photo taken October 7, 2021 facing north in the northern region of the Study Area adjacent to residential development.



Photograph 2. Photo taken October 7, 2021 facing north.



Photograph 3. Photo taken October 7, 2021 facing west. View of deeply incised banks of Arroyo Seco, the perennial stream within the Study Area that runs east to west. Water was observed in the stream during the January 13, 2021 and October 7, 2021 site visits.



Photograph 4. Photo taken October 7, 2021 facing southwest. View of grazed non-native annual grassland habitat that is dominant within the Study Area and top of bank of Arroyo Las Positas.



Photograph 5. Photo taken October 7, 2021 facing west. View of Arroyo Las Positas that runs north to south along the western boundary of the Study Area. Water was observed in the stream during the January 13, 2021 and October 7, 2021 site visits. In stream vegetation is scattered.



Photograph 6. Photo taken October 7, 2021. View of Arroyo Las Positas facing south. Scattered wetland vegetation was observed within the stream channel in some areas of the Study Area.



Photograph 7. Photo taken October 7, 2021 facing east. This photo shows scattered willow riparian vegetation below the top of bank in Arroyo Seco and an example of non-native annual grassland habitat that has been disked.



Photograph 8. Photo taken October 7, 2021 facing east. View of deeply incised top of bank within Arroyo Seco and scattered willow riparian vegetation.



Photograph 9. Photo taken October 7, 2021 facing north. Example of gravel road and fencing within the southern portion of the Study Area in unincorporated Alameda County.



Photograph 10. Photo taken October 7, 2021 facing west. A small vineyard that was observed within the southern portion of the Study Area in unincorporated Alameda County.



Photograph 11. Photo taken January 13, 2021 facing west. Seasonal wetland swale delineated within the southern portion of the Study Area within unincorporated Alameda County.



Photograph 12. Photo taken October 7, 2021 facing south. View of agricultural infrastructure observed within the southern portion of the Study Area within unincorporated Alameda County.



Photograph 13. Photo taken April 8, 2022. An individual of San Joaquin spearscale in the Study Area.



Photograph 14. Photo taken April 8, 2022, facing northeast. Habitat view of a San Joaquin spearscale population west of Arroyo Last Positas.



Photograph 15. Photo taken May 17, 2022, facing east. Habitat view of a large (approximately 15,000 individuals) population of San Joaquin spearscale growing in a broad flat area just south of the residential development in the northern portion of the Study Area.



Photograph 16. Photo taken May 17, 2022, facing southwest. Habitat view of a small grouping of scattered San Joaquin spearscale individuals south of the residential development in the northern portion of the Study Area.

BIOLOGICAL RESOURCES IMPACTS AND MITIGATION REPORT
SPRINGTOWN SEWER TRUNKLINE PROJECT
LIVERMORE, ALAMEDA COUNTY, CALIFORNIA



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WRA #30337
MAY 2023



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- Figure 2. Potential Impacts to Biological Communities
- Figure 3. Potential Impacts to San Joaquin Spearscale
- Figure 4. Impacts to Potential California Tiger Salamander Habitat
- Figure 5. Impacts to Potential California Red-legged Frog Habitat

Appendix B – Potential for Special-Status Species Plant and Wildlife Species to Occur in the Study Area

LIST OF PREPARERS

Leslie Lazarotti – Principal-in-Charge
Ellie Knecht – Associate
Nicholas Brinton – Wildlife Biologist
Neal Jander – GIS Analyst

DEFINITIONS

Study Area: The 41.85-acre Study Area includes the Project Area, which covers installation of the new sewer line, abandonment of the old sewer line, and staging and access areas. The Study Area also includes a 250-foot buffer around any trenching work, a 25-foot buffer around work associated with the sewer abandonment, and any staging and access areas not within previously developed urban areas.

Project: The Springtown Sewer Trunkline Project includes upgrades to the sewer trunkline to replace an existing oversized sewer line.

Project Area: The 6.04-acre Project Area is the area encompassing the Project, including all ground disturbing work associated with construction of the new sewer line, abandonment of the old sewer line, and staging and access.

LIST OF ACRONYMS

CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFGF	California Fish and Game Code
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CRLF	California Red-legged Frog
CTS	California Tiger Salamander
EACCS	East Alameda County Conservation Strategy
RWQCB	Regional Water Quality Control Board
USFWS	U.S. Fish and Wildlife Service
WRA	WRA, Inc.

1.0 INTRODUCTION

This Biological Resources Impacts and Mitigation Report evaluates potential impacts to biological resources and provides recommended avoidance, minimization, and mitigation measures for the Springtown Sewer Trunkline Project (Project) located in the City of Livermore, Alameda County, California (Figure 1, Appendix A). A separate Biological Resources Technical Report was prepared by WRA, Inc. (WRA) that discusses the regulatory background and existing biological conditions that pertain to both the Sewer Trunkline Project and the Arroyo Las Positas Trail Project (which shares a similar alignment with the Sewer Trunkline Project) (WRA 2022). Based on the results and discussion in the Biological Resources Technical Report (WRA 2022), potential impacts to sensitive biological communities and special-status species resulting from the Springtown Sewer Trunkline Project are evaluated in this report. If the Project has the potential to result in significant impacts to biological resources, measures to avoid, minimize, or mitigate for those significant impacts are described.

1.1 Project Description

Background. The Springtown Sewer Trunkline Project includes installation of a new Sewer Transmission Main as a part of the Springtown Sewer Trunkline to improve the City's ability to properly maintain the Sewer Trunkline. The existing 33-inch sewer pipe was previously installed when a bigger build-out of the North Livermore area was anticipated by the City of Livermore. As a result, the existing pipe is oversized and the flow in the pipe is insufficient to flush the line, requiring higher levels of maintenance. The existing line is also hard to maintain because of the proximity to Arroyo Las Positas, which is hard to access during the rainy season. In addition, the existing pipe is an unlined reinforced concrete pipe, subject to corrosion, and at the end of its useful life. The City of Livermore's Risk Management Program identified this line as one of the highest risk sewer lines due to the sensitive environment where it is located, the condition of the pipe, and the level of flow in the pipe. The new alignment will be farther away from Arroyo Las Positas, allowing easier access and maintenance, and the material will be corrosion resistant to reduce the risk of future failure.

Pipeline Abandonment. The existing sewer pipeline between just north of Las Colinas Road and Redwood Road, including a segment below Arroyo Seco, will be abandoned in place. Abandonment of the existing sewer line will take place entirely in uplands with no impacts to Arroyo Seco. An approximately 100-square-foot area around each existing manhole (seven manholes / 700 square feet total) will be excavated to approximately 4 feet below grade using an excavator and concrete saw. At the location of each manhole, a controlled low-strength material (water, cement, and aggregate) will be pumped from a pre-mix truck into the underground pipe segments to close the underground pipes, including the segment below Arroyo Seco. The native soil excavated at the manholes will be replaced and the areas returned to the original grade. A 20-foot-wide corridor along the existing pipe alignment will be utilized for access during sewer abandonment work.

Pipeline Installation. A new 24-inch sewer pipeline will be installed east of the existing sewer alignment. The pipeline will be installed through a combination of open trench construction in upland areas and trenchless drilling below the bed of Arroyo Seco. Pipe installation will occur along approximately 2,990 linear feet, with approximately 100 linear feet of pipe installation per day on average.

In upland areas, open trench construction will occur within a 20-foot-wide easement for the sewer. An additional approximately 20-foot-wide buffer on either side of the sewer easement will be utilized for access and staging of materials, along with two additional staging areas (one located at the north end and

one located at the south end). The trench will include a vertical cut with shoring and some amount of layback at the top. Bedding material (i.e. gravel) will be placed at the bottom of the trench, the pipe will be placed on top of the bedding, and the native soil will be returned to the trench to match pre-project grade.

Installation of the sewer pipeline below Arroyo Seco will utilize one of two trenchless drilling methods such as horizontal directional drilling, jack and bore, or similar methods. Entry and exit pits located on either side of Arroyo Seco and in upland areas (at minimum 10 feet from the top of bank elevation) will be excavated to facilitate drilling efforts and pipe threading. Each pit will measure approximately 100 by 100 feet. The pits will be excavated approximately 20 to 25 feet below existing grade.

Between the two entry and exit pits, a minimum 36-inch diameter casing will be installed approximately 5 to 8 feet below the bed of Arroyo Seco (this would result in the top of the pipe at approximately 5 feet below the bed of Arroyo Seco). The existing pipeline tie-in constraints limit further deepening the gravity-fed sewer at the crossing location. After the casing is installed, the 24-inch sanitary sewer pipeline will be installed within the casing. After the pipeline is installed below Arroyo Seco, native soil will be returned to the entry and exit pits to match pre-project grade.

Temporary dewatering of Arroyo Seco will occur below the top of bank elevation as a preventative measure for the trenchless drilling activities. Dewatering structures include an upstream and downstream cofferdam (approximately 20 feet in length and 5 feet in width for each cofferdam), a pump for water intake in the upstream cofferdam, and a pipe for water diversion. The pump intake will be covered with 0.125-inch mesh to prevent entrainment of wildlife into the pump system. The water diversion pipe and pump should accommodate up to 5 cubic feet per second (CFS) of flow, which is anticipated to be the maximum water flow in Arroyo Seco during the construction activities planned in the dry season.

Two blue gum eucalyptus trees (*Eucalyptus globulus*) trees will be removed below the top of bank elevation to facilitate sewer installation and prevent future maintenance issues.

All areas of temporary ground disturbance will be restored to existing condition after the sewer pipeline is installed and the areas are backfilled. Seventeen manholes (20 square feet each) will be installed along the new sewer alignment in uplands.

Equipment. Equipment will include excavators and trucks. If horizontal direction drilling is selected, a horizontal drilling machine will be placed in the entry pit. Drilling slurry will be used to keep the excavation open under the creek. If jack and bore is selected, a jack and bore machine will be installed in the entry pit.

Schedule. The sewer abandonment and installation process is anticipated to take approximately eight weeks, with approximately 15 days for trenchless drilling below Arroyo Seco.

2.0 PROJECT IMPACTS SUMMARY

An approximately 41.85-acre Study Area was evaluated based on an approximately 250-foot buffer around trenching work for sewer installation, a 25-foot buffer around the sewer abandonment, and access and staging. The Project Area is an approximately 6.04-acre subset of the Study Area that includes approximately 1.94 acres of ground disturbance through excavation/backfill activities and approximately

4.10 acres for access and staging. All Project impacts are considered temporary as all areas will be restored to existing condition. The Project will temporarily impact non-native annual grassland and perennial stream, as shown on Figure 2 (Appendix A) and summarized in Table 1. Two eucalyptus trees that are rooted below the top of bank elevation in the perennial stream will also be removed. New manholes will total less than 0.01 acre and are therefore not called out separately.

TABLE 1. TEMPORARY IMPACTS TO BIOLOGICAL COMMUNITIES

ACTIVITY	NON-NATIVE ANNUAL GRASSLAND (AC)	PERENNIAL STREAM (AC)	TOTAL (AC)
Excavation/Backfill	1.94	<0.01	1.52
Access/Staging	4.05	0.05	4.10
Totals	5.99 ¹	0.05	6.04

¹ New manholes will total less than 0.01 acre and are therefore not called out separately.

In addition, the Project is anticipated to temporarily impact a population of San Joaquin spearscale (*Extriplex joaquinana*) plants documented within the Study Area, and potential habitat for California tiger salamander (CTS, *Ambystoma californiense*) and California red-legged frog (CRLF, *Rana draytonii*). Anticipated impacts to San Joaquin spearscale, and potential habitat for CTS and CRLF are shown on Figures 3, 4, and 5, respectively (Appendix A) and summarized in Table 2. Recommended avoidance, minimization, and mitigation measures for San Joaquin spearscale, CTS, CRLF, and all other special-status species with potential to be impacted by the Project are discussed in greater detail in Section 4.

TABLE 2. TEMPORARY IMPACTS TO SAN JOAQUIN SPEARSCALE AND POTENTIAL CTS AND CRLF HABITAT

ACTIVITY	SAN JOAQUIN SPEARSCALE (AC)	POTENTIAL CTS HABITAT (AC)	POTENTIAL CRLF HABITAT (AC) ¹
Excavation/Backfill	0.08	1.94	1.05
Access/Staging	0.11	4.05	2.33
Totals	0.19	5.99	3.38

¹ Calculated as impacts in uplands within 300 feet of Arroyo Seco and Arroyo Las Positas

3.0 ANALYTICAL METHODOLOGY AND SIGNIFICANCE THRESHOLD CRITERIA

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

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or,
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

These thresholds were utilized in completing the analysis of potential project impacts for CEQA purposes. For the purposes of this analysis, a “substantial adverse effect” is generally interpreted to mean that a potential impact could directly or indirectly affect the resiliency or presence of a local biological community or species population. Potential impacts to natural processes that support biological communities and special-status species populations that can produce similar effects are also considered potentially significant. Impacts to individuals of a species or small areas of existing biological communities may be considered less than significant if those impacts are speculative, beneficial, de minimis, and/or would not affect the resiliency of a local population.

