“F”

Biological Study

American Canyon Solar P18-00114-UP
Planning Commission Hearing October 17, 2018

BIOLOGICAL CONSTRAINTS ANALYSIS FOR THE

NAPA COUNTY RENEWABLE PROPERTIES AMERICAN CANYON SOLAR PROJECT

Privileged attorney-client review product

PREPARED FOR:

Renewable Properties, LLC
2914 Larkin Street
San Francisco, California 94109
Contact: Vince Gibbs
(510) 812-3028

PREPARED BY:

Garcia and Associates
435 Lincoln Way
Auburn, California 95603
Contact: Susan Dewar
(530) 823-3151

March 2018

Renewable Properties, LLC. 2018. *Biological Constraints Analysis for the American Canyon Solar Project*. March 2018. Napa County, California. Prepared by Garcia and Associates, Auburn, California.

Contents

Figures

Appendices

Napa County Renewable Properties
American Canyon Solar Project
Biological Constraints Analysis

Summary

The American Canyon Solar Project is a small-scale utility solar project proposed to be built on approximately 21 acres of land in Napa County, California. Renewable Properties, LLC intends to purchase the land in order to facilitate the development of a utility solar power generation facility on the property. Garcia and Associates biologists conducted background research and field surveys in order to identify biological resources that could be affected by construction of the Project. Wildlife habitat suitability surveys and floristic surveys were conducted for special-status wildlife and plant species as designated by the United States Fish and Wildlife Service, California Department of Fish and Wildlife, and California Native Plant Society, or otherwise considered rare or threatened in the region.

Surveys focused on the Project Area and a buffer extending 500 feet around the Project Area. The biological constraints analysis considered the Project Area and buffer (approximately 95 acres), as well as a larger Biological Resources Evaluation Area consisting of the associated Napa River watershed (approximately 234,031 acres). Habitats in the Project Area include agricultural land and developed disturbed areas (livestock pens, residences, and ornamental landscaping). A riparian woodland (mixed willow alliance) and a small aquatic resource feature (intermittent stream) occur on the northern boundary of the Project Area near an existing access road. This woodland and stream are in an area where direct impacts can be avoided during Project construction.

Special-status wildlife species and migratory birds were evaluated for their potential to occur and be affected by the Project. Based on the presence of suitable habitat, four of the eleven special-status wildlife species identified from desktop research have potential to occur in the Project Area: western bumblebee (*Bombus occidentalis,* tracked by CDFW*)*, California red-legged frog (*Rana draytonii,* federally threatened*),* white-tailed kite (*Elanus leucurus,* state fully protected), and yellow warbler (*Setophaga petechia,* state species of special concern). None of these species were observed during field surveys.

Eighty-two special-status plant species were evaluated for their potential to occur and to be affected by the Project. Of these, none have potential to occur within the Project Area based on absence of suitable habitat.

This biological constraint analysis recommends Avoidance and Minimization Measures to avoid and minimize impacts to biological resources from the Project. In addition to these measures, the following surveys are recommended:

1. Pre-construction nesting bird surveys prior to any work within the bird nesting season (approximately February 15–August 31);
2. Pre-construction California red-legged frog survey prior to any work within the sensitive period for this species (October–June).

Introduction

Project Description

Renewable Properties, LLC (proponent) has entered into a purchase option agreement with the property owner (Barrow Irrevocable Trust) and intends on purchasing land in order to facilitate the development of a small scale, utility solar power generation facility in Napa County, California.

The American Canyon Solar Project (Project) consists of three phases and will generate a total of 3 megawatts (MW) alternating current (AC)[1] of clean, reliable solar energy when complete. The Project will interconnect to Pacific Gas and Electric Company's (PG&E's) pre-existing electrical distribution system located onsite. The power generated from this facility will be sold to Marin Clean Energy (MCE) through a long-term Power Purchase Agreement (PPA).

The Project will utilize approximately 12,096 solar modules and 66 string inverters, which convert the sun's energy into usable, AC power. Single axis tracking technology will be utilized to allow the modules to efficiently track the sun throughout the day and maximize the efficiency of solar collection. The modules will be mounted on a steel racking system, anchored into the ground using driven steel piers. The overall height of the array will be no more than 8 feet tall and the array will require approximately 18 acres of disturbance. Detailed plans are provided in Appendix F.

Background and Objectives

The purpose of this analysis is to evaluate the potential for special-status species and habitats to occur and to be affected by the Project. This assessment identifies the habitat types present on and adjacent to the site; any wildlife movement corridors on the site; and additional wildlife or botanical surveys needed to determine the presence of special-status species and the effects of the proposed Project.

For this analysis, a desktop review was performed to assess the potential presence of special-status species and their habitats in the vicinity of the Project Area. This was followed by a floristic survey for special-status plants and a habitat-level reconnaissance survey for special-status wildlife habitat. Based on the results, recommendations, including recommendations for further surveys and avoidance and mitigation measures (AMMs) are provided herein.

Site Location

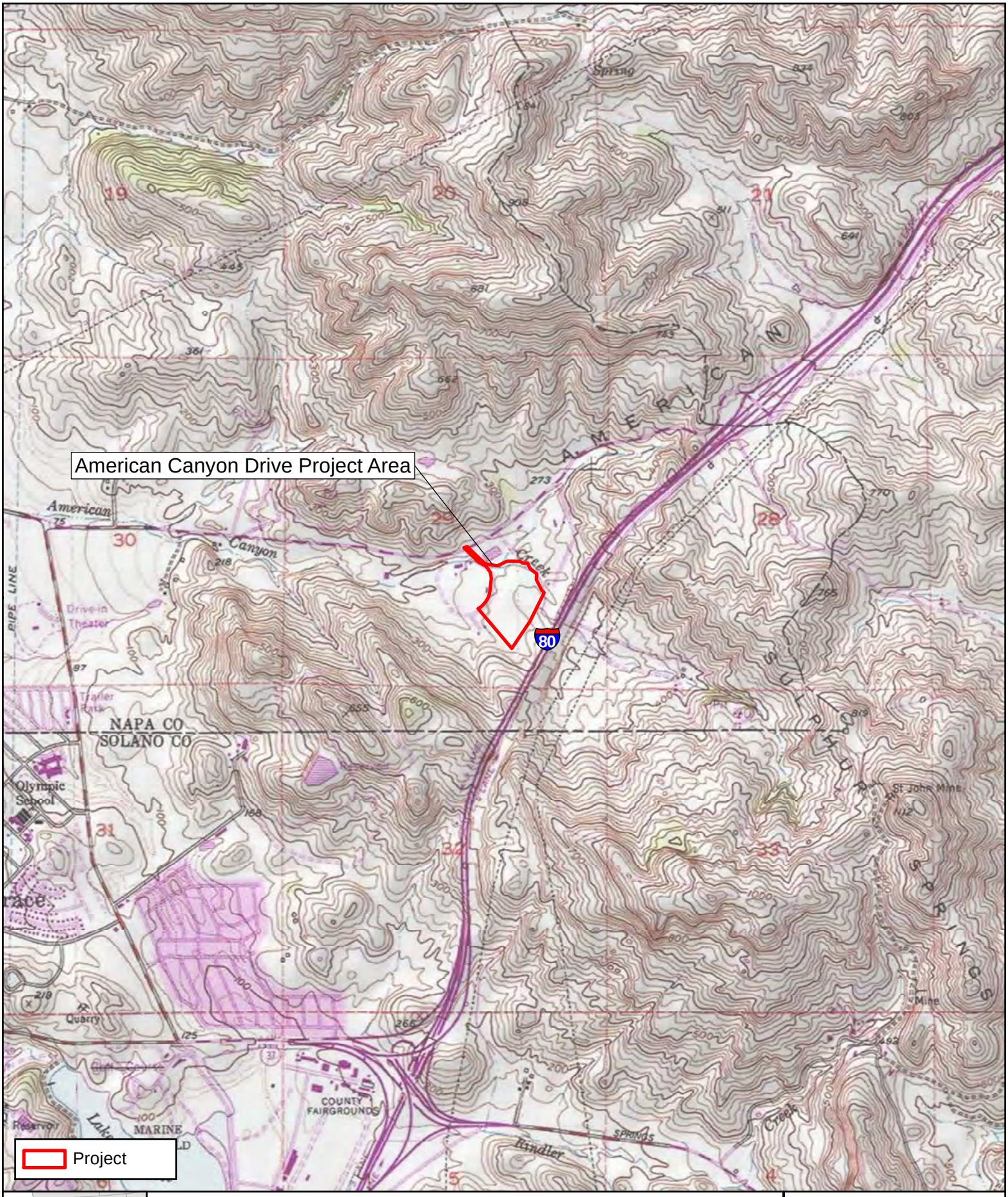
The Project encompasses approximately 21 acres (Project Area, Figure 1) in unincorporated Napa County at 2180 American Canyon Road. The Project Area consists of two parcels (APN 059-090-012 and APN 059-090-016) and is located within the Napa River watershed. The field survey primarily focused on the Project Area and a 500-foot buffer (approximately 95 acres total). Habitats within a larger Biological Resources Evaluation Area (BREA) (all lands within 1 mile of the Project Area and all lands in the Napa River watershed drainage [approximately 234,031 acres]) were also assessed (Appendix D).