Table 3 shows the correlation between applicable laws and regulations and each Biological Resources question in the Environmental Checklist Form (Appendix G) of the CEQA guidelines and includes a summary of significance thresholds based on the above-described methods. The applicable laws and regulations are discussed in more detail in the Biological Resources Technical Report prepared by WRA (WRA 2022).

TABLE 3. SUMMARY OF BIOLOGICAL RESOURCES EVALUATION

CEQA ASSESSMENT CATEGORY ¹ IV. -BIOLOGICAL RESOURCES	BIOLOGICAL RESOURCES CONSIDERED	RELEVANT LAWS AND REGULATIONS	RESPONSIBLE REGULATORY AGENCY	SUMMARY OF FINDINGS & REPORT SECTION
Question A. Special-status species	Special-status Plants Special-status Wildlife Designated Critical Habitat	Federal Endangered Species Act California Endangered Species Act California Native Plant Protection Act Migratory Bird Treaty Act Bald and Golden Eagle Protection Act	U.S. Fish and Wildlife Service National Marine Fisheries Service California Department of Fish and Wildlife	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less than significant. See Section 4.1 for more information
Question B. Sensitive natural communities & riparian habitat	Sensitive Natural Communities Streams, Lakes, & Riparian Habitat	California Fish and Game Code Oak Woodland Conservation Act Porter-Cologne Act Clean Water Act	California Department of Fish and Wildlife U.S. Army Corps of Engineers U.S. Environmental Protection Agency State Water Resources Control Board Regional Water Quality Control Board	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less than significant. See Section 4.2 for more information
Question C. State and federally protected wetlands	Wetlands Unvegetated surface waters	Clean Water Act Sections 404/401 Rivers and Harbors Act Section 10 Porter Cologne Act	U.S. Army Corps of Engineers U.S. Environmental Protection Agency State Water Resources Control Board Regional Water Quality Control Board	Potentially significant impacts were identified and mitigation measures included that reduce those impacts to a level that is less than significant. See Section 4.3 for more information
Question D. Fish & wildlife corridors	Essential Fish Habitat Wildlife Corridors	California Fish and Game Code Magnuson-Stevens Fishery	California Department of Fish and Wildlife National Marine Fisheries	Potentially significant impacts were not identified.

¹ CEQA Questions have been summarized here; see Section 3 for details.

CEQA ASSESSMENT CATEGORY ¹ IV. - BIOLOGICAL RESOURCES	BIOLOGICAL RESOURCES CONSIDERED	RELEVANT LAWS AND REGULATIONS	RESPONSIBLE REGULATORY AGENCY	SUMMARY OF FINDINGS & REPORT SECTION
		Conservation & Management Act	Service	See Section 4.4 for more information
Question E. Local policies	Protected Trees Coastal zone resources Other biological protections	Local Tree Ordinance General Plan (e.g., Stream & Wetland Setbacks) Local ordinances	Local and regional agencies California Coastal Commission San Francisco Bay Conservation and Development Commission	Potentially significant impacts were not identified. See Section 4.5 for more information
Question F. Local, state, federal conservation plans	Habitat Conservation Plans Natural Community Conservation Plans	Federal Endangered Species Act Natural Community Conservation Planning Act	U.S. Fish and Wildlife Service California Department of Fish and Wildlife	Potentially significant impacts were not identified. See Section 4.6 for more information

4.0 IMPACTS AND MITIGATION EVALUATION

Using the CEQA analysis methodology outlined in Section 3, the following sections describe potential significant impacts to sensitive resources and include suggested mitigation measures which are expected to reduce impacts to less than significant. Where applicable, suggested mitigation measures adhere to the measures identified in the East Alameda County Conservation Strategy (EACCS; EACCS 2010). Some modifications to the EACCS measures are incorporated here for added clarity or to reflect Project-specific circumstances. Where proposed measures vary from the EACCS or do not apply, strikethrough text is used to indicate this. Variations from the EACCS measures are also explained in separate notes that follow any modified measure.

In addition to the mitigation measures outlined in the following sections, it is recommended that the Project adhere to the following general avoidance and minimization measures (**General Measures**) identified in EACCS.

EACCS Measure GEN-01: Employees and contractors performing construction activities will receive environmental sensitivity training. Training will include review of environmental laws and avoidance and minimization measures that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.

EACCS Measure GEN-02: Environmental tailboard trainings will take place on an as-needed basis in the field. The environmental tailboard trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects to these species during construction activities. Directors, managers, superintendents, and the crew foremen and forewomen will be responsible for ensuring that crewmembers comply with the guidelines.

EACCS Measure GEN-03: Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with the Project avoidance, minimization, and mitigation measures.

EACCS Measure GEN-04: The following will not be allowed at or near work sites for covered activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).

EACCS Measure GEN-05: Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

EACCS Measure GEN-06: Off-road vehicle travel will be minimized.

- **Note:** For EACCS Measure GEN-05 and GEN-06, temporary access, storage, and staging areas are outlined as part of the Project Area and such areas are the minimum amount necessary to conduct the Project. As such access and temporary disturbance are reduced to the extent practical.

EACCS Measure GEN-07: Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land-cover types, or during off-road travel.

EACCS Measure GEN-08: Vehicles or equipment will not be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

EACCS Measure GEN-09: Vehicles will be washed at offsite facilities. Vehicles will not be washed at the Project site.

EACCS Measure GEN-10: To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed-free straw.

EACCS Measure GEN-11: Pipes, culverts and similar materials greater than four inches in diameter, will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.

EACCS Measure GEN-12: Erosion control measures will be implemented to reduce sedimentation in ~~wetland~~ aquatic habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic mono-filament netting (erosion control matting) or similar material containing netting shall not be used at the Project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

- **Note:** Wetlands that contain habitat for covered species are not present. For the interpretation of this measure “wetlands” would be replaced by “aquatic” during implementation such that measures would be used to protect Arroyo Seco.

EACCS Measure GEN-13: ~~Stockpiling of material will occur such that direct effects on covered species are avoided.~~ Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.

- **Note:** Stockpiling of materials will need to occur directly adjacent to the trench such that native materials are removed, infrastructure (i.e. sewer pipes) are placed into the trench and then the native materials are returned and compacted. Staging of materials is therefore a covered activity and is included on the list of activities for which take would be permitted, thereby negating the first sentence of this measure.

EACCS Measure GEN -14: Grading will be restricted to the minimum area necessary.

EACCS Measure GEN-15: Prior to ground disturbing activities in sensitive habitats, Project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.

- **Note:** Fencing in this measure is not considered wildlife exclusion fencing.

EACCS Measure GEN-16: Significant earth moving-activities will not be conducted in ~~riparian~~ aquatic areas within 24 hours of predicted storms or after major storms (defined as 1 inch of rain or more).

- **Note:** This measure will apply more generally to aquatic areas.

EACCS Measure GEN-17: Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist.

4.1 Special-status Species

This section analyzes the Project’s potential impacts and mitigation for special-status species in reference to the significance threshold outlined in CEQA Appendix G, Part IV (a):

Does the project have the potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The WRA Biological Resources Technical Report (WRA 2022) identifies special-status plant and wildlife species with potential to occur in the vicinity of the Study Area. A table identifying the potential for all special-status species known to occur in the vicinity of the Study Area is provided as Appendix B to this report. The table in Appendix B includes the results of the CDFW California Natural Diversity Database (CNDDDB), California Native Plant Society (CNPS) Rare Plant Inventory (RPI), and USFWS's Information for Planning and Consultation (IPaC) database searches for the Livermore and surrounding eight 7.5-minute USGS quadrangles (Byron Hot Springs, Mendenhall Springs, Altamont, Dublin, Tassajara, Diablo, La Costa Valley, and Niles). Recommendations for special status species with moderate or high potential to occur are discussed in greater detail below.

In addition, USFWS's Critical Habitat and the National Oceanic and Atmospheric Administration's Essential Fish Habitat maps were evaluated to determine habitat designations for special status species within the Study Area. No critical habitat designations are located within the Study Area. Essential Fish Habitat for Pacific Salmon covering coho (*Onchorynchus kisutch*) and chinook (*Oncorhynchus tshawytscha*) salmon is designated within the Study Area. However, there is no potential for these species to occur and as such any temporary effects to streams would not reduce or adversely modify Essential Fish Habitat. Coho salmon have been extirpated from San Francisco Bay and all of its tributaries (National Marine Fisheries Service 2012), and steelhead or other anadromous salmonids are not known to occur within Arroyo Secco and Arroyo Las Positas as neither stream contains spawning or rearing habitat required to support anadromous fish (Leidy et al 2005).

Additional agency-imposed measures may be provided for the federal or state protected species discussed below. The Project will adhere to agency-imposed measures for special-status species that are typically more restrictive than the mitigation measures recommended herein. To the extent there are any conflicting provisions between agency-imposed measures and the mitigation measures recommended herein, the agency measures will supersede these recommended mitigation measures.

Special-Status Plant Species

Protocol-level special-status plant surveys were conducted within the Study Area following regulatory agency and CNPS survey protocols (CDFW 2018, CNPS 2001, USFWS 1996) on October 7, 2021, April 8, 2022, and May 17, 2022 by qualified WRA botanists proficient in identifying special-status plant species in the Livermore area, including areas nearby and adjacent to the Study Area. The surveys focused on plants that were identified to have potential to occur within the Study Area; those species being bent flowered fiddleneck (*Amsinckia lunaris*), heartscale (*Atriplex cordulata* var. *cordulata*), crownscale (*Atriplex coronata* var. *coronata*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), Livermore tarplant (*Deinandra bacigalupii*), stinkbells (*Fritillaria agrestis*), and San Joaquin spearscale (*Extriplex joaquinana*). The surveys were conducted by taking meandering transects throughout the entire Study Area. Prior to the surveys, reference sites for species with accessible and nearby populations were visited to ensure that the timing of the surveys was appropriate. The target species were observed to be blooming, evident, and identifiable at the reference sites. A hydrologic analysis using the Antecedent Precipitation Tool (Deters 2022) was conducted to determine whether precipitation levels during the 3-month periods preceding each plant survey were above, below, or within the 30-year average for the region. The results

of the hydrologic analysis indicate precipitation was below normal for the 3-month periods preceding the first two plant surveys (October 7, 2021 and April 8, 2022). Precipitation was within the normal range for the 3-month period preceding the May 17, 2022 site visit.

Bent flowered fiddleneck, heartscale, crownscale, Congdon's tarplant, Livermore tarplant, and stinkbells were not observed during the protocol-level surveys and are assumed absent from the Study Area. San Joaquin spearscale (Rank 1B.2) was observed during the April 8 and May 17, 2022 surveys in the Project alignment. Per the EACCS, floristic surveys must be completed within the preceding three years prior to commencement of the Project. As long as the Project commences before October 2024, no further floristic surveys are recommended. However, if the Project occurs after October 2024, follow-up floristic surveys are recommended.

Based on the results of the 2021 and 2022 protocol-level special-status plant surveys, the Project will involve trenching, access, and staging over approximately 0.19 acre of grassland containing San Joaquin spearscale within the Study Area. The actual impact to San Joaquin spearscale may differ somewhat from the 0.19-acre estimate because this species is an annual herb so distribution and abundance can vary from year to year. Direct disturbance to San Joaquin spearscale plants would be considered a significant impact.

To reduce potential impacts to special-status plants to less-than-significant, the following measure is recommended in addition to the **General Measures** identified above.

MM BIO-1: Special-Status Plants

- All Project work will be restricted to designated work areas which have been developed to minimize Project impacts to special status plants based on the 2021- 2022 rare plant observations.
- If the Project commences after October 2024, follow-up floristic surveys will take place within the Project Area. During the floristic survey, a qualified botanist will survey the Project Area for special-status plants during the appropriate blooming season(s) in accordance with current CDFW and CNPS survey protocols. The location and quantities of all special-status plants observed in the Project Area will be recorded.
- The topsoil (i.e., the top two inches of soil) will be removed from areas of substantial soil disturbance (e.g., areas where excavation and trenching occur) where special status plants were documented during the 2021-2022 surveys or in future floristic surveys. The topsoil will be stockpiled prior to further excavation. The topsoil will be replaced in the same area from which it was removed following disturbance. Because annual herbaceous species, such as San Joaquin spearscale, rely mostly on gravitational transport for its seeds (i.e., limited dispersal from source plant), it is assumed that the top two inches of topsoil will contain viable/dormant seeds from individuals that were documented in the 2021-2022 surveys (or future floristic surveys). Replacement of topsoil containing the seeds would allow the species to re-establish following construction disturbance.
- A monitoring plan will be developed that requires a qualified botanist or restoration ecologist to monitor areas of temporary disturbance to special-status plants to ensure the special-status plant re-establishes in the area following replacement of topsoil, resulting in no loss of the special-status plant habitat compared to the 2021-2022 or future floristic surveys. Monitoring will occur for a minimum of three years, with the final year demonstrating no net loss of special status plant population based on area or quantity.

Burrowing Owl

Burrowing owl (*Athene cunicularia*) may utilize ground squirrel burrows in non-native annual grassland within the Study Area. Burrowing owls have not been documented within or adjacent to the Study Area, and disking in portions of the Study Area reduces the suitability of grassland areas through the removal of burrows. However, if burrowing owls are present during Project activities, they could be directly affected by ground disturbance (i.e. removal of occupied burrows) or indirectly affected by increased noise from construction activities. Nest removal or abandonment from increased noise related to the Project would be considered a significant impact.

To reduce potential impacts to burrowing owl to a less-than-significant level, the following measure adapted from EACCS pertaining to burrowing owl is recommended in addition to the **General Measures** identified above.

MM BIO-2: Burrowing Owl

- Prior to commencement of construction, a qualified biologist will conduct protocol-level burrowing owl surveys in accordance with the California Department of Fish and Wildlife (CDFW) 2012 Staff Report (ICF 2010).
- If an active nest is identified near a proposed work area and work cannot feasibly be conducted outside of the burrowing owl nesting season (March 15 to September 1), a no-activity zone will be established by a qualified biologist. The no-activity zone will be large enough to avoid nest abandonment and will be a minimum 250-foot radius from the nest.
- If burrowing owls are present during the non-breeding period, a qualified biologist will establish a no-activity zone of at least 150 feet from the burrowing owls.
- If work cannot feasibly be avoided in the no-activity zone(s) during the burrowing owl nesting season, an experienced burrowing owl biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

California tiger salamander

Non-native annual grassland within the Study Area may provide suitable upland habitat for CTS. Disking in portions of the Study Area reduces suitability of upland habitat. In addition, the Study Area is surrounded by development to the north, east and south making it an illogical path for CTS dispersal between suitable habitats as no two habitats are separated solely by the Study Area. However, given that the Study Area contains annual grassland and is within potential dispersal distances for CTS, the Study Area is considered potential upland habitat. If CTS are present, construction activities including grading, operation of heavy equipment, and staging may result in mortality or injury of CTS individuals. The Project may result in approximately 5.99 acres of impacts to potential CTS upland habitat. Direct injury or mortality of individuals and loss of habitat are considered potentially significant impacts.

To reduce potential impacts to CTS to a less-than-significant level, measures **MM BIO-3** and **MM BIO-4**, adapted from EACCS pertaining to CTS are recommended in addition to the **General Measures** identified above.

California red-legged frog

Pools within perennial streams are likely to provide non-breeding aquatic habitat for CRLF. Non-native annual grassland within 300 feet of aquatic habitat is considered potential upland aestivation habitat for CRLF (USFWS 2010). Non-native annual grasslands within 1 mile of breeding habitats are also considered dispersal habitat for CRLF. If CRLF are present within the Project Area during construction, CRLF may be harassed, harmed, or killed during Project activities in suitable habitat. The Project may result in approximately 3.38 acres of impacts to potential CRLF habitats. In addition, construction activities may result in temporary sedimentation in aquatic features.

To reduce potential impacts to CRLF to a less-than-significant level, measures **MM BIO-3** and **MM BIO-5** are recommended in addition to the **General Measures** identified above.

MM BIO-3: Special-Status Amphibians

- An exclusion zone will be staked or flagged around aquatic habitats that will be avoided by the Project prior to initiating activities.²
- A qualified biologist will conduct pre-construction surveys prior to initiating activities. If CTS or CRLF individuals are found, work will not begin until they are moved out of the construction zone to a USFWS and California Department of Fish and Wildlife (CDFW) approved relocation site.
- A USFWS- and CDFW-approved biologist will be present for initial ground disturbing activities.
- No monofilament plastic will be used for erosion control.
- Construction personnel will inspect open trenches in the morning and evening for trapped amphibians.
- Work will be avoided within suitable habitat for CTS and CRLF from October 15 (or the first measurable fall rain of 1 inch or greater) to May 1.

MM BIO-4: CTS Mitigation

Compensatory mitigation will be provided for the disturbance of potential CTS habitat at a minimum 1:1 ratio, the final ratio will ultimately be prescribed by the CDFW and USFWS. Compensatory mitigation may be in the form of mitigation bank credits, permittee-responsible mitigation, and/or turnkey mitigation.

MM BIO-5: CRLF Mitigation

Compensatory mitigation will be provided for disruption to potential CRLF habitats at a minimum 1:1 ratio, the final ratio will ultimately be prescribed by the USFWS. Compensatory mitigation may be in the form of mitigation bank credits, permittee-responsible mitigation, and/or turnkey mitigation.

American badger

American badger has potential to occur in non-native annual grassland within the Study Area, although disking in portions of the Study Area and nearby anthropogenic disturbance reduces habitat suitability. No indication of this species presence was observed within the Study Area. However, if dens are present, ground disturbance may result in impacts to American badger dens and mortality of individuals, or indirect

² The EACCS measures require exclusion fencing be installed at least 500 feet from aquatic features. This is infeasible for the Project because this Project must cross and work within aquatic features. In addition, the Project is scheduled to occur during the dry season outside of periods when native amphibians are biologically suited to move across open ground. Therefore exclusion fence is not necessary or biologically warranted to minimize take.

impacts through increased noise and traffic in the vicinity during construction. These are potentially significant impacts to American badger. In addition, if a den was observed within or adjacent to the work area, loss of habitat around the den may be a potentially significant impact if that loss of habitat leads to take of individuals.

To reduce impacts to American badger to a less-than-significant level, the following measure is recommended in addition to the **General Measures** identified above.

MM BIO-6. American Badger

- No more than 21 days before the start of ground disturbing activities, a qualified biologist will conduct a pre-construction survey in areas of annual grassland within 100 feet of the work area to determine if potentially suitable American badger dens are present.
- If dens are identified during the pre-construction survey, their disturbance and destruction will be avoided to the extent feasible.
- If potential dens are located within the proposed work area and cannot be avoided during construction, a qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the CDFW.
- If unoccupied, the qualified biologist will collapse these dens by hand in accordance with USFWS procedures (USFWS 1999).
- If occupied, exclusion zones will be implemented following standard procedures. The radius of these zones will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Popping Den—to be determined on a case-by-case basis in coordination with CDFW.
- If dens cannot be avoided and must be impacted, these will be determined on a case-by-case basis with CDFW.

Western pond turtle

Perennial stream within the Study Area may serve as habitat for western pond turtle (*Emys marmorata*). If western pond turtle are present within the Study Area during construction, Project activities within or adjacent to aquatic habitat may impact western pond turtle and could result in direct mortality of individuals if present. This is a potentially significant impact.

To reduce impacts to western pond turtle to a less-than-significant level, the following measure is recommended in addition to the **General Measures** identified above.

MM BIO-7: Western Pond Turtle

- Within 48 hours prior to the initiation of construction activities, a qualified biologist will survey all work areas within 200 feet of suitable habitat for western pond turtle.
- If western pond turtle individuals are found during the survey, construction work within 50 feet of any observed individuals will halt. The biologist will then assess the location and status of the turtle to determine the best course of action to either allow the animal to leave on its own, or if approved by CDFW, will relocate the animal to suitable habitat outside of the work area. If a turtle nest is encountered, work within 25 feet will cease and a no disturbance buffer will be placed around the nest. The biologist will then contact CDFW to determine any follow-up actions. The biologist will maintain detailed records of any individuals that are moved (e.g. size, coloration, any distinguishing features, photos) to assist in determining whether translocated animals are returning to their original point of capture.

Special-status and non-status nesting birds

The following special-status avian species have potential to occur within or adjacent to the Study Area: grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), and yellow warbler (*Setophaga petechial*). Special-status and non-status nesting birds protected under the California Fish and Game Code (CFG) have the potential to nest in trees, shrubs, herbaceous vegetation, and on bare ground within and adjacent to the Study Area. Project construction activities have the potential to impact nests in these areas if construction is initiated during the breeding bird season (February 1 through August 31). Potential impacts include direct destruction of nests as well as indirect visual and acoustic disturbance to nesting birds from construction in adjacent areas that have the potential to result in nest abandonment. Destruction of nests or indirect disturbance that may result in nest abandonment is a potentially significant impact.

To reduce potential impacts to nesting birds to a less than significant level, the following measure is recommended in addition to the **General Measures** identified above.

MM BIO-8: Nesting Birds (including loggerhead shrike, white-tailed kite and yellow warbler)

- If Project construction is scheduled during the breeding season (February 1 – August 31), a qualified biologist will conduct a preconstruction nesting bird survey in and within 300 feet of the Project Area.
- The survey will be conducted no more than 14 days prior to the start of work.
- If the survey indicates the potential presence of nesting birds, the biologist will determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged or the nest is no longer active. The size of the nest buffer will be determined by the biologist and will be based on the nesting species and its sensitivity to disturbance. In general, buffer sizes of up to 300 feet for raptors and 50 to 100 feet for other birds will be used to prevent disturbance to nesting birds, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

Roosting Bats

Tree roosting bat species including western red-bat (*Lasirurs blossevillii*) and hoary bat (*Lasiurus cinereus*) are known to roost within riparian trees. Trees within the Study Area are located primarily along creeks within riparian areas. Large trees in the Study Area may provide suitable roosting substrates for bats. If bats are roosting and trees are removed, the impact to roosting bats could be considered a significant impact.

To reduce potential impacts to roosting bats to a less-than-significant level, the following measure adapted from CDFWs standard bat survey protocols to reduce effects to less than significant levels.

MM BIO-9: Bats

- Prior to commencement of construction, a qualified biologist will conduct a habitat assessment for bats. The habitat assessment will be conducted at least 30 days prior to the start of construction and shall include a visual inspection of potential roosting trees features within trees scheduled for removal or trimming (e.g., cavities, crevices in wood and bark, exfoliating bark for colonial species, suitable canopy for foliage roosting species). If suitable habitat trees are

identified, they will be flagged or otherwise clearly marked. If no suitable habitat is identified no further measures are required.

- Any trees with potential bat roosting habitat will be removed during the non-maternity season from March 1 through April 15 or September 1 through October 15 using a two phased process. Two-step tree removal will be conducted over two consecutive days, as follows:
 - Day 1: under the supervision of a qualified biologist, limbs and branches will be removed by a tree cutter using chainsaws or hand tools. Limbs with cavities, crevices or deep bark fissures will be avoided. At least 25% of the tree limbs and canopy will be removed in the first cut.
 - On the morning of the following day the remaining tree will be felled.

4.2 Sensitive Natural Communities and Land Cover Types

This section addresses the question:

b) Does the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

The Project is designed to avoid impacts to riparian habitat, but does involve removal of two eucalyptus trees rooted below the top of bank elevation in Arroyo Seco. If any additional trimming or removal of riparian trees is determined necessary, it will be the minimum necessary and comply with the local tree ordinance and Sections 1600-1616 of the CFGC. Impacts to special-status species habitat are discussed in Section 4.1. Impacts to aquatic resources are discussed in Section 4.3. Removal or modification of riparian habitat is a potentially significant impact.

To reduce potential impacts to riparian habitat to a less than significant level, the following measure is recommended in addition to the **General Measures** identified above.

MM BIO-9: Riparian Habitat

Removal and trimming of riparian vegetation will be minimized to the extent feasible.

4.3 Aquatic Resources

This section analyzes the Project's potential impacts and mitigation for wetlands and waters presumed or determined to be within the jurisdiction of the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), and CDFW in reference to the significance threshold outlined in CEQA Appendix G, Part IV (c):

c) Does the Project have the potential to have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

Project activities will impact Arroyo Seco, a perennial stream, potentially subject to the jurisdiction of the Corps, RWQCB, and CDFW. The Project will involve direct disturbance through cofferdam installation and eucalyptus tree removal, and access over an approximately 0.05-acre area of perennial stream. Construction work within Arroyo Seco would be a regulated activity that would require permits from the

Corps (CWA Section 404), RWQCB (CWA Section 401), and CDFW (Section 1602 Streambed Alteration Agreement). Additional agency-imposed measures may be provided for aquatic resources. The Project will adhere to agency-imposed measures for aquatic resources that are typically more restrictive than the mitigation measures recommended herein. To the extent there are any conflicting provisions between agency-imposed measures and the mitigation measures recommended herein, the agency measures will supersede the mitigation measures.

To reduce potential impacts to waters to a less than significant level, the following measure is recommended in addition to the **General Measures** identified above.