The Project Area is currently being utilized as a goat and sheep farm. The majority of the Project Area was mapped as agricultural (pastures) (13 acres, Figure 2). The southern and eastern portions of the Project Area are dominated by pens, stalls, and exercise areas for livestock (horse, cow, sheep, goat, chicken). The northern boundary of the Project Area supports a strip of riparian woodland (mixed

[1] 3 MW AC = 4 MW direct current (DC)

willow alliance) and is protected from livestock grazing and disturbance by a fence (Appendix E, Photos 3, 9, and 10). Outside of the Project Area, areas to the east are vegetated with coyote brush (*Baccharis pilularis*) - California sagebrush (*Artemisia californica*) super alliance (Sawyer et al. 1995), and to the west and south with agriculture.

The desktop review identified one soil mapping unit underlying the Project Area (National Resource Conservation Service [NRCS] 2018): Clear Lake clay, drained, 0 to 2 percent slopes.



USGS 7.5' Quadrangle: CORDELIA (1980)
Legal Description: T04N, R03W, Sec. 29
Source: Bing Aerial Hybrid, Ganda GIS 2018

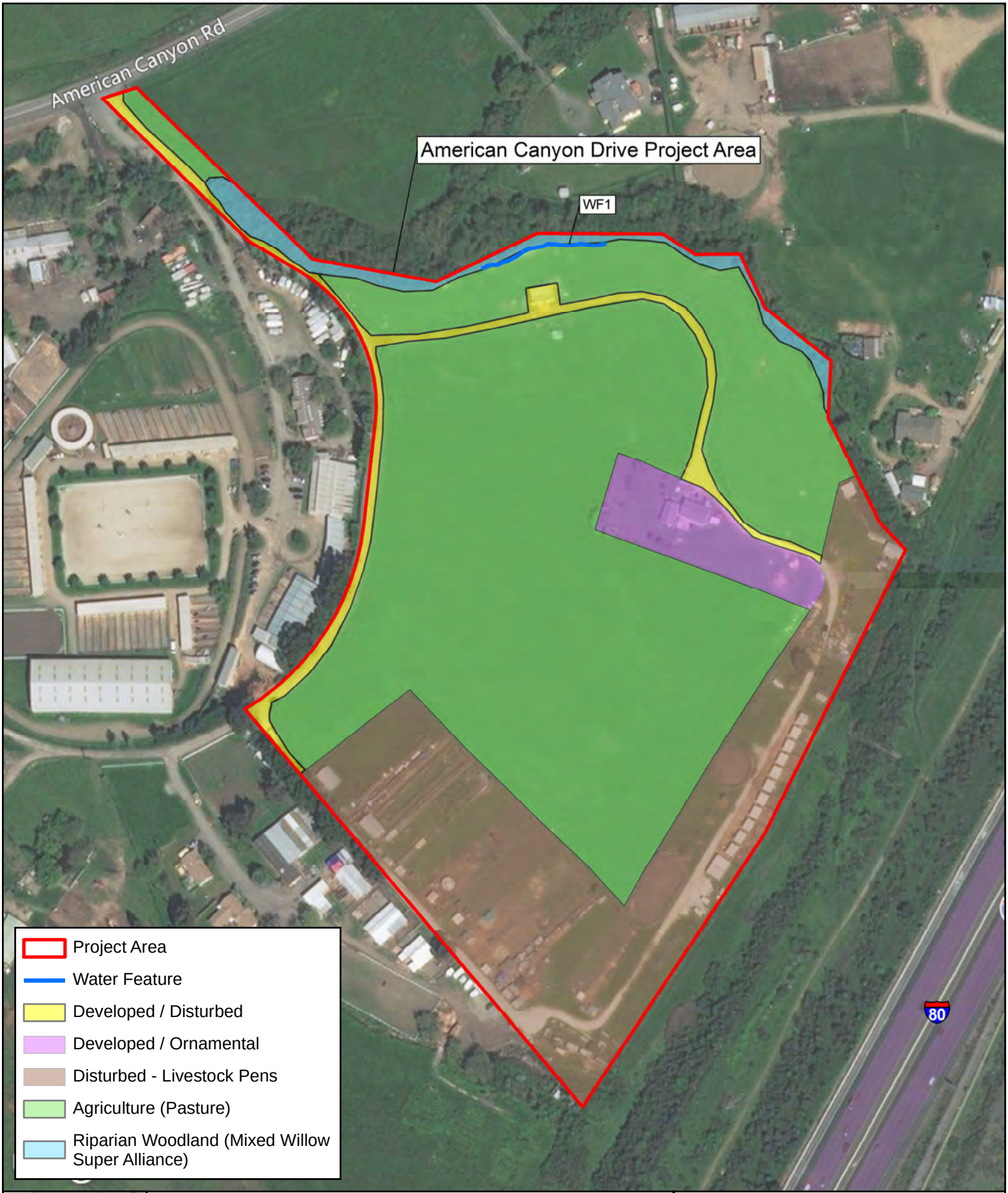
GANDA

0 0.5 1 Miles

Scale 1:24,00
1 Inch = 2000 Feet

Figure 1. Project Location
2180 American Canyon Road, Napa County, CA.

March 2018



USGS 7.5' Quadrangle: CORDELIA (1980)
Legal Description: T04N, R03W, Sec. 29
Source: Bing Aerial Hybrid, Ganda GIS 2018

GANDA

0 30 60 Meters

0 100 200 Feet

N

Scale 1:2,400
1 Inch = 200 Feet

Figure 2. Vegetation Map of Project Area
2180 American Canyon Road, Napa County, CA

March 2018

Methods

Desktop Review

Prior to field surveys, habitat types were reviewed using Napa County vegetation map data (M. Lamborn, Geographic Information Systems [GIS] Department Coordinator, pers. comm., March 2018 using Sawyer et al. 1995[2]). In addition, published information concerning special-status species that may occur in the Project Area was collected from several sources and reviewed. Sources consulted included the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDB; CDFW 2018), the California Native Plant Society's (CNPS's) *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2018), and the Napa County Biological Resources Baseline Data Report (Watershed Information and Conservation Council [WICC] of Napa County 2005). Searches in these databases were conducted for the United States Geological Survey (USGS) 7.5-minute quadrangle (quad) in which the site is located (*Cordelia, California*) and all directly-adjacent quads (nine-quad search) for wildlife and special-status plant species. The subset of CNDDB special-status species occurrences located within1 mile of the Project Area is presented in Figure 3.

Definition of Special-status Species

Section 15380 of the California Environmental Quality Act (CEQA, September 1983) has a discussion regarding non-listed taxa. This section states that a plant or animal species must be treated as rare or endangered even if it is not officially listed. If a person or organization provides information showing that a taxon meets the State's definitions and criteria, then it should be treated as such. With this guidance in mind, the following definitions of special-status species are used in this analysis.

Special-status Wildlife Species

Special-status wildlife species include taxa designated as follows:

- Threatened, endangered, or candidate for listing under the Federal Endangered Species Act (ESA);
- Threatened, endangered, or rare under the California Endangered Species Act (CESA);
- CDFW species of special concern or fully protected species; and,
- Species listed as sensitive by Region 5 of the United States Forest Service (USFS).[3]

Special-status Plant Species

Special-status plant species include taxa designated as follows:

- Threatened, endangered, or candidate for listing under the ESA;
- Threatened, endangered, or rare under the CESA;
- Species with California Rare Plant Ranks (CRPRs) as described below (CNPS 2018):

[2] Manual of California Vegetation (MCV), 1st edition (MCV1, Sawyer et al. 1995) is used rather than the more recent 2nd edition (MCV2, Sawyer et al. 2009) or online versions, because mapping for Napa County (WICC of Napa County 2005) utilizes Sawyer et al. 1995.

[3] No National Forest System Land administered by the USFS lies within the Project Area

1A – Plants presumed extinct in California;

1B – Plants rare, threatened, or endangered in California and elsewhere;

2 – Plants rare, threatened, or endangered in California, but more common elsewhere;

3 – Plants about which more information is needed – a review list (if suitable habitat is present); and

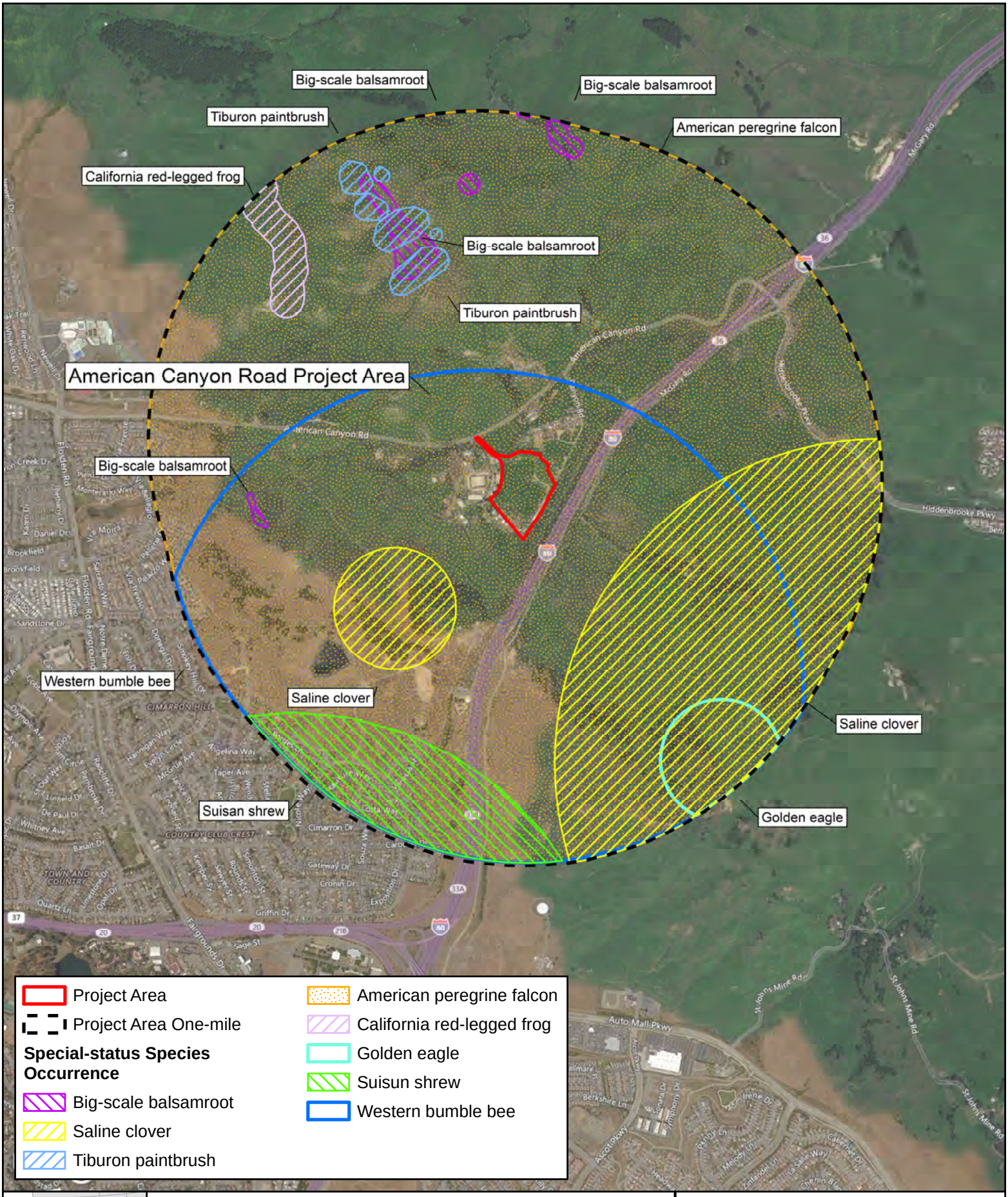
4 – Plants of limited distribution – a watch list (if suitable habitat is present).

Field Surveys

A field survey evaluating botanical and wildlife resources, including habitat suitability for special-status species and a floristic survey, was conducted on March 5, 2018 from 1300-1600 by Garcia and Associates (GANDA) biologist Christine Heckler and GANDA botanist Eliza Shepard. This survey was performed by walking meandering transects to cover the full extent of the Project Area (Figure 4). Observations were made of current land use, nature and degree of existing disturbances, physical topography, site physiognomy (characteristic species and related features of the associated plant community or vegetation, if any), current wildlife use, and presence or potential presence (permanent or transitional) of special-status wildlife.

The botanical survey methods followed established survey guidelines (California Department of Fish and Game [CDFG] 2009, CNPS 2001). All vascular plant species encountered were identified to the level necessary to determine status (floristic, Appendix C). *The Jepson Manual Second Edition* (Baldwin et al. 2012) was used for plant identification and nomenclature.

Resources of interest and survey transects (Figure 4) were mapped with geographical positioning system (GPS) capable Apple iPad Mini devices equipped with 1-meter-accurate GPS receivers running ESRI Collector for ArcGIS version 10.3.2 software.



USGS 7.5' Quadrangle: CORDELIA (1980)
Legal Description: T04N, R03W, Sec. 29
Source: CNDDB (March, 2018), Bing Aerial Hybrid, Ganda GIS 2018

GANDA

0 250 500 Meters
0 1,000 2,000 Feet

N

Scale 1:24,000
1 Inch = 2000 Feet

Figure 3. CNDDB Special-status Species Occurrences
2180 American Canyon Road, Napa County, CA.

March 2018

USGS 7.5' Quadrangle: CORDELIA (1980)
Legal Description: T04N, R03W, Sec. 29
Source: Bing Aerial Hybrid, Ganda GIS 2018

GANDA

0 30 60 Meters

0 100 200 Feet

N

Scale 1:2,400
1 Inch = 200 Feet

Figure 4. Project Area Boundary and Survey Route 2180 American Canyon Road, Napa County, CA.

March 2018

Results

Biological Setting

The BREA encompasses 59 of the 59 vegetation types within Napa County (WICC of Napa County 2005, and Appendix D). The nearest aquatic resource feature is American Canyon Creek, located directly adjacent to the Project Area to the north.

Existing Habitats

Two vegetation alliances are present within the Project Area (Manual of California Vegetation, First Edition [MCV1], Sawyer et al. 1995)[4]: agricultural (pasture) and riparian woodland (mixed willow alliance). Also present are developed areas with ornamental plantings and ruderal disturbed areas (Figure 2). One small aquatic feature (overflow from the American Canyon Creek) was also mapped (Figure 5). A description of vegetation types follows.

Agricultural

The majority of the Project Area (13 acres) is agricultural land used as pastures for sheep and goats. These disturbed areas are dominated by non-native annual grasses (Appendix E, photos 5 and 6). Dominant species included orchard grass (*Dactylis glomerata*), white clover (*Trifolium repens*), barley (*Hordeum* sp.), and brome (*Bromus* sp.). Other non-native species present included sheep sorrel (*Rumex acetosella*) and ribwort (*Plantago lanceolata*). One native herb species was observed: red maids (*Calandrinia menziesii*).

The agricultural land in the Project Area comprises 8.8 percent of the total agricultural land within 1 mile of the Project Area and approximately 0.02 percent of the total agricultural land within the BREA.

Riparian Woodland (Mixed Willow Alliance)

On the north and northeastern boundary of the Project Area is a strip of riparian woodland (0.55 acre) (mixed willow alliance [Sawyer et al. 1995]). This woodland is part of the riparian corridor around American Canyon Creek.