MM BIO-10: Jurisdictional Waters

- Construction activities will be timed to minimize impacts to aquatic resources and protect water quality. To the extent possible, construction activities in jurisdictional waters will occur during the dry season, between April 15 and October 15 (or the first measurable rainfall of 1 inch or greater).
- Significant earth moving-activities will not be conducted in jurisdictional waters within 24 hours of predicted storms or after major storms (defined as 1 inch of rain or more).
- Work in jurisdictional waters will occur in isolation from flowing waters. All work in jurisdictional waters will be either conducted when the area is isolated with a cofferdam, sandbags, or equivalent.
- Temporary erosion and sediment control measures will be implemented, as determined appropriate, to minimize discharge of sediment into aquatic features, in compliance with state and local standards in effect at the time of construction. Such measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, and sandbag dikes.
- All construction personnel and equipment will be confined to designated work areas and access corridors.
- Staging and storage areas for equipment, materials, fuels, lubricants, and solvents, will be confined to upland staging areas where they cannot enter aquatic areas. Stationary equipment such as motors, pumps, generators, and compressors will be positioned over drip-pans. Vehicles and other equipment will be refueled and lubricated only within the staging areas. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.
- Work in jurisdictional waters will be restricted to the minimum area necessary.
- After Project completion, areas of annual grassland disturbed by Project activities will be seeded with a native seed mix to prevent runoff and sedimentation of adjacent waterways.

4.4 Wildlife Corridors and Native Wildlife Nursery Sites

This section analyzes the Project's potential impacts and mitigation for habitat corridors and linkages in reference to the significance threshold outlined in CEQA Appendix G, Part IV (d):

d) Does the Project have the potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

Wildlife movement between suitable habitat areas can occur via open space areas lacking substantial barriers. The terms "landscape linkage" and "wildlife corridor" are often used when referring to these

areas. The key to a functioning corridor or linkage is that it connects two larger habitat blocks, also referred to as core habitat areas (Beier and Loe 1992; Soulé and Terbough 1999). It is useful to think of a “landscape linkage” as being valuable in a regional planning context, a broad scale mapping of natural habitat that functions to join two larger habitat blocks. The term “wildlife corridor” is useful in the context of smaller, local area planning, where wildlife movement may be facilitated by specific local biological habitats or passages and/or may be restricted by barriers to movement. Above all, wildlife corridors must link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat (Hilty et al. 2019).

The Study Area is not within a designated wildlife corridor based on the Essential Connectivity Areas geospatial dataset, which uses habitat modelling to identify areas of land with value as wildlife corridors (CDFW and Caltrans 2022). The site is located within a larger tract of development, including I-580 to the south and dense residential development to the east which serve as barriers to movement for terrestrial species. However, the Study Area is connected to a larger tract of lightly developed and undeveloped land to the west and terrestrial wildlife species may therefore be present incidentally within the Study Area. In addition, perennial streams within the Study Area may provide local dispersal habitat for aquatic species. Such species may be present year-round or may disperse through streams during seasonal rain events. The Project is scheduled to occur during the dry season when streams are less likely to function for dispersal and corridor movement, as opposed to aquatic habitat for species with aquatic requirements (e.g. CRLF used as non-breeding aquatic habitat). As such the Study Area does not provide corridor functions beyond connecting similar lightly developed land parcels in local surrounding areas. After Project completion, the Study Area will function as it does currently which allows movement of wildlife through aquatic and terrestrial habitats. No impact will occur to wildlife corridors for terrestrial and aquatic species and no mitigation measures are recommended.

A “native wildlife nursery site” must contain the resources necessary for adult wildlife species to breed, give birth, and rear their young. Nursery sites must include elements required by juvenile wildlife species to reach maturity; this includes adequate space, refuge, food, and physical conditions in the environment.

No wetlands or waters are present that would support reproduction by amphibians, thus no nursery sites are present to support amphibians. No colonial roosting sites are known for mammals (e.g. caves or similar structures known to support maternity colonies of bats). Some individual nesting sites for birds or denning mammals (e.g. badgers) may occur in the Study Area. However, if nesting birds are present within the Study Area at the time of Project activities, implementation of MM BIO-8 reduces impacts to nesting birds to a less than significant level. Similarly, MM BIO-6 reduces impacts to American badger and their dens to less than significant levels. In addition, implementation of MM BIO-10 will protect water quality and the Project is not anticipated to cause any change in water quantity, or food production which might affect downstream areas where salmonids may be present. As such, the Project will have no effect on the function or productivity of downstream wildlife nursery sites for fish. Therefore, with the implementation of the aforementioned minimization measures, no impact will occur to native wildlife nursery sites for any species and no additional mitigation measures are recommended.

4.5 Local Policies and Ordinances

This section analyzes the Project’s potential impacts and mitigation based on potential conflicts with local policies and ordinances in reference to the significance threshold outlined in CEQA Appendix G, Part IV (e):

e) Does the Project have the potential to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

The City of Livermore encourages the preservation of protected trees through its development review and permit approval process. The City of Livermore Tree Preservation Ordinance (Section 12.20 of the Livermore Municipal Code) defines “protected trees” based on trunk circumference at breast height i.e. 4.5 feet above grade. The definition of protected trees varies depending on several factors including existing land use and property ownership status. The Project will comply with the City of Livermore Tree Preservation Ordinance, as well as all other local ordinances and policies. Therefore, no significant impact to local policies and ordinances is anticipated and no mitigation is recommended.

4.6 Habitat Conservation Plans

This section analyzes the Project’s potential impacts and mitigation based on conflicts with any adopted local, regional, and state habitat conservation plans in reference to the significance threshold outlined in CEQA Appendix G, Part IV (f):

f) Does the Project have the potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The Study Area and Project Area fall within the area identified by the EACCS. The EACCS is not an adopted habitat conservation plan or natural community conservation plan. Rather, it is a guidance document that provides recommendations for addressing species impacts for the purpose of permitting project specific authorizations needed under the federal and state Endangered Species Acts. Further, as noted in the previous sections, the Project incorporates avoidance, minimization, and mitigation strategies identified in the EACCS. Thus, there is no conflict with any adopted habitat conservation plan or natural community conservation plan and no mitigation measures are recommended.

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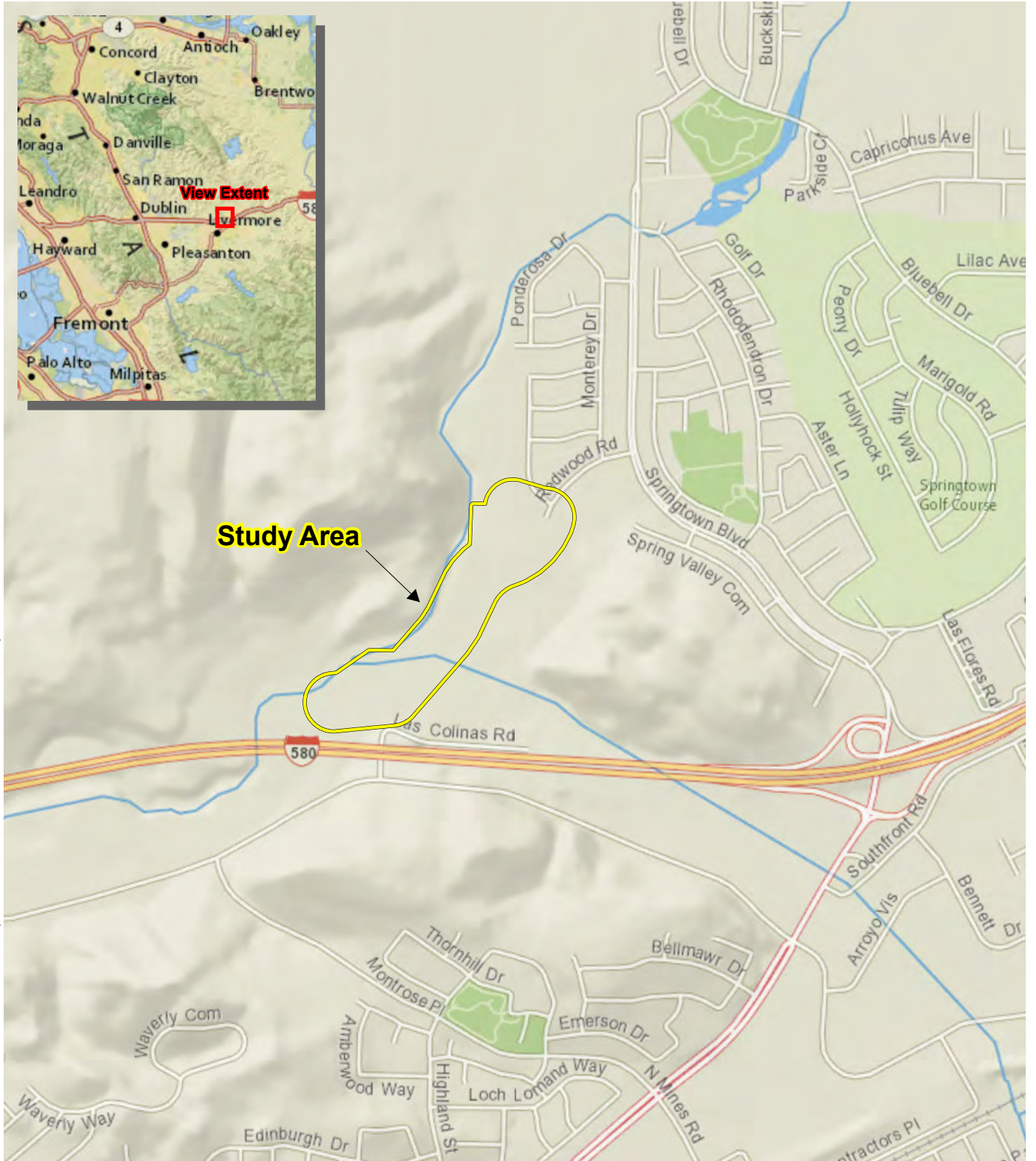
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APPENDIX A – FIGURES

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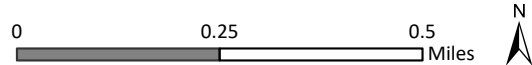


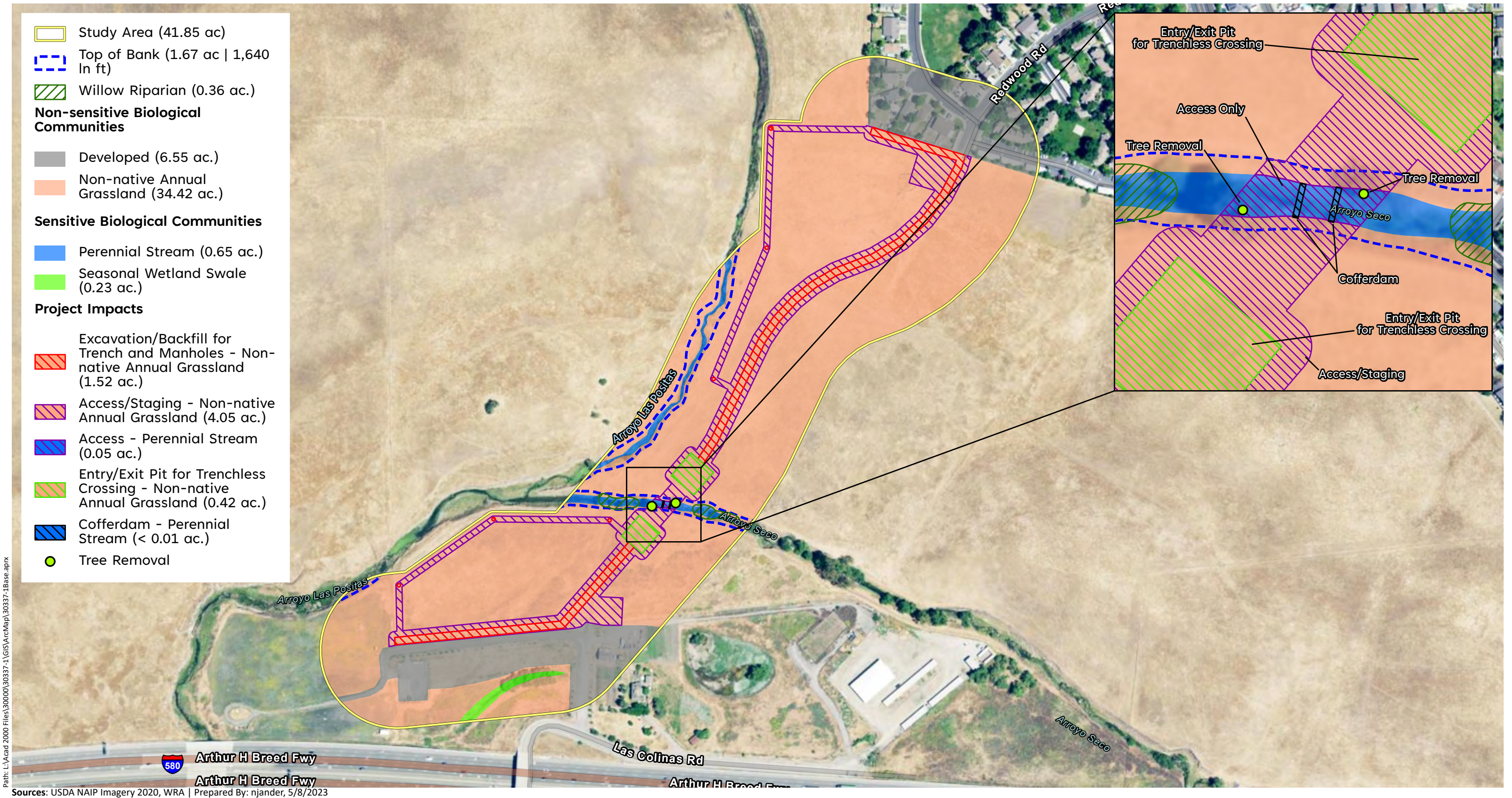
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Sources: National Geographic, WRA | Prepared By: njander, 4/18/2022