The mixed willow alliance was dominated by two willow species: red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*). The understory was dominated by Himalayan blackberry (*Rubus armeniacus*); few native torrent sedges (*Carex nudata*) were also present (Appendix E, photos 2-3, and 10).

The mixed willow alliance in the Project Area comprises 2.75 percent of the total mixed willow alliance within 1 mile of the Project Area and approximately 0.20 percent of the total within the BREA. This riparian woodland lies outside the fenced parcel proposed for development; no impacts are anticipated to occur within this riparian habitat in association with this Project.

[4] Vegetation is classified according to *A Manual of California Vegetation First Edition* (Sawyer et al. 1995) rather than more recent 2009 (Sawyer et al. 2009) or online version. The first edition was used to be consistent with the vegetation maps received from Napa County (M. Lamborn, GIS Department Coordinator, pers. comm., March 2018).

Developed/Disturbed Habitats

Gravel roads and disturbed areas are present in the eastern and southern portion of the Project Area (total of 7.6 acres). Livestock pens and exercise areas (5.8 acres) have primarily bare ground with sparse vegetation around the edges. Common non-native plant species include blue gum (*Eucalyptus globulus*), wild radish (*Raphanus sativus*), milk thistle (*Silybum marianum*), pineapple weed (*Matricaria discoidea*), and annual blue grass (*Poa annua*). Disturbed and developed areas also include a residential home with a few cultivated fruit trees such as apple (*Malva* sp.) and cherry plum (*Prunus cerasifera* (Appendix E, photos 1-2, 4, and 6-7).

Wetland and Water Features

One aquatic resource feature is located within the buffered Project Area.

Intermittent Stream

One small aquatic resource feature was mapped at the northern edge of the Project Area. This intermittent channel is an overflow channel from American Canyon Creek which lies immediately outside the Project Area boundary. This feature has a bed and bank, and held water at time of survey. It has an area of approximately 0.02 acre (3 feet at its widest) and is approximately 430 ft long. This channel is likely an unvegetated water of the U.S. (Figure 5 and Appendix E, photos 8 and 9). No impacts are proposed to this intermittent stream in association with the Project.

Special-status Wildlife with Potential to Occur in the Project Area

Special-status wildlife, their listing status, habitats, if species and habitat were observed during field survey and potential to occur in the Project Area are identified in Table 1, Appendix A. Eleven special-status wildlife species have potential to occur or occurrence records within a 1-mile radius of the Project Area (Appendix A, Figure 3). Of these, four special-status wildlife species have a moderate potential to occur in the Project Area. Life history accounts, significance, and potential impacts for these species are discussed below. Avoidance measures for species likely to occur or be impacted by the Project are discussed under AMMs.

No evidence of wildlife corridors, raptor nests, wildlife dens, burrows or other unique or sensitive biological habitats or resources were observed during the field survey.

Special-status Invertebrates

Western Bumblebee (*Bombus occidentalis*)
Federal Status: USFS Sensitive

The western bumblebee has no formal state status and is not listed as endangered or threatened under the ESA, but it is classified as sensitive by the USFS and as vulnerable by the International Union for Conservation of Nature (IUCN) (USFS 2018; IUCN 2017).

The western bumblebee was once very common in the western United States and western Canada. It is a generalist pollinator, and an important pollinator to a number of agricultural crops.

Although the western bumblebee was historically broadly distributed throughout its range, it has experienced serious declines in relative abundance, persistence, and range in recent years (Hatfield et al. 2015), most dramatically in western and central California, Oregon, and Washington (Xerces 2018). A number of factors are thought to contribute to the decline of the western bumblebee and other bee

species in general, including habitat loss and fragmentation, introduction of diseases and parasites through commercial rearing, pesticides, and climate change.

No *Bombus* species or suitable burrows for nest sites were observed during the field survey; however, the Project Area does contain suitable foraging habitat for the western bumblebee. The Project may affect foraging habitat, which could cumulatively add to the overall loss of habitat for the species, but Project activities are not likely to affect individuals. As described in the AMMs section below, implementation of AMMs can minimize habitat impacts to the western bumblebee.

Special-status Amphibians

California red-legged frog (*Rana draytonii*)
Federal Status: Threatened. State Status: Species of Special Concern

California red-legged frog (CRLF) is the largest native frog in the western United States and is endemic to California. Adult frogs range from 1.5-5 inches long and frequently eat invertebrates, or even vertebrates such as Sierran tree frogs (*Pseudacris sierrae*) and mice (USFWS 2017a).

CRLF occupies a fairly specific habitat, combining both aquatic and upland habitat requirements. Aquatic habitat is comprised of slow-moving streams or ponds, and suitable breeding habitat is generally found in deep (greater than 2.5 feet) still or slow-moving pools. Upland habitat includes nearly any area within 2 miles of a breeding site that stays cool during summer, and includes sheltering habitat such as logs, small mammal burrows, or man-made structures (USFWS 2017a). Because of this two-fold habitat requirement, they are especially vulnerable to habitat fragmentation. Current threats to CRLF include habitat loss and fragmentation, introduction of invasive species, inappropriate grazing and agriculture practices, and urbanization.

Suitable upland habitat is present in portions of the Project Area, and suitable aquatic habitat is present in the stream that borders the buffered Project Area. Documented occurrences of CRLF are also present within one mile of the Project. Because the Project is not anticipated to occur within the stream and no burrows or logs are present in the Project Area (man-made structures may still provide upland shelter), direct impacts to CRLF from the Project are not expected. The northern Project Area along the stream and access road are the areas of suitable upland habitat that could be affected. The lack of aquatic habitat, burrows or other shelter in the remainder of the Project Area limits the probability of CRLF occurring in the area that will be directly impacted by the Project.

As described in the AMMs section below, a preconstruction survey for CRLF is recommended and, if necessary, seasonal buffers will be implemented to avoid disturbances to breeding sites. With the implementation of these AMMs, direct impacts to CRLF are not anticipated. The Project may affect upland habitat, but Project activities are not likely to affect individuals or lead to a downward trend of the CRLF population.

Special-status Birds

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

The white-tailed kite is a locally common species in certain habitats of California. They are the only North American kite that hovers while hunting for prey; this consists of small rodents, especially voles, and occasionally reptiles, insects, and small birds.

The white-tailed kite was headed towards extinction in the 1930s due to habitat destruction, shooting, and egg collection (Chesney 2017). It was listed as State fully protected in the 1950s and population numbers have since steadily recovered. Although population numbers have increased, the white-tailed kite population continues to face threats; these include habitat destruction and fragmentation, urbanization, and accidental poisoning from rodenticide use.

The Project Area is located in suitable nesting and foraging habitat for white-tailed kite. No nests were observed at the time of the survey; however, the removal of trees as a result of Project development could limit future nest sites. Foraging habitat could also be eliminated through Project implementation.

As described in the AMMs section below, a preconstruction nesting bird survey is recommended prior to any Project development. If necessary, seasonal buffers will be implemented to avoid disturbances to nests. With the implementation of these AMMs, direct impacts to white-tailed kites are not anticipated. The Project may affect habitat, but Project activities are not likely to affect individuals or lead to a trend towards a loss of viability.

Yellow Warbler (*Setophaga petechia*)
State Status: Species of Special Concern

The yellow warbler is a small, brilliantly colored songbird that primarily occurs as a migrant or summer resident in California. Although this species is locally common in certain areas and still occupies the majority of its historic breeding sites, they are almost completely extirpated from the Central Valley. Recent efforts in Napa County have also failed to locate the species at most of its historic breeding sites, most notably at Napa River, Mill Creek, and Suisun Creek, perhaps due to wine industry thinning of riparian habitat in the Napa Valley (Heath 2008).

Other threats to the yellow warbler include habitat loss and degradation, urbanization, parasitism by brown-headed cowbirds *(Molothrus ater),* and predation.

Suitable habitat for yellow warbler exists along the small riparian corridor that borders the access road and northern boundary of the Project Area. No nests were observed at the time of the survey; however, if trees are to be removed, especially willows, for Project development, this and other Project-related disturbances could impact or limit future nest sites.