Figure 1. Study Area Location

Springtown Sewer Trunkline Project
Livermore, Alameda County, California





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Sources: USDA NAIP Imagery 2020, WRA | Prepared By: njander, 5/8/2023

Figure 2. Potential Impacts to Biological Communities

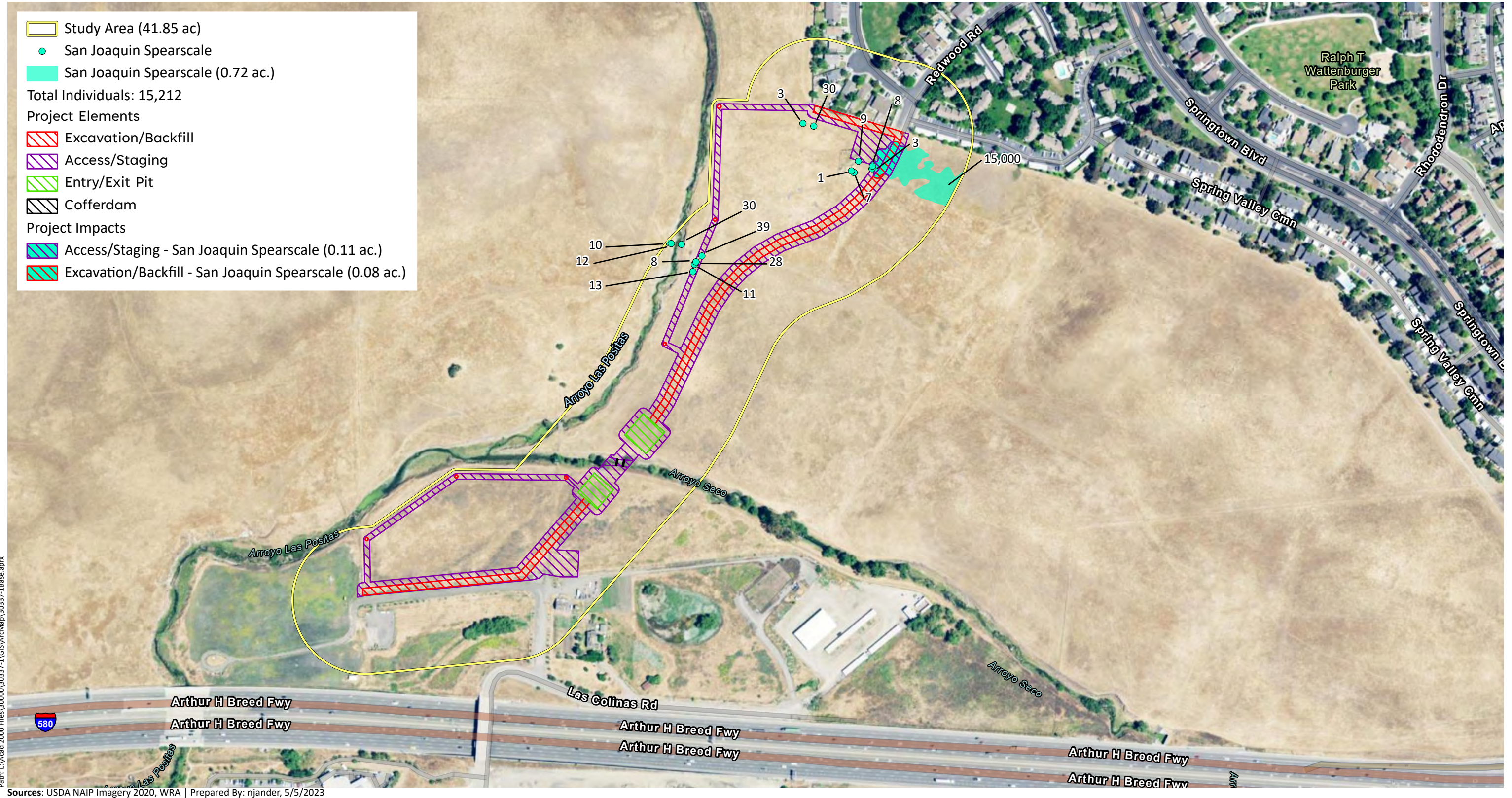
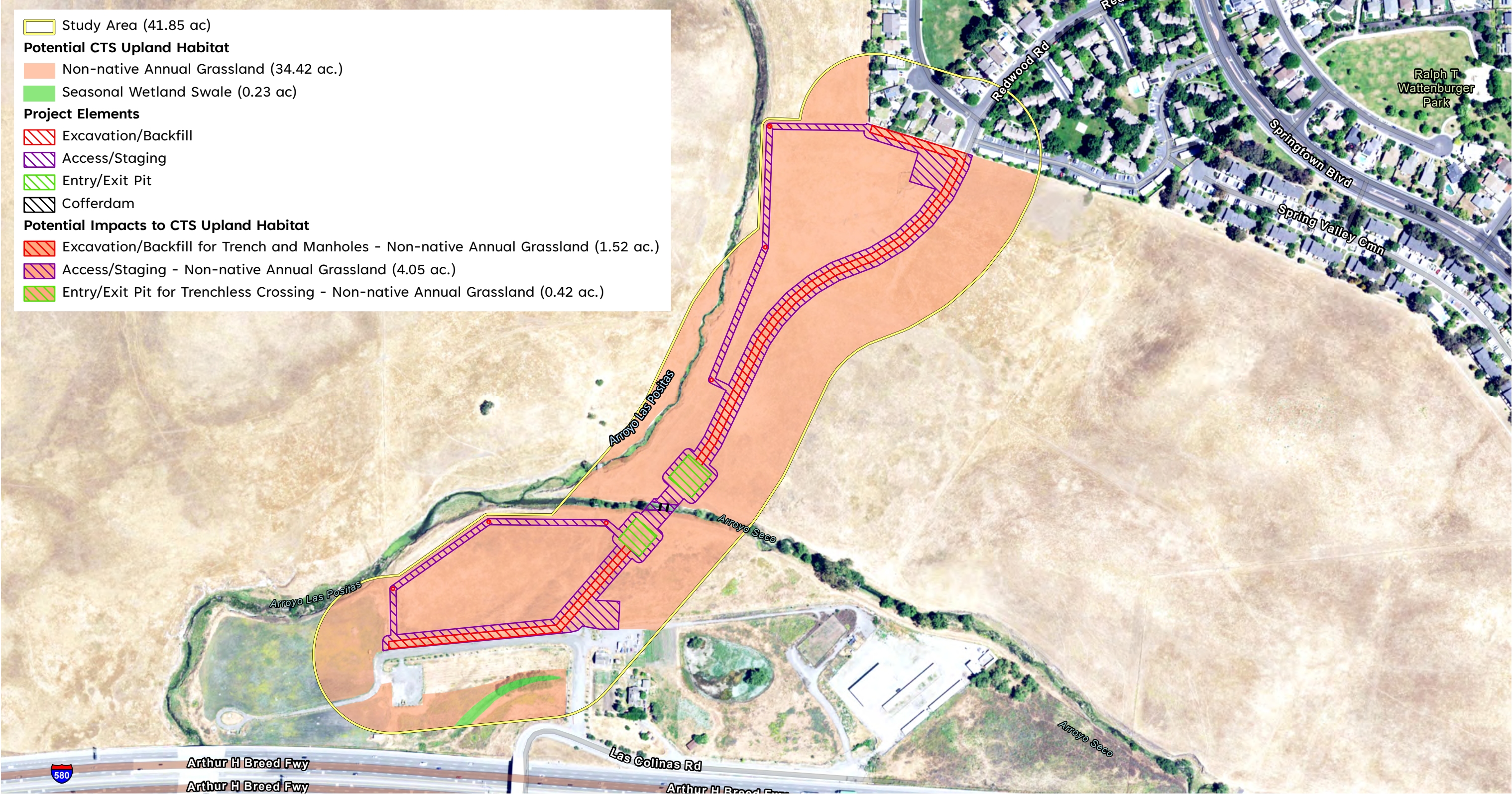


Figure 3. Potential Impacts to San Joaquin Spearscale

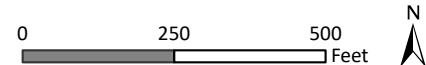
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- Study Area (41.85 ac)
- Potential CTS Upland Habitat**
- Non-native Annual Grassland (34.42 ac.)
- Seasonal Wetland Swale (0.23 ac)
- Project Elements**
- Excavation/Backfill
- Access/Staging
- Entry/Exit Pit
- Cofferdam
- Potential Impacts to CTS Upland Habitat**
- Excavation/Backfill for Trench and Manholes - Non-native Annual Grassland (1.52 ac.)
- Access/Staging - Non-native Annual Grassland (4.05 ac.)
- Entry/Exit Pit for Trenchless Crossing - Non-native Annual Grassland (0.42 ac.)

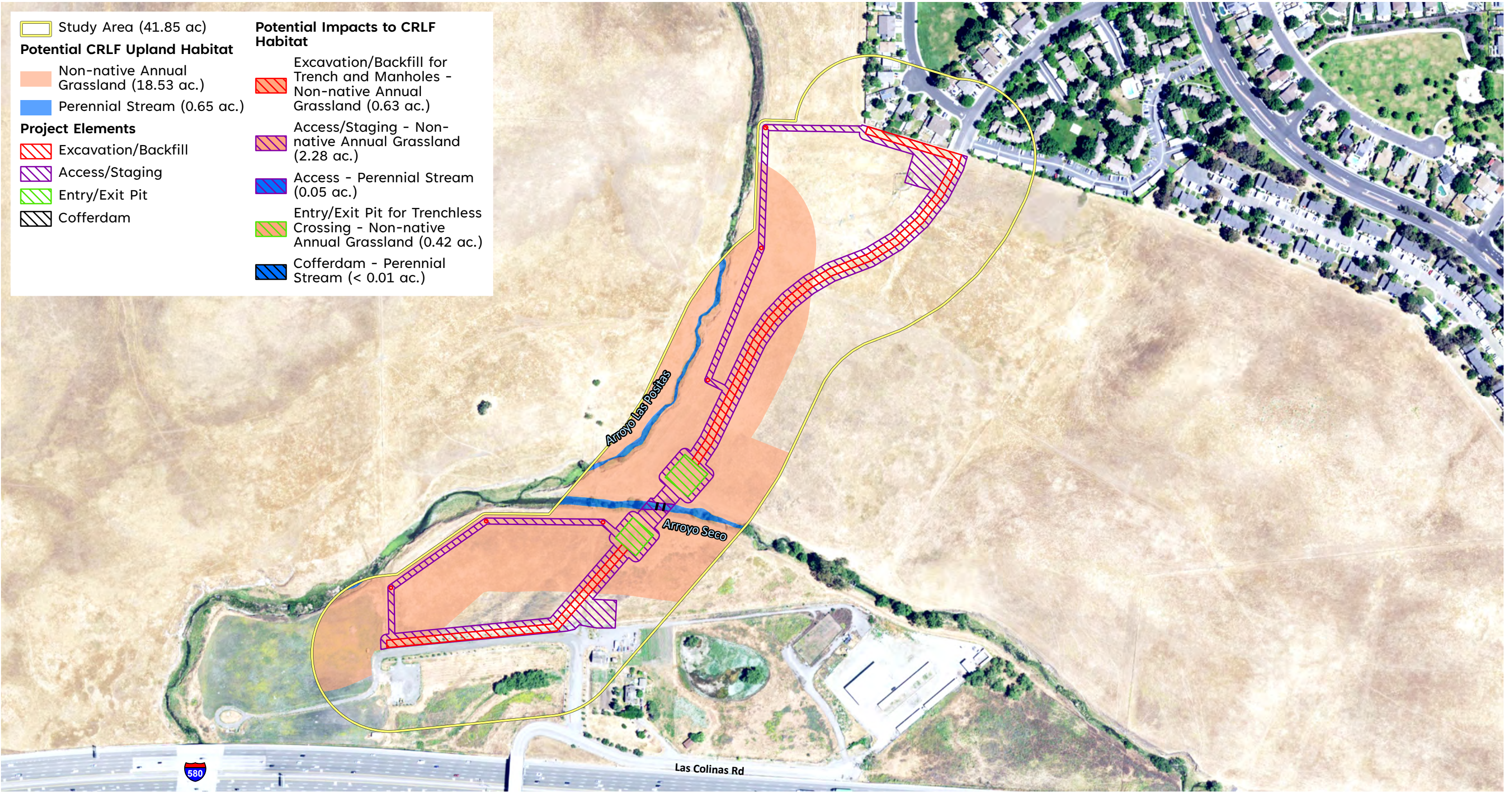


Sources: USDA NAIP Imagery 2020, WRA | Prepared By: njander, 5/5/2023

Figure 4. Impacts to Potential California Tiger Salamander Upland Habitat



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Sources: USDA NAIP Imagery 2020, WRA | Prepared By: njander, 5/5/2023

Figure 5. Impacts to Potential California Red-legged Frog Habitat

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**APPENDIX B – POTENTIAL FOR SPECIAL-STATUS SPECIES 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 within the Study Area

List Compiled from the California Department of Fish and Wildlife Natural Diversity Database (CDFW 2023), U.S. Fish and Wildlife Service Information for Planning and Consultation Species Lists (USFWS 2023), and California Native Plant Society Rare Plant Inventory (CNPS 2023) search of the Livermore and surrounding eight (Altamont, Byron Hot Springs, Diablo, Dublin, La Costa Valley, Mendenhall Springs, Niles, and Tassajara) U.S. Geological Survey 7.5' quadrangles.