As described in the AMMs section below, a preconstruction nesting bird survey is recommended prior to any Project activities that occur during the nesting season. If necessary, seasonal buffers will be implemented to avoid disturbances to nests. With the implementation of these AMMs, direct impacts to yellow warbler are not anticipated. The Project may minimally affect habitat, but Project activities are not likely to affect individuals or lead to a downward population trend for the species.

Special-status Plants with Potential to Occur in the Project Area

Special-status plant taxa reviewed for this investigation, including listing status, habitats, and presence of suitable habitat in the Project Area, are identified in Appendix A, Table 2. The desktop review identified 82 special-status plant species. Three of these species have known CNDDB occurrences (CDFW 2018) within 1 mile of the Project Area (Figure 3): big-scale balsamroot (*Balsamorhiza macrolepis*), Tiburon paintbrush (*Castilleja affinis* var. *neglecta*), and saline clover (*Trifolium hydrophilum*).

The nearest CNDDB occurrences of big-scale balsamroot and Tiburon paintbrush are approximately 0.50 mile from the Project Area. These species are known to occur in valley and foothill grassland on

serpentine substrate. Neither this habitat or substrate is present within the Project Area or within 500 feet of the Project Area (Appendix A).

Two occurrences of saline clover are recorded within 0.30 mile of the Project Area. This species is found in marshes, swamps, or vernal pools. These habitats are not present within the Project Area or within 500 feet of the Project Area (Appendix A).

The Project Area contains no suitable habitat for any special-status plant taxa, and no special-status plants are expected to be impacted by Project activities.

Critical Habitat

No designated critical habitat for federally listed species occurs within the Project Area or will be affected by proposed Project activities.

USGS 7.5' Quadrangle: CORDELIA (1980)
Legal Description: T04N, R03W, Sec. 29
Source: Bing Aerial Hybrid, Ganda GIS 2018

GANDA

0 30 60 Meters

0 100 200 Feet

N

Scale 1:2,400
1 Inch = 200 Feet

Figure 5. Biological Survey Results
2180 American Canyon Road, Napa County, CA

March 2018

Recommended Avoidance and Minimization Measures (AMMs)

The following AMMs will be implemented to avoid and minimize impacts to biological resources:

General Construction Measures

1. Prior to working on the Project, all Project personnel will attend a preconstruction environmental training to review potential special-status wildlife that could be found in the Project Area and ensure that AMMs for the Project are understood and implemented.

2. Work areas, staging areas, and access roads will be limited to those shown in the final Project description. All heavy equipment, vehicles, and construction activities will be confined to these designated areas.

3. All trash and waste items generated by construction or crew activities will be properly contained and removed from the Project Area.

4. All Project personnel will visually check for animals beneath vehicles and equipment immediately prior to operation. Any pipes, culverts, or other open-ended materials and equipment stored onsite for one or more overnight periods will be inspected for animals prior to moving, burying, or capping to assure that no animals are present within the materials and equipment. To prevent accidental entrapment of wildlife during construction, all excavated holes, ditches, or trenches greater than 1 foot deep will be covered at the end of each work day by suitable materials or escape routes will be constructed. After opening and before filling, such holes, ditches, and trenches will be thoroughly inspected for trapped animals.

   If a special-status species is discovered in the Project Area, the Project Manager will be contacted. The Project Manager will report the sighting to the appropriate natural resource agency(ies) (e.g., CDFW, USFWS, etc.) within 24 hours. The animal will be allowed to move off site on its own. Special-status species will not be taken or harassed.

5. A copy of all applicable permits and approvals, with associated maps, conditions, and AMMs will be kept onsite at all times.

Measures for Invertebrates

6. Where temporarily disturbed areas are stabilized for Project storm water pollution prevention plan (SWPPP) compliance (if required), erosion control seed mixes should incorporate native forb species to replace foraging habitat for western bumblebee.

Measures for Amphibians

7. A preconstruction survey to determine the presence of CRLF and suitable breeding sites is recommended if Project activities are anticipated to occur within the sensitive period for CRLF (October-June).

8. Complete avoidance of the stream and associated drainages along the access road and on the northern boundary of the Project is recommended. Fencing, flagging, or other highly visible material to mark the boundary of the stream is recommended.

9. In the event a CRLF is encountered onsite, construction activities will cease until the animal has left the location on its own will and is no longer in danger. The Project Manager will report the sighting to the appropriate natural resource agency(ies) (e.g., CDFW, USFWS, etc.) within 24 hours. No one other than a USFWS-approved biologist is permitted to handle or capture CRLF, and CRLF will not be taken or harassed.

Measures for Birds

All migratory birds are protected under the Migratory Bird Treaty Act. A number of migratory birds were observed in the Project Area, and may utilize structures, buildings, vegetation, or pastureland for nesting.

All trees and vegetation have the potential to be active nest sites for a number of species of birds. Tree and vegetation removal could potentially impact nesting migratory birds if conducted during the nesting season. If feasible, Project activities should be scheduled outside of the nesting bird season (February 15–August 31), in order to avoid impacts to nesting migratory birds of all types.

10. In the event that construction activities occur within the nesting bird season (generally February 15–August 31), a qualified biologist will conduct a preconstruction survey for nesting birds within 14 days prior to the start of Project activities. If active nests are found, a qualified biologist will determine appropriate avoidance buffers and may monitor associated Project activities.

Measures for Special-status Plants and Vegetation Communities

Although the botanical survey in March 2018 was floristic in nature, the survey timing (early spring) was not suitable to identify all special-status plant species; however, it was determined after the first survey that there was not suitable habitat within the Project Area for any special-status plants. Therefore, no additional botanical surveys are needed to determine if special-status plant species occur in the Project Area.

11. No known occurrences of special-status plant species occur at this time. If species are found, individuals will be will be marked (e.g., with flagging or construction fencing) and avoided during construction activities.

Wetland and Water Feature Measures

12. As specified by the Project SWPPP (if required), erosion, sediment, and material stockpile best management practices (BMPs) will be employed between work areas and adjacent wetlands or waterways. No fill or runoff will be allowed to enter wetlands or waterways.

13. Any erosion and sediment control materials (e.g., hay bales, straw wattles, erosion blankets, etc.) will not include micro-filament netting, to avoid entrapment of wildlife. Any straw erosion and sediment control materials will be composed of certified weed free material.

14. Extreme caution will be exercised when handling and or storing chemicals (fuel, hydraulic fluid, etc.) near waterways. All applicable laws/regulations and BMPs will be followed. Appropriate materials will be kept on site to prevent and manage spills. All construction equipment will be well maintained to prevent fuel, lubricants, or other fluid leaks. Equipment, when not in use, will be stored in upland areas outside of the boundaries of the stream-channel or other water bodies.

References Cited

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: vascular plants of California, second edition.* University of California Press, Berkeley.

Calflora. 2018. The Calflora Database. Accessed online at http://www.calflora.org/ on several dates including March 8, 2018.

California Department of Fish and Game (CDFG). 2009. Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities. California Natural Resources Agency. November 24, 2009.

California Department of Fish and Wildlife (CDFW). 2018. RareFind 5 Version 5.2.14 https://map.dfg.ca.gov/rarefind/view/RareFind.aspx. Accessed February 2018

California Native Plant Society (CNPS). 2001. CNPS Botanical Survey Guidelines, Revised.

California Native Plant Society (CNPS). 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39) from the CNPS Rare Plant Program. Website http://www.rareplants.cnps.org. Accessed online on February 28 and March 8 2018.

Chesney, Charlie. 2017. White-Tailed Kite - *Elanus leucurus*. *SF Bay Wildlife Info*, 9 Mar. 2018, sfbaywildlife.info/species/whitetailed_kite.htm.

Collins, W, Paul. 1998. Terrestrial Mammal Species of Special Concern in California, Suisun Shrew, *Sorex ornatus sinuosus.*

Cornell Lab of Ornithology. 2015. All About Birds. < https://www.allaboutbirds.org/> Downloaded March 17, 2018

Hatfield, R., Jepsen, S., Thorp, R., Richardson, L., Colla, S. & Foltz Jordan, S. 2015. *Bombus occidentalis*. The IUCN Red List of Threatened Species 2015: http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937492A46440201.en.

Heath, K, Sacha. 2008. Studies of Western Birds, Yellow Warbler (*Dendoica petechia).* Excerpt from: Shuford, W. D., and Gardali, T., editors. 2008. *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California*. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

IUCN 2017. *The IUCN Red List of Threatened Species. Version 2017-3*. <http://www.iucnredlist.org>. Downloaded on March 19, 2018

Jepsen, S., S.F. Jordan, and R. Huff. 2014. Species fact sheet: Western bumblebee (*Bombus occidentalis*). 6 pp

National Resource Conservation Service (NRCS). 2018. Web Soil Survey (WSS). Area around the Project Area, Napa County, California. Accessed online at http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx on March 08, 2018

Sawyer, J.O. and T. Keeler-Wolf 1995. *A Manual of California Vegetation, 1st edition*. California Native Plant Society, Sacramento, CA.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation, 2nd edition*. California Native Plant Society, Sacramento, CA.

The Xerces Society for Invertebrate Conservation (Xerces). 2018. < https://xerces.org/red-lists/>. Downloaded on March 20, 2018

United States Fish and Wildlife Service (USFWS). 1999. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Accessed online at https://www.fws.gov/cno/es/Recovery_Permitting/insects/valley_elderberry_longhorn_beetle/ValleyElderberryLonghornBeetle_ConservationGuidelines_19990709.pdf on March 12, 2018.

United States Fish and Wildlife Service (USFWS). 2017a. Species Information, California Red-legged Frog. Accessed online at https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/ca_red_legged_frog/ on March 12, 2018

United States Fish and Wildlife Service (USFWS). 2017b. Species Information, Valley Elderberry Longhorn Beetle. Accessed online at https://www.fws.gov/sacramento/es_species/Accounts/Invertebrates/valley_elderberry_longhorn_beetle/ on March 13, 2018.

United States Forest Service (USFS) (United States Department of Agriculture [USDA]). 2018. https://www.fs.fed.us/. Downloaded on March 19, 2018.

Watershed Information & Conservation Council (WICC) of Napa County. 2005. Baseline Data Report, Chapter 4, Biological Resources. Accessed online at https://www.napawatersheds.org/app_pages/view/192. Accessed on February 2, 2018.

PERSONAL COMMUNICATIONS

Lamborn, Matt, GIS Department Coordinator, email communication with Garcia and Associates GIS Specialist. March 2018.

Appendix A
Special-status Species Identified from Background Research

Table 1. Special-status Wildlife Identified from Background Research

NAME	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA
Invertebrates			
Western bumblebee *Bombus occidentalis*	--- FSS	Occurs in a variety of habitats throughout northern and central California. Three basic habitat requirements are 1) suitable nesting habitat (usually underground cavities such as abandoned rodent burrows), 2) nectar and pollen from floral resources available throughout the duration of the colony (spring, summer and fall), and 3) suitable overwintering sites for the queen (Jepsen et al. 2014).	**Moderate. Suitable habitat present.** One known occurrence record for western bumblebee is documented on CNDDB within 1 mile of the Project Area. This bee is a generalist pollinator, and likely has suitable habitat in the Project Area. No suitable nesting burrows were observed during the field survey, but species may forage on plants within the Project Area. **Species not observed.**
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Typically occurs at elevations below 3,000 feet and is almost always found on elderberry shrubs, its host plant, that are greater than 1-inch diameter at ground level. Also, closely associated with riparian habitat (USFWS 2017b).	**Low. Minimally suitable habitat present.** No documented occurrences are noted on CNDDB within 1 mile of the Project, but a single elderberry shrub greater than 1-inch diameter is located in the Project Area. Napa County is not known to be within the range of this species, and because of the isolation of the shrub and distance to the riparian habitat, the species likely has low potential to occur. **Species not observed.**
Amphibians			
California red-legged frog *Rana draytonii*	FT SSC	Requires specific aquatic and upland habitat resources and can travel up to two miles from suitable breeding sites. Aquatic habitat consists of slow moving streams, ponds or drainages, and breeding sites typically occur in deep (>2.5 feet) slow moving or still pools. Prefers upland habitat that stays cool during summer and features suitable shelter such as logs, dense vegetation, burrows and man-made structures (culverts, boxes, etc.).	**Moderate. Minimally suitable habitat present.** One known occurrence record for CRLF is documented in CNDDB within one mile of the Project Area. Suitable aquatic habitat borders the Project Area and minimally suitable upland habitat occurs in the northern Project Area along the stream and access road. Species may utilize this as upland habitat or pass through, but permanent use is not likely. **Species not observed.**

Table 1. Special-status Wildlife Identified from Background Research

NAME	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA
Birds			
American peregrine falcon *Falco peregrinus*	FP	Breeds mostly in woodland, forest, and coastal habitats. Riparian areas and coastal and inland wetlands are important habitats yearlong, especially in nonbreeding seasons. Typically nests on cliffs and ledges, occasionally in trees. Forages in flight.	**Low. Minimal suitable habitat present.** Suitable cliff nesting habitat is not present in the Project Area; however, suitable cliffs and nesting habitat occur in other areas in Napa County. One CNDDB occurrence is reported within 1 mile of the Project Area, but because minimal suitable foraging and nesting habitat is present in the Project Area, if American peregrine falcon were to occur it would likely be in passing. **Species not observed.**
White-tailed kite *Elanus leucurus*	FP	Occurs in open woodlands, grasslands, marshes and agricultural areas. Typically forages over lightly grazed fields (Cornell Lab of Ornithology 2015). Nests in a variety of trees, typically in the upper third of the canopy.	**Moderate. Suitable habitat present.** No occurrences are reported in CNDDB within 1 mile of the Project Area. However, suitable foraging and nesting habitat is present in and around the Project Area. **Species not observed.**
Golden eagle *Aquila chrysaetos*	FP	Known to inhabit a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. Nests in tall trees or cliffs usually adjacent to open areas. Foraging habitat varies from grassland to oak woodland.	**Low. Minimal suitable habitat present.** Suitable nesting habitat is not present in the Project Area; however, suitable cliffs and nesting habitat occur in other areas in Napa County. One CNDDB occurrence is reported within 1 mile of the Project Area, but because minimal suitable foraging and nesting habitat is present in the Project Area, if golden eagle were to occur it would likely be in passing. **Species not observed.**

Table 1. Special-status Wildlife Identified from Background Research

NAME	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA
Loggerhead shrike *Lanius ludovicianus*	SSC	Suitable habitat includes open woodland with scattered trees or perches, agricultural areas, scrubland, and grassland, particularly with thorny vegetation, barbed wire or other features used to impale prey. Often nests in thorny vegetation or brush close to ground level.	**Low. Minimal suitable habitat present.** Minimal suitable habitat is present in the Project Area. Few perches and impaling structures occur in the Project Area. Open fields for foraging are present; however, if species were to occur, it would likely be in passing. **Species not observed.**
Western burrowing owl *Athene cunicularia*	SSC	Occurs in open, treeless areas with low, sparse vegetation. Typically found in grassland, desert, and steppe habitats; may also utilize agriculture fields, pastures, and fairly urbanized vacant or adjacent lots. Often associated with high densities of burrowing mammals.	**None. Habitat not present.** Although suitable open habitat for the species occurs in the Project Area, no burrows or suitable nesting habitat were observed. Lack of burrows and no evidence of a high burrowing mammal population limits the likelihood of occurrence in the Project Area. **Species not observed.**
Yellow warbler *Setophaga petechia*	SSC	Occurs in a variety of woodland habitats, particularly streamside willows and woodland edges. Spends majority of the breeding season in and around riparian areas. Typically nest in willows, small cottonwood, dogwood or riparian shrub.	**Moderate. Suitable habitat present. Species not observed.** No known occurrences are reported in CNDDB within 1 mile of the Project; however, suitable habitat exists in and along the drainage that borders the Project Area. Willows, small cottonwood trees and other riparian vegetation have the potential to be nest sites for the species.
Mammals			
Suisun ornate shrew *Sorex ornatus sinuosus*	SSC	Occurs in salt and brackish marshes along the northern margins of San Pablo and Suisun bays (Collins 1998). Requires dense, low vegetation cover, ample shelter and nesting features, and an abundance of invertebrates.	**None. Habitat not present.** One occurrence of the species is documented on CNDDB within 1 mile of the Project. However, the occurrence is located at Lake Chabot, south of the Project Area. No suitable habitat is present in the Project Area for this species. **Species not observed.**