SCIENTIFIC NAME	STATUS ¹	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. Chaparral, cismontane woodland, and coastal scrub habitat are not present within the Study Area.	No further actions are recommended pertaining to 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.	No Potential. Suitable microhabitat of steep slopes on valley and foothill grassland habitat are not present within the Study Area.	No further actions are recommended pertaining to this species.
California androsace <i>Androsace elongata</i> ssp. <i>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. While valley and foothill grassland habitat is present within the Study Area, the vegetation is typically dense, which would outcompete this diminutive species. Additionally, the nearest Consortium of California Herbarium 2 (CCH2) record is more than 6 miles to the northeast.	No further actions are recommended pertaining to this species.
slender silver moss <i>Anomobryum julaceum</i>	Rank 4.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest. Elevation ranges from 330 to 3280 feet (100 to 1000 meters). Blooms .	No Potential. Broadleafed upland forest, lower montane coniferous forest, and north coast coniferous forest habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.

SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mt. Diablo manzanita <i>Arctostaphylos auriculata</i>	Rank 1B.3	Chaparral (sandstone), cismontane woodland. Elevation ranges from 445 to 2135 feet (135 to 650 meters). Blooms Jan-Mar.	No Potential. Chaparral and cismontane habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
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. Chaparral habitat is not present within the Study Area.	No further actions are recommended pertaining to 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 5 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	Unlikely. While valley and foothill grassland habitat (with alkaline clay soils) is present within the Study Area, this species is typically associated with mesic environments. The seasonal wetland swale located to the south of the Study Area is dominated by nonnative species and lacks the alkaline species typically associated with this taxon and is therefore unlikely to support it.	No further actions are recommended pertaining to 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.	Moderate Potential. Small patches of potentially suitable, strongly alkaline substrate are present.	Presumed Absent. This species was not observed during the protocol level rare plant surveys. See Section 4.1
crownscale <i>Atriplex coronata</i> var. <i>coronata</i>	Rank 4.2	Chenopod scrub, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 1935 feet (1 to 590 meters). Blooms Mar-Oct.	Moderate Potential. Small patches of potentially suitable, strongly alkaline substrate are present.	Presumed Absent. This species was not observed during the protocol level rare plant surveys. See Section 4.1