Table 1. Special-status Wildlife Identified from Background Research

NAME	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA
Pallid bat *Antrozous pallidus*	SSC	Occurs in a variety of habitats; grasslands, shrub lands, woodlands, deserts and forests throughout most of California. Uses caves, crevices, tree cavities or buildings for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Low. Minimally suitable habitat present.** No CNDDB occurrences are documented within 1 mile of the Project Area; potential roosting habitat may occur in abandoned barns, structures or other buildings in the Project Area. However, based on the ambient noise level of the adjacent highway, it is unlikely roost sites exist. Foraging habitat is present throughout the Project Area, and if pallid bat were to occur, it would likely be in passing. **Species not observed.**

Table 2. Special-status Plants Identified from Background Research			
NAME	**STATUS***	**HABITAT**	**POTENTIAL FOR OCCURRENCE IN PROJECT AREA**
Special-status Plant Taxa			
Henderson's bent grass *Agrostis hendersonii* April – June	--/--/3.2	Valley and foothill grassland, vernal pools. Moist places in grassland or vernal pool habitat. 225-1000 feet (ft).	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Franciscan onion *Allium peninsulare* var. *franciscanum* (April) May – June	--/--/1B.2	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine; sometimes on volcanics. Dry hillsides. 170-1,000 ft.	**None.** Suitable habitat is not present, no clay or serpentine substrates are within the Project Area. **Not observed during survey**
Napa false indigo *Amorpha californica* var. *napensis* April – June	--/--/1B.2	Broadleaved upland forest, chaparral, cismontane woodland. Openings in forest or woodland or in chaparral. 390-6,560 ft.	**None.** Suitable habitat is not present on site. **Not observed during survey.**
Bent-flowered fiddleneck *Amsinckia lunaris* March – June	--/--/1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. 5-1,640 ft.	**None.** Suitable habitat is present on site. **Not observed during survey.**
Rincon Ridge manzanita *Arctostaphylos stanfordiana* ssp. *decumbens* February – April (May)	--/--/1B.1	Chaparral, cismontane woodland. Highly restricted endemic to red rhyolites in Sonoma County. 245-1,215 ft.	**None.** Suitable habitat is not present, no red rhyolite present on site. **Not observed during survey.**
Solano milkweed *Asclepias solanoana* May – July	--/--/--/LR	Serpentine chaparral. 2,296-5,249 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Clara Hunt's milk-vetch *Astragalus claranus* March – May	FE/ST/1B.1	Cismontane woodland, valley and foothill grassland, chaparral. Open grassy hillsides, especially on exposed shoulders in thin, volcanic clay soil moist in spring. 245-900 ft.	**None.** Suitable habitat is not present, volcanic clay soils are not present within the Project Area. Not known from within 1 mile of the Project Area. **Not observed during survey.**
Alkali milk-vetch *Astragalus tener* var. *tener* March – June	--/--/1B.2	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-195 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.

Big-scale balsamroot *Balsamorhiza macrolepis* March – June	--/--/1B.2	Chaparral, valley and foothill grassland, cismontane woodland. Sometimes on serpentine. 145-5,100 ft.	**None.** CNDDB occurrence within 1 mile of Project Area but no suitable habitat is present on site. **Not observed during survey.**
Sonoma sunshine *Blennosperma bakeri* March – May	FE/SE/1B.1	Vernal pools, valley and foothill grassland. Vernal pools and swales. 30-360 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Big tarplant *Blepharizonia plumosa* July – October	--/--/1B.1	Valley and foothill grassland. Dry hills and plains in annual grassland. Clay to clay loam soils; usually on slopes and often in burned areas. 95-1,655 ft.	**None.** Suitable habitat is not present on site. **Not observed during survey.**
Narrow-anthered brodiaea *Brodiaea leptandra* May – July	--/--/1B.2	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Volcanic substrates. 360-3,000 ft.	**None.** The Project Area is out of elevation range for this species. Suitable volcanic substrates are not present within the Project Area. Not known from within 1 mile of the Project Area. **Not observed during survey.**
Mt. Diablo fairy-lantern *Calochortus pulchellus* April – June	--/--/1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes. 895-2,755 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Large-flowered pink star tulip *Calochortus uniflorus* April – June	--/--/--/LR	Seeps and swales in serpentine chaparral, low wet meadows in grasslands and woodland, sometimes on serpentine soils. 0-1,640 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Small-flowered calycadenia *Calycadenia micrantha* June – September	--/--/1B.2	Chaparral, valley and foothill grassland, meadows and seeps. Rocky talus or scree; sparsely vegetated areas. occasionally on roadsides; sometimes on serpentine. 15-4,920 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Lyngbye's sedge *Carex lyngbyei* April – August	--/--/2B.2	Marshes and swamps (brackish or freshwater). 0-35 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Tiburon paintbrush *Castilleja affinis* var. *neglecta* April – June	FE/ST/1B.2	Valley and foothill grassland. Rocky serpentine sites. 195-1,310 ft.	**None.** CNDDB occurrence within 1 mile but no suitable habitat is present, no serpentine is present on site. **Not observed during survey.**

Mead's owls-clover *Castilleja ambigua* var. *meadii* April - May	--/--/1B.1	Vernal pools, meadows and seeps. Soils of volcanic origin that tend to have high clay content and be gravelly. 1475-1,560 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Rincon Ridge ceanothus *Ceanothus confusus* February – June	--/-- /1B.1/BLM	Closed cone coniferous forest, chaparral, cismontane woodland. Known from volcanic or serpentine soils, dry shrubby slopes. 245-3,495 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Calistoga ceanothus *Ceanothus divergens* February – April	--/-- /1B.2/BLM	Chaparral. Rocky, serpentine or volcanic sites. 555-3,115 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Holly-leaved ceanothus *Ceanothus purpureus* February – June	--/--/1B.2	Chaparral, cismontane woodland. Rocky, volcanic slopes. 390-2,100 ft.	**None.** Project Area out of geographic and elevation range and suitable habitat is not present. **Not observed during survey**.
Sonoma ceanothus *Ceanothus sonomensis* February – April	--/--/1B.2	Chaparral. sandy, serpentine or volcanic soils. 705-2,625 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Congdon's tarplant *Centromadia parryi* ssp. *congdonii* May – October (November)	--/-- /1B.1/BLM	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 0-755 ft.	**None.** Suitable habitat is not present. No alkaline soils are present on site. **Not observed during survey.**
Pappose tarplant *Centromadia parryi* ssp. *parryi* May – November	--/-- /1B.2/BLM	Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland. Vernally mesic, often alkaline sites. 0-1,380 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Soft salty bird's-beak *Chloropyron molle* ssp. *molle* June – November	FE/Rare/1B.2	Coastal salt marsh. In coastal salt marsh with *Distichlis*, *Salicornia*, *Frankenia*, etc. 0-10 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi* July – September	--/--/2B.1	Marshes and swamps, fresh or brackish water. 0-655 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.

Suisun thistle *Cirsium hydrophilum* var. *hydrophilum* June – September	FE/--/1B.1	Marshes and swamps. Grows with *Scirpus* and *Distichlis* near small watercourses within saltmarsh. 0-5 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**.
Serpentine cryptantha *Cryptantha dissita* April – June	--/--/1B.2	Chaparral. Serpentine outcrops. 1,295-1,905 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**
Boggs Lake dodder *Cuscuta howelliana* August – September	--/--/3/LR	Volcanic vernal pools in chaparral. 460-5,413 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Western leatherwood *Dirca occidentalis* January – March (April)	--/--/1B.2	Broadleaved upland forest, chaparral, closed cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 80-1,395 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Dwarf downingia *Downingia pusilla* March – May	--/--/2B.2	Vernal lake and pool margins with a variety of associates. In several types of vernal pools. Valley and foothill grassland (mesic), Vernal pools. 0-1,460 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Marsh horsetail *Equisetum palustre*	--/--/--/LR	Freshwater marsh. 0-984 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Streamside daisy *Erigeron biolettii* June – October	--/--/3	Broadleaved upland forest, cismontane woodland, north coast coniferous forest. Dry slopes, rocks, ledges along rivers; mesic sites. 95-3,610 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Greene's narrow-leaved daisy *Erigeron greenei* May – September	--/--/1B.2	Chaparral. Serpentine and volcanic substrates, generally in shrubby vegetation. 260-3,295 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Tripod buckwheat *Eriogonum tripodum* May – July	--/--/--/LR	Rocky slopes in serpentine chaparral. 984-2,624 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**