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
brittlescale <i>Atriplex depressa</i>	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 1050 feet (1 to 320 meters). Blooms Apr-Oct.	Unlikely. While valley and foothill grassland habitat (with alkaline clay soils) is present within the Study Area, alkali scald microhabitat is not present within the Study Area.	No further actions are recommended pertaining to this species.
lesser saltscale <i>Atriplex minuscula</i>	Rank 1B.1	Chenopod scrub, playas, valley and foothill grassland. Elevation ranges from 50 to 655 feet (15 to 200 meters). Blooms May-Oct.	Unlikely. While valley and foothill grassland habitat (with alkaline clay soils) is present within the Study Area, this Study Area lacks sandy substrate that would support this species.	No further actions are recommended pertaining to this species.
big-scale balsamroot <i>Balsamorhiza macrolepis</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 150 to 5100 feet (45 to 1555 meters). Blooms Mar-Jun.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is not typically observed within alkaline substrate. The nearest documented occurrence is in the hills approximately 6 miles southeast, on mapped acidic soils.	No further actions are recommended pertaining to this species.
big tarplant <i>Blepharizonia plumosa</i>	Rank 1B.1	Valley and foothill grassland. Elevation ranges from 100 to 1655 feet (30 to 505 meters). Blooms Jul-Oct.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in vertic (cracked) and sloped alkaline soils.	No further actions are recommended pertaining to this species.
Brewer's calandrinia <i>Calandrinia breweri</i>	Rank 4.2	Chaparral, coastal scrub. Elevation ranges from 35 to 4005 feet (10 to 1220 meters). Blooms (Jan)Mar-Jun.	No Potential. Chaparral and coastal scrub habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mt. Diablo fairy-lantern <i>Calochortus pulchellus</i>	Rank 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation ranges from 100 to 2755 feet (30 to 840 meters). Blooms Apr-Jun.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, microhabitat of wooded/brushy slopes are not present to support this species.	No further actions are recommended pertaining to this species.
Oakland star-tulip <i>Calochortus umbellatus</i>	Rank 4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 330 to 2295 feet (100 to 700 meters). Blooms Mar-May.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is generally known from serpentine substrate, which is absent from the Study Area, and it is not known from alkaline substrate. Additionally, the nearest CCH2 record is more than 12 miles to the northwest.	No further actions are recommended pertaining to this species.
Congdon's tarplant <i>Centromadia parryi</i> ssp. <i>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).	High Potential. Alkaline valley and foothill grassland habitat with alkaline soils are present within the Study Area. The nearest CNDDDB occurrence is less than one mile to the north, last observed in 2019.	Presumed Absent. This species was not observed during the protocol level rare plant surveys. See Section 4.1.
hispid salty bird's-beak <i>Chloropyron molle</i> ssp. <i>hispidum</i>	Rank 1B.1	Meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 5 to 510 feet (1 to 155 meters). Blooms Jun-Sep.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, and alkaline soils are also present, there are no microhabitats of alkaline meadows and alkaline sinks with saltgrass (<i>Distichlis</i> spp.) as the dominant species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
<p>palmate-bracted bird's-beak <i>Chloropyron palmatum</i></p>	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. While valley and foothill grassland habitat is present within the Study Area, and alkaline soils are also present, there are no microhabitats of alkaline meadows/sinks/scalds with associated alkaline species as dominant (e.g., <i>Distichlis</i> spp. as the dominant species.	No further actions are recommended pertaining to this species.
<p>Santa Clara red ribbons <i>Clarkia concinna</i> ssp. <i>automixa</i></p>	Rank 4.3	Chaparral, cismontane woodland. Elevation ranges from 295 to 4920 feet (90 to 1500 meters). Blooms (Apr)May-Jun(Jul).	No Potential. Chaparral and cismontane woodland habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
<p>small-flowered morning-glory <i>Convolvulus simulans</i></p>	Rank 4.2	Chaparral (openings), coastal scrub, valley and foothill grassland. Elevation ranges from 100 to 2430 feet (30 to 740 meters). Blooms Mar-Jul.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, microhabitat of serpentine substrate is absent, and the nearest CCH2 record is more than 10 miles to the northeast.	No further actions are recommended pertaining to this species.
<p>Livermore tarplant <i>Deinandra bacigalupii</i></p>	SE, Rank 1B.1	Meadows and seeps (alkaline). Elevation ranges from 490 to 605 feet (150 to 185 meters). Blooms Jun-Oct.	Moderate Potential. The Study Area contains potentially suitable alkaline substrate. The nearest CNDDDB occurrence is 1.5 mile to the northeast, last observed in 2015.	Presumed Absent. This species was not observed during the protocol level rare plant surveys. See Section 4.1.
<p>Hospital Canyon larkspur <i>Delphinium californicum</i> ssp. <i>interius</i></p>	Rank 1B.2	Chaparral (openings), cismontane woodland (mesic), coastal scrub. Elevation ranges from 640 to 3595 feet (195 to 1095 meters). Blooms Apr-Jun.	No Potential. Chaparral, cismontane woodland, and coastal scrub habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
recurved larkspur <i>Delphinium recurvatum</i>	Rank 1B.2	Chenopod scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 2590 feet (3 to 790 meters). Blooms Mar-Jun.	Unlikely. While valley and foothill grassland habitat (with alkaline soils) is present within the Study Area, and this species is more likely to occur in valley saltbrush or valley chenopod scrub habitat on steeper slopes, and such habitats are absent from the Study Area.	No further actions are recommended pertaining to this species.
Mt. Diablo buckwheat <i>Eriogonum truncatum</i>	Rank 1B.1	Chaparral, coastal scrub, valley and foothill grassland. Elevation ranges from 10 to 1150 feet (3 to 350 meters). Blooms Apr-Sep(Nov-Dec).	Unlikely. This species' geographic distribution is restricted to Contra Costa County, and the nearest known occurrence is approximately 15 miles northwest of the Study Area. There are no CNDDDB occurrences in Alameda County.	No further actions are recommended pertaining to this species.
bay buckwheat <i>Eriogonum umbellatum</i> var. <i>bahiiforme</i>	Rank 4.2	Cismontane woodland, lower montane coniferous forest. Elevation ranges from 2295 to 7220 feet (700 to 2200 meters). Blooms Jul-Sep.	No Potential. This species is known from serpentine substrate, which is absent from the Study Area. Additionally, cismontane woodland and lower montane coniferous forest habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
Jepson's woolly sunflower <i>Eriophyllum jepsonii</i>	Rank 4.3	Chaparral, cismontane woodland, coastal scrub. Elevation ranges from 655 to 3365 feet (200 to 1025 meters). Blooms Apr-Jun.	No Potential. Chaparral, cismontane woodland, and coastal scrub habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Jepson's coyote-thistle <i>Eryngium jepsonii</i>	Rank 1B.2	Valley and foothill grassland, vernal pools. Elevation ranges from 10 to 985 feet (3 to 300 meters). Blooms Apr-Aug.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, and this species typically occurs within vernal pool habitat, which is absent from the Study Area.	No further actions are recommended pertaining to 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.	Unlikely. While valley and foothill grassland habitat (with alkaline soils) is present within the Study Area, the nearest CNDDDB occurrence is more than 11 miles to the southeast.	No further actions are recommended pertaining to 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 5 to 2740 feet (1 to 835 meters). Blooms Apr-Oct.	Present. Valley and foothill grassland habitat (with alkaline soils) is present within the Study Area, and this species was observed during the April 8, 2022 and May 17, 2022 protocol-level rare plant surveys.	Present. This species was observed during the April 8, 2022 and May 17, 2022 protocol-level rare plant surveys. See Section 4.1.
stinkbells <i>Fritillaria agrestis</i>	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 35 to 5100 feet (10 to 1555 meters). Blooms Mar-Jun.	Moderate Potential. Valley and foothill grassland habitat (nonnative species dominant, with clay soils) is present within the Study Area. The nearest CCH2 occurrence, documented in 2019, is approximately 6 miles to the east.	Presumed Absent. This species was not observed during the protocol level rare plant surveys. See Section 4.1.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
fragrant fritillary <i>Fritillaria liliacea</i>	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 10 to 1345 feet (3 to 410 meters). Blooms Feb-Apr.	Unlikely. While valley and foothill grassland habitat (clay soils) is present within the Study Area, this species is typically observed on steeper slopes, often with rocky substrate (ridge tops) and/or with serpentine substrate. The nearest CNDDDB occurrence is over 14 miles to the northwest.	No further actions are recommended pertaining to this species.
phlox-leaf serpentine bedstraw <i>Galium andrewsii</i> ssp. <i>gatense</i>	Rank 4.2	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 490 to 4755 feet (150 to 1450 meters). Blooms Apr-Jul.	No Potential. Chaparral, cismontane woodland, and lower montane coniferous forest habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
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. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in chaparral/oak woodland interface in rocky, azonal soils in partial shade, and such habitat is absent from the Study Area.	No further actions are recommended pertaining to 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. While valley and foothill grassland habitat (with clay) is present within the Study Area, this species is typically found in vernal pool habitat in vertic clay soils, and such habitat is absent from the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Brewer's western flax <i>Hesperolinon breweri</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 100 to 3100 feet (30 to 945 meters). Blooms May-Jul.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in serpentine microhabitats.	No further actions are recommended pertaining to 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. Vernal pool habitat is not present within the Study Area.	No further actions are recommended pertaining to this species.
legenere <i>Legenere limosa</i>	Rank 1B.1	Vernal pools. Elevation ranges from 5 to 2885 feet (1 to 880 meters). Blooms Apr-Jun.	No Potential. Vernal pool habitat is not present within the Study Area.	No further actions are recommended pertaining to this species.
serpentine leptosiphon <i>Leptosiphon ambiguus</i>	Rank 4.2	Cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 395 to 3710 feet (120 to 1130 meters). Blooms Mar-Jun.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in serpentine microhabitats.	No further actions are recommended pertaining to this species.
bristly leptosiphon <i>Leptosiphon aureus</i>	Rank 4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 180 to 4920 feet (55 to 1500 meters). Blooms Apr-Jul.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is typically found where grassland integrates with oak woodland habitat and/or on serpentine substrate, and such habitats are absent from the Study Ara. In addition, there are no CNDDDB or CCH2 occurrences in Alameda County.	No further actions are recommended pertaining to this species.
Hall's bush-mallow <i>Malacothamnus hallii</i>	Rank 1B.2	Chaparral, coastal scrub. Elevation ranges from 35 to 2495 feet (10 to 760 meters). Blooms (Apr)May-Sep(Oct).	No Potential. Chaparral and coastal scrub habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
woodland woollythreads <i>Monolopia gracilens</i>	Rank 1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), valley and foothill grassland. Elevation ranges from 330 to 3935 feet (100 to 1200 meters). Blooms (Feb)Mar-Jul.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in sandy to rocky substrates.	No further actions are recommended pertaining to this species.
Tehama navarretia <i>Navarretia heterandra</i>	Rank 4.3	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 100 to 3315 feet (30 to 1010 meters). Blooms Apr-Jun.	Unlikely. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in vernal pool habitat.	No further actions are recommended pertaining to this species.
prostrate vernal pool navarretia <i>Navarretia prostrata</i>	Rank 1B.2	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools. Elevation ranges from 10 to 3970 feet (3 to 1210 meters). Blooms Apr-Jul.	Unlikely. While valley and foothill grassland habitat (with alkaline soils) is present within the Study Area, this species is typically found in vernal pool habitat, which was not observed within the Study Area.	No further actions are recommended pertaining to this species.
Mt. Diablo phacelia <i>Phacelia phacelioides</i>	Rank 1B.2	Chaparral, cismontane woodland. Elevation ranges from 1640 to 4495 feet (500 to 1370 meters). Blooms Apr-May.	No Potential. Chaparral and cismontane woodland habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
hairless popcornflower <i>Plagiobothrys glaber</i>	Rank 1A	Marshes and swamps (coastal salt), meadows and seeps (alkaline). Elevation ranges from 50 to 590 feet (15 to 180 meters). Blooms Mar-May.	No Potential. Marshes/swamp and meadows/seeps habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
Oregon polemonium <i>Polemonium carneum</i>	Rank 2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. Elevation ranges from 0 to 6005 feet (0 to 1830 meters). Blooms Apr-Sep.	No Potential. Coastal prairie, coastal scrub, and lower montane coniferous forest habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
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.	Unlikely. While valley and foothill grassland habitat (with alkaline soils) is present within the Study Area, this species is typically found in alkaline scald habitat, which was not observed within the Study Area.	No further actions are recommended pertaining to this species.
chaparral harebell <i>Ravenella exigua</i>	Rank 1B.2	Chaparral (rocky, usually serpentine). Elevation ranges from 900 to 4100 feet (275 to 1250 meters). Blooms May-Jun.	No Potential. Chaparral habitat is not present within the Study Area.	No further actions are recommended pertaining to this species.
chaparral ragwort <i>Senecio aphanactis</i>	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub. Elevation ranges from 50 to 2625 feet (15 to 800 meters). Blooms Jan-Apr(May).	No Potential. Chaparral, cismontane woodland, and coastal scrub habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
long-styled sand-spurrey <i>Spergularia macrotheca</i> var. <i>longistyla</i>	Rank 1B.2	Marshes and swamps, meadows and seeps. Elevation ranges from 0 to 835 feet (0 to 255 meters). Blooms Feb-May.	Unlikely. This taxon is typically known from alkaline scalds and alkaline seasonal wetlands, which are not present within the Study Area.	No further actions are recommended pertaining to this species.
most beautiful jewelflower <i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 310 to 3280 feet (95 to 1000 meters). Blooms (Mar)Apr-Sep(Oct).	No Potential. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in serpentine outcrops on ridges and slopes.	No further actions are recommended pertaining to this species.
Mt. Diablo jewelflower <i>Streptanthus hispidus</i>	Rank 1B.3	Chaparral, valley and foothill grassland. Elevation ranges from 1200 to 3935 feet (365 to 1200 meters). Blooms Mar-Jun.	No Potential. While valley and foothill grassland habitat is present within the Study Area, this species is typically found in talus or rocky outcrops, and this microhabitat was not observed within the Study Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
northern slender pondweed <i>Stuckenia filiformis</i> ssp. <i>alpina</i>	Rank 2B.2	Marshes and swamps (shallow freshwater). Elevation ranges from 985 to 7055 feet (300 to 2150 meters). Blooms May-Jul.	No Potential. Marsh/swamp habitat is not present within the Study Area.	No further actions are recommended pertaining to this species.
California seablite <i>Suaeda californica</i>	FE, Rank 1B.1	Marshes and swamps (coastal salt). Elevation ranges from 0 to 50 feet (0 to 15 meters). Blooms Jul-Oct.	No Potential. Marsh/swamp habitat is not present within the Study Area.	No further actions are recommended pertaining to this species.
saline clover <i>Trifolium hydrophilum</i>	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	Unlikely. While valley and foothill grassland habitat (with alkaline soils) is present within the Study Area, this species is typically associated with vernal pool habitat, which is absent from the Study Area. The seasonal wetland swale located in the southern portion of the Study Area is dominated by nonnative annual grasses and lacks species that are indicative of alkaline wetlands.	No further actions are recommended pertaining to this species.
coastal triquetrella <i>Triquetrella californica</i>	Rank 1B.2	Coastal bluff scrub, coastal scrub. Elevation ranges from 35 to 330 feet (10 to 100 meters). Blooms .	No Potential. Coastal bluff scrub and coastal scrub habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
caper-fruited tropidocarpum <i>Tropidocarpum capparideum</i>	Rank 1B.1	Valley and foothill grassland (alkaline hills). Elevation ranges from 5 to 1495 feet (1 to 455 meters). Blooms Mar-Apr.	Unlikely. While valley and foothill grassland habitat (with alkaline clay soils) is present within the Study Area, there are no modern CNDDB occurrences in the vicinity of the Study Area (the most recent being from Byron in 1936).	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
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. Chaparral, cismontane woodland, and lower montane coniferous forest habitats are not present within the Study Area.	No further actions are recommended pertaining to this species.
WILDLIFE				
MAMMALS				
American badger <i>Taxidea taxus</i>	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	Moderate Potential. Annual grassland within the Study Area may provide suitable denning or foraging habitat.	See section 4.1.
big free-tailed bat <i>Nyctinomops macrotis</i>	SSC, WBWG med-high	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	No Potential. The Study Area does not contain cliffs or rock outcrops to support roosting by this species.	No further actions are recommended pertaining to this species.
California leaf-nosed bat <i>Macrotus californicus</i>	SSC, WBWG, FS sensitive	Desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis habitats. Needs rocky, rugged terrain with mines or caves for roosting.	No Potential. The Study Area does not contain cliffs or rock outcrops to support roosting by this species.	No further actions are recommended pertaining to this species.
fringed myotis <i>Myotis thysanodes</i>	WBWG High	Associated with a wide variety of habitats including dry woodlands, desert scrub, mesic coniferous forest, grassland, and sage-grass steppes. Buildings, mines and large trees and snags are important day and night roosts.	No Potential. The Study Area does not contain dry woodland or desert scrub habitats to support roosting by this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
hoary bat <i>Lasiurus cinereus</i>	WBWG Medium	Prefers open forested habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths.	Moderate Potential. While the Study Area does not contain large trees, trees are present and may support roosting.	See Section 4.1.
long-eared myotis <i>Myotis evotis</i>	WBWG Medium	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.	No Potential. The Study Area does not contain sage, chaparral or forested habitats with refugia to support roosting substrates for this species.	No further actions are recommended pertaining to this species.
long-legged myotis <i>Myotis volans</i>	WBWG High	Primarily found in coniferous forests, but also occurs seasonally in riparian and desert habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	No Potential. The Study Area does not contain forested habitats or desert habitats with underground refugia to support roosting substrates for this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
pallid bat <i>Antrozous pallidus</i>	SSC, WBWG High	Found in a variety of habitats ranging from grasslands to mixed forests, favoring open and dry, rocky areas. Roost sites include crevices in rock outcrops and cliffs, caves, mines, and also hollow trees and various manmade structures such as bridges, barns, and buildings (including occupied buildings). Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	No Potential. The Study Area has no forested habitats or caves, mines or abandoned buildings to support roosting by this species.	No further actions are recommended pertaining to this species.
pocketed Free-tailed Bat <i>Nyctinomops femorasaccus</i>	SSC, WBWG Medium	Variety of arid areas in southern California -- pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	No Potential. The Study Area does not contain cliffs or rock outcrops to support roosting by this species.	No further actions are recommended pertaining to this species.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	SSC	Forest habitats of moderate canopy and moderate to dense understory. Also in chaparral habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	No Potential. The Study Area is largely grassland and does not contain woodland with dense understory brush to support this species.	No further actions are recommended pertaining to this species.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	FE, ST, RP	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Unlikely. Studies of the distribution of this species in the vicinity indicate that it is extirpated from this portion of the Livermore Valley.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
silver-haired bat <i>Lasionycteris noctivagans</i>	WBWG Medium	Primarily a forest dweller, feeding over streams, ponds, and open brushy areas. Summer habitats include a variety of forest and woodland types, both coastal and montane. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.	No Potential. The Study Area does not contain suitable forest habitat for this species.	No further actions are recommended pertaining to this species.
spotted bat <i>Euderma maculatum</i>	SSC, WBWG	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Feeds over water and along washes. Needs rock crevices in cliffs or caves for roosting.	No Potential. The Study Area does not contain cliffs or rock outcrops to support roosting by this species.	No further actions are recommended pertaining to this species.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SSC, WBWG High	Associated with a wide variety of habitats from deserts to higher-elevation mixed and coniferous forests. Females form maternity colonies in buildings, caves and mines, and males roost singly or in small groups. Foraging typically occurs at edge habitats near wooded areas, e.g. along streams.	No Potential. The Study Area does not contain buildings, caves or mines that could provide roosting habitat for this species.	No further actions are recommended pertaining to this species.
western mastiff bat <i>Eumops perotis</i>	SSC, WBWG High	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.	No Potential. The Study Area does not contain suitable roosting substrates including large mountain caves and large rock outcrops.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western red bat <i>Lasiurus blossevillii</i>	SSC, WBWG High	Highly migratory and typically solitary, roosting primarily in the foliage of broad leaf trees or shrubs. Roosts are usually in broad-leaved trees including cottonwoods, sycamores, alders, and maples which occur within densely vegetated riparian corridors. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas when trees are of suitable species.	Moderate Potential. While the Study Area does not contain large trees or extensive riparian forest, trees are present that may support roosting.	See Section 4.0.
western yellow bat <i>Lasiurus xanthinus</i>	SSC, WBWG	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	No Potential. The Study Area does not contain suitable roosting trees for this species.	No further actions are recommended pertaining to this species.
BIRDS				
Alameda song sparrow <i>Melospiza melodia pusillula</i>	SSC	Year-round resident of salt marshes bordering the south arm of San Francisco Bay. Inhabits primarily pickleweed marshes; nests placed in marsh vegetation, typically shrubs such as gumplant.	No Potential. The Study Area is outside of the typical range for this species and does not contain salt marsh habitat which this species occurs within.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
American peregrine falcon <i>Falco peregrinus anatum</i>	FD, SD, CFP	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.	No Potential. The Study Area does not contain tall cliffs or similar structures to support nesting, nor does it occur next to a large waterbody that might support foraging by the species.	No further actions are recommended pertaining to this species.
bald eagle <i>Haliaeetus leucocephalus</i>	FD, SE, CFP	Occurs year-round in California, but primarily a winter visitor; breeding population is growing. Nests in large trees in the vicinity of larger lakes, reservoirs and rivers. Wintering habitat somewhat more variable but usually features large concentrations of waterfowl or fish.	No Potential. The Study Area does not contain snags or similar tall features to support nesting, nor is it located next to a large water body such as a lake which might support foraging.	No further actions are recommended pertaining to this species.
burrowing owl <i>Athene cunicularia</i>	SSC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	Moderate Potential. Annual grassland with presence of ground squirrel burrows may provide suitable nesting or wintering habitat.	See Section 4.1.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California black rail <i>Laterallus jamaicensis coturniculus</i>	ST, CFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	No Potential. The Study Area does not contain expansive undisturbed marsh habitats required to support this species.	No further actions are recommended pertaining to this species.
golden eagle <i>Aquila chrysaetos</i>	CFP	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	Unlikely (nesting). There are no tall cliffs or large trees to support nesting within the Study Area. This species forages long distances from its nest and due to the relative abundance of this species in nearby Diablo Range and Altamont Pass Wind Resource Area and known nests in North Livermore area, it may be observed foraging in the vicinity or flying over the Study Area, however there is low potential for the species to nest as cliffs or very large trees are absent.	In the unlikely event this species were to nest within a tree within the Study Area, preconstruction nesting bird surveys associated with MM BIO-8 would identify the nest and follow prescribed procedures to buffer the nest, thus ensuring no effects to the nest.
grasshopper sparrow <i>Ammodramus savannarum</i>	SSC	Summer resident. Breeds in open grasslands in lowlands and foothills, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	High Potential (nesting and foraging). Annual grassland within the Study Area may provide suitable nesting and foraging habitat.	See Section 4.1.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
great blue heron <i>Ardea herodias</i>	none (breeding sites protected by CDFW)	Year-round resident. Nests colonially or semi-colonially in tall trees and on cliffs, also sequestered terrestrial substrates. Breeding sites usually in close proximity to foraging areas: marshes, lake margins, tidal flats, and rivers. Forages primarily on fishes and other aquatic prey, also smaller terrestrial vertebrates.	Unlikely (nesting). The Study Area does not occur next to a body of water sufficient to support a breeding colony for this species, nor are any historic colonial roosts known from within the site. Adults may occasionally be observed foraging within the creek but would be sufficiently grown to relocate on their own, unlike nest-bound chicks.	No further actions are recommended pertaining to this species.
loggerhead shrike <i>Lanius ludovicianus</i>	SSC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	Moderate Potential (nesting and foraging). Open grassland foraging habitat is available within the Study Area and the Study Area contains trees and dense vegetation that may support nesting.	See Section 4.1.
northern harrier <i>Circus hudsonius (cyaneus)</i>	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	Moderate Potential (nesting and foraging). Annual grassland within the Study Area may provide suitable nesting and foraging habitat.	See Section 4.1.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Swainson's hawk <i>Buteo swainsoni</i>	ST	Summer resident in California's Central Valley and limited portions of the southern California interior. Nests in tree groves and isolated trees in riparian and agricultural areas, including near buildings. Forages in grasslands and scrub habitats as well as agricultural fields, especially alfalfa. Preys on arthropods year-round as well as smaller vertebrates during the breeding season.	Unlikely (nesting). This species is recently known to nest approximately 3 miles southeast of the Project Area (CNDDDB unprocessed records, CDFW 2022). There is one CNDDDB occurrence of the species south of I-580 of a nest in a suburban neighborhood in 2017 (CDFW 2022). However, the species is not known to nest within the Project Area and nesting substrates in the project site are limited to a small number of smaller eucalyptus trees. Given the quality of potential nest trees, this species is unlikely to nest within the Project Area. The site provides suitable foraging habitat.	In the unlikely event this species were to nest within a tree within the Study Area, preconstruction nesting bird surveys associated with MM BIO-8 would identify the nest and follow prescribed procedures to buffer the nest, thus ensuring no effects to the nest.
tricolored blackbird <i>Agelaius tricolor</i>	ST, SSC	Nearly endemic to California, where it is most numerous in the Central Valley and vicinity. Highly colonial, nesting in dense aggregations over or near freshwater in emergent growth or riparian thickets. Also uses flooded agricultural fields. Abundant insect prey near breeding areas essential.	Unlikely (nesting). The Study Area does not contain expansive marshes required to support a nesting colony by this species. The species may nest in nearby areas outside of the Project Area and occasionally forage through the riparian corridors or in grasslands. Thus the species may be observed flying or foraging but individuals are unlikely to be directly impacted by events in the Project Area.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	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 (nesting and foraging). Annual grassland within the Study Area provides open foraging habitat for small mammals, and trees along Arroyo Seco may support nesting as this species.	See Section 4.1.
California condor <i>Gymnogyps californianus</i>	FE, SE, CFP	Year-round resident in vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100 miles from roost/nest.	No Potential. The Study Area is outside of the known distribution for this species.	No further actions are recommended pertaining to this species.
California least tern <i>Sternula antillarum browni</i>	FE, SE, CFP	Summer resident along the coast from San Francisco Bay south to northern Baja California; inland breeding also very rarely occurs. Nests colonially on barren or sparsely vegetated areas with sandy or gravelly substrates near water, including beaches, islands, and gravel bars. In San Francisco Bay, has also nested on salt pond margins.	No Potential. The Study Area does not contain sandy beaches or alkaline flats to support nesting by this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Francisco common yellowthroat <i>Geothlypis trichas sinuosa</i>	SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Unlikely (nesting). Any riparian vegetation along the creek is minimal and unlikely to support nesting by this species which requires extensive, thick cover down to the waters edge. This species has been observed in the vicinity, but only around larger ponded features with more extensive riparian vegetation or marsh (eBird 2022).	No further actions are recommended pertaining to this species.
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 (roosting, nesting). The Study Area doesn't contain suitable woodland habitat to support roosting and nesting by this species.	No further actions are recommended pertaining to this species.
Olive-sided flycatcher <i>Contopus cooperi</i>	SSC	Summer resident. Typical breeding habitat is montane coniferous forests. At lower elevations, also occurs in wooded canyons and mixed forests and woodlands. Often associated with forest edges. Arboreal nest sites located well off the ground.	No Potential. The Study Area does not contain woodland habitats required to support nesting by this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Yellow warbler <i>Setophaga petechia</i>	SSC	Summer resident throughout much of California. Breeds in riparian vegetation close to water, including streams and wet meadows. Microhabitat used for nesting variable, but dense willow growth is typical. Occurs widely on migration.	Moderate Potential (nesting). Willows and blackberry along Arroyo Seco may provide suitable nesting habitat for this species.	See Section 4.1.
REPTILES & AMPHIBIANS				
California red-legged frog <i>Rana draytonii</i>	FT, SSC, RP	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Disperses through upland habitats after rains.	High Potential. Water within perennial streams within the Study Area may provide nonbreeding aquatic habitat. Annual grassland within the Study Area is potential upland aestivation or dispersal habitat.	See Section 4.1.
California tiger salamander <i>Ambystoma californiense</i>	FE/FT, ST, RP	Populations in Santa Barbara and Sonoma counties currently listed as endangered; threatened in remainder of range. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Adults are fossorial and utilize mammal burrows and other subterranean refugia. Breeding occurs primarily in vernal pools and other seasonal water features.	High Potential. Documented breeding ponds are present within 1 mile of the Study Area. Annual grassland within the Study Area is potential upland habitat.	See Section 4.1.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
foothill yellow-legged frog <i>Rana boylei</i>	SC, SSC	Found in or adjacent to rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	Unlikely. Creeks within the Study Area are largely muddy bottoms and not the clear running, rocky substrates necessary for this species.	No further actions are recommended pertaining to this species.
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.	No Potential. The Study Area does not have seasonal vernal pools or similar features with sufficient inundation to support breeding by this species.	No further actions are recommended pertaining to this species.
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT, ST	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 and small mammal burrows provide basking and refuge.	No Potential. The Study Area is outside of the range for this species which occurs in nearby hills with rocky outcrops and scrub or chaparral communities. No rocky outcrops, or scrub habitats are present that might attract the species.	No further actions are recommended pertaining to 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.	No Potential. The Study Area does not contain sandy washes required to support this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
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. This species is largely restricted to habitats south of I-580 which is an impassable barrier for this species (Nafis 2023).	No further actions are recommended pertaining to this species.
Pacific (western) pond turtle <i>Actinemys marmorata</i>	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	High Potential. Perennial stream within the Study Area may serve as dispersal habitat and annual grassland within the Study Area may serve as potential nesting habitat. This species has been documented at ponds immediately upstream of the Study Area.	See Section 4.1.
FISH				
Coho salmon - central CA coast ESU <i>Oncorhynchus kisutch</i>	FE, SE, EFH	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	No Potential. This species has been extirpated from San Francisco Bay and all of its tributaries (NMFS 2012).	No further actions are recommended pertaining to this species. With the use on MM BIO-10 to protect water quality, any temporary effects to EFH would be minimized to less than significant levels.

SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
steelhead - central CA coast DPS <i>Oncorhynchus mykiss irideus</i>	FT	Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	No Potential. The creeks within the Study Area are not known to support anadromy and therefore this species cannot occur. Specifically both spawning and rearing habitat are absent (Leidy et al 2005).	No further actions are recommended pertaining to this species.
Chinook salmon - central valley fall/late fall-run ESU <i>Oncorhynchus tshawytscha</i>	SSC, RP, NMFS	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	No Potential. The creeks within the Study Area are not known to support anadromy and therefore this species cannot occur. Specifically both spawning and rearing habitat are absent (Leidy et al 2005).	No further actions are recommended pertaining to this species. With the use on MM BIO-10 to protect water quality, any temporary effects to EFH would be minimized to less than significant levels.
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 known range for this species.	No further actions are recommended pertaining to this species.
INVERTEBRATES				
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.	Unlikely. The Study Area does not contain wetlands with suitable inundation period to support a reproductive population of this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
longhorn fairy shrimp <i>Branchinecta longiantenna</i>	FE, RP	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.	Unlikely. The Study Area does not contain wetlands with suitable inundation period to support a reproductive population of this species.	No further actions are recommended pertaining to this species..
midvalley fairy shrimp <i>Branchinecta mesovallensis</i>	SSI	Known only from the Central Valley, primarily its central portions. Typically inhabits short-lived, grass-bottomed vernal pools and other seasonal water features.	Unlikely. The Study Area does not contain wetlands with suitable inundation period to support a reproductive population of this species.	No further actions are recommended pertaining to this species.
vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT, RP	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Unlikely. The Study Area does not contain wetlands with suitable inundation period to support a reproductive population of this species.	No further actions are recommended pertaining to this species.
vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE, RP	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Unlikely. The Study Area does not contain wetlands with suitable inundation period to support a reproductive population of this species.	No further actions are recommended pertaining to this species.
Antioch efferian robberfly <i>Efferia antiochi</i>	SSI	Known only from Antioch, Fresno, and Scout Island in the San Joaquin River.	No Potential. The Study Area is outside of the known distribution of this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Crotch bumblebee <i>Bombus crotchii</i>	SC	Range largely restricted to California, favoring grassland and scrub habitats. Typical of bumble bees, nests are usually constructed underground.	Unlikely. The range of this species has been recently reevaluated under the petition for listing. Maps associated with the petition show the range of this species further east, outside of the Study Area (Xerces 2018).	No further actions are recommended pertaining to this species.
obscure bumblebee <i>Bombus caliginosus</i>	none (Special Animals List)	Obscure bumble inhabits coastal meadows and open grassy prairies. Nests may be located underground or above ground in old bird or rodent nests, rock piles, tree cavities, and tufts of grass.	No Potential. This species is limited to coastal meadows and not inland grasslands such comprise the Study Area.	No further actions are recommended pertaining to this species.
western bumble bee <i>Bombus occidentalis</i>	SC	Formerly common throughout much of western North America; populations from southern British Columbia to central California have nearly disappeared (Xerces 2015). 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.	No Potential. Within California the range of this species is primarily limited to high meadows in the Sierra Nevada mountains and not within the vicinity near where the Study Area is located.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western ridged mussel <i>Gonidea angulata</i>	SSI	Occurs from southern British Columbia to northern California. The southern most river where this species is currently known to occur is the Russian River (Xerces 2020). Hardhead, Pit sculpin and Tule perch are documented fish hosts for <i>G. angulata</i> in northern California, although little is known about the fish species that serve as hosts for this mussel throughout other parts of its range.	No Potential. The Study Area is outside of the known range for this species.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
monarch butterfly <i>Danaus plexippus</i>	FC, winter roosts protected by CDFW	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, Monterey cypress), with nectar and water sources nearby.	Unlikely. The primary focus of conservation for this species in California is on winter roosting habitat (USFWS 2023). The Study Area is not along the coast where winter roosting occurs. There is no potential for winter roosting. Narrowleaf milkweed was documented onsite and can be a nectar plant for the species. However, recommendations for this area of California from the USFWS (2023) and Xerces (2018) recommend conserving early season blooming milkweeds, which are used as nectar sources and reproduction. Narrowleaf milkweed is a late-blooming plant (June-Sept) and as such is not likely used for nectar and early reproduction. As such it is unlikely that larvae would be present. Plants may be used as nectar sources by general migrating adults in the late season, but it is not expected adults would be impacted by implementation.	No further actions are recommended pertaining to this species.



SCIENTIFIC NAME	STATUS ¹	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE, RP	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	Unlikely. The Study Area does not contain wetlands with suitable inundation period to support a reproductive population of this species.	No further actions are recommended pertaining to this species.

¹ California Native Plant Society. 2023. Inventory of Rare and Endangered Plants (online edition, v9.5). Sacramento, California. Online at: <http://rareplants.cnps.org/>; most recently accessed: February 2023.

- FE: Federal Endangered
- FT: Federal Threatened
- FC: Federal Candidate
- SE: State Endangered
- ST: State Threatened
- SC: State Candidate
- 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

- SSI: Special-status Invertebrates List
- SSC: CDFW Species of Special Concern
- RP: Recovery Plan
- EFH: Essential Fish Habitat for this Species is Present