Mt. Diablo buckwheat *Eriogonum truncatum* April – September (November-December)	--/--/1B.1	Chaparral, coastal scrub, valley and foothill grassland. Dry, exposed clay or sandy substrates. 5-1,150 ft.	**None.** Suitable habitat is not present, no clay or sandy substrates are within the Project Area. **Not observed during survey.**
Jepson's coyote-thistle *Eryngium jepsonii* April – August	--/--/1B.2	Vernal pools, valley and foothill grassland. Clay. 5-985 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Fragrant fritillary *Fritillaria liliacea* February – April	--/--/1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay in grassland. 5-1,345 ft.	**None.** No suitable habitat is present on site. **Not observed during survey.**
Diablo helianthella *Helianthella castanea* March – June	--/--/1B.2	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. 195-4,265 ft.	**None. No** suitable habitat is present on site. **Not observed during survey.**
Two-carpellate western flax *Hesperolinon bicarpellatum* May – July	--/--/1B.2	Chaparral. Serpentine barrens at edge of chaparral. 195-3,295 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Brewer's western flax *Hesperolinon breweri* May – July	--/--/1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Often in rocky serpentine soil in serpentine chaparral and serpentine grassland. 95-3,100 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Sharsmith's western flax *Hesperolinon sharsmithiae* May – July	--/--/1B.2	Chaparral. Serpentine substrates. 885-985 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Bolander's horkelia *Horkelia bolanderi* (May) June – August	--/--/1B.2	Lower montane coniferous forest, chaparral, meadows and seeps, valley and foothill grassland. Grassy margins of vernal pools and meadows. 1,475-3,610 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Carquinez goldenbush *Isocoma arguta* August – December	--/--/1B.1	Valley and foothill grassland. Alkaline soils, flats, lower hills. On low benches near drainages and on tops and sides of mounds in swale habitat. 0-65 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.

Northern California black walnut *Juglans hindsii* April – May	--/--/1B.1	Riparian forest, riparian woodland. Few extant native stands remain; widely naturalized. Deep alluvial soil, associated with a creek or stream. 0-1,445 ft.	**None.** Suitable riparian habitat is not present. **Not observed during survey**.
Contra Costa goldfields *Lasthenia conjugens* March – June	FE/--/1B.1	Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland, low depressions, in open grassy areas. 0-1,540 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii* May – July (August-September)	--/--/1B.2	Marshes and swamps. In freshwater and brackish marshes. Usually on marsh and slough edges. 0-15 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Legenere *Legenere limosa* April – June	--/--/1B.1	Vernal pools. In beds of vernal pools. 0-2,885 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Jepson's leptosiphon *Leptosiphon jepsonii* March – May	--/--/1B.2	Chaparral, cismontane woodland. Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. 325-1,640 ft.	**None.** The Project Area is out of elevation range for these species. Suitable habitat is not present; volcanic substrates are not present within the Project Area. Not known from within 1 mile of the Project Area. **Not observed during survey.**
woolly-headed lessingia *Lessingia hololeuca* June – October	--/--/3	Coastal scrub, lower montane coniferous forest, valley and foothill grassland, broadleaved upland forest. Clay, serpentine; roadsides, fields. 45-1,000 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during surveys.**
Mason's lilaeopsis *Lilaeopsis masonii* April – November	--/Rare/1B.1	Marshes and swamps, riparian scrub. Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. In brackish or freshwater. 0-35 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Redwood lily *Lilium rubescens* April – August (September)	--/--/LR	Broadleaved upland forest, chaparral, lower montane coniferous forest, North Coast coniferous forest, upper montane coniferous forest, sometimes serpentinite, sometimes roadsides. 95-6,265 ft.	**None.** Suitable habitat is present within the Project Area. Not known from within 1 mile of the Project Area. **Not observed during survey.**

Sebastopol meadowfoam *Limnanthes vinculans* April – May	FE/SE/1B.1	Meadows and seeps, vernal pools, valley and foothill grassland. Swales, wet meadows and marshy areas in valley oak savanna; on poorly drained soils of clays and sandy loam 45-1,000 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Delta mudwort *Limosella australis* May – August	--/--/2B.1	Riparian scrub, marshes and swamps. Usually on mud banks of the Delta in marshy or scrubby riparian associations. 0-10 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Bristly linanthus *Leptosiphon acicularis* April – July	--/--/4/LR	Grassy slopes in foothill woodlands. 0-2,294 ft.	**None.** Suitable habitat is not present, volcanic substrates are not present within the Project Area. Not known from within 1 mile of the Project Area. **Not observed during surveys.**
Hover's wild parsnip *Lomatium ciliolatum* var. *hooveri* April – July	--/--/4/LR	Rocky slopes and ridgetops in serpentine chaparral. 984-1,968 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Cobb Mountain lupine *Lupinus sericatus* March – June	--/--/1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, broadleaved upland forest. In stands of knob cone pine oak woodland, on open wooded slopes in gravelly soils; sometimes on serpentine. 900-5,005 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**.
Mt. Diablo cottonweed *Micropus amphibolus* March – May	--/--/3.2	Valley and foothill grassland, cismontane woodland, chaparral, broadleaved upland forest. Bare, grassy or rocky slopes. 145-2,705 ft.	**None.** Suitable habitat is present on site. **Not observed during survey.**
Cotula navarretia *Navarretia cotulifolia* May – June	--/--/4/LR	Chaparral, foothill woodland, grassland, on heavy Adobe soils. 0-1,640 ft.	**None.** Suitable habitat is not present. Adobe soils are not present on site. **Not observed during survey.**
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri* April – July	--/--/1B.1	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest; adobe or alkaline soils. 15-5,710 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Few-flowered navarretia *Navarretia leucocephala* ssp. *pauciflora* May – June	FE/ST/1B.1	Vernal pools. Volcanic ash flow, and volcanic substrate vernal pools. 1,310-2,805 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.

Sonoma beardtongue *Penstemon newberryi var. sonomensis* April – August	--/--/1B.3	Chaparral. Crevices in rock outcrops and talus slopes. 2,295-4,495 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Douglas' mesamint *Pogogyne douglasii* ssp. *parviflora* April – July	--/--/3/LR	Serpentine swales in chaparral grasslands. 0-2,952 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Marin knotweed *Polygonum marinense* (April) May – August (October)	--/--/3.1	Marshes and swamps. Coastal salt marshes and brackish marshes. 0-35 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
California alkali grass *Puccinellia simplex* March – May	--/--/1B.2	Meadows and seeps, chenopod scrub, valley and foothill grasslands, vernal pools. Alkaline, vernally mesic. Sinks, flats, and lake margins. 5-3,050 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Lobb's aquatic buttercup *Ranunculus lobbii* February – May	--/--/LR	Cismontane woodland, north coast coniferous forest, Valley and foothill grassland, vernal pools. 45-1,540 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
California beaked-rush *Rhynchospora californica* May – July	--/--/1B.1	Bogs and fens, marshes and swamps, lower montane coniferous forest, meadows and seeps. Freshwater seeps and open marshy areas. 145-3,315 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Sanford's arrowhead *Sagittaria sanfordii* May – October (November)	--/--/1B.2	Marshes and swamps. In standing or slow moving freshwater ponds, marshes, and ditches. 0-2,135 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Hickman's checkerbloom *Sidalcea hickmanii* ssp. *hickmanii* May – July	--/--/1B.3	Chaparral, coastal bluff scrub, cismontane woodland. Grassy openings in chaparral, and on dry ridges. 1,095-4,005 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**.
Napa checkerbloom *Sidalcea hickmanii* ssp. *napensis* April – June	--/--/1B.1	Chaparral. Rhyolitic substrates. 1,360-2,000 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**.

Keck's checkerbloom *Sidalcea keckii* April – May (June)	FE/--/1B.1	Cismontane woodland, valley and foothill grassland. Grassy slopes in blue oak woodland. On serpentine derived, clay soils, at least sometimes. 245-2,135 ft.	**Low.** Habitat within the Project Area might be suitable for this taxon. However, no serpentine or clay soils are present in the Project Area and this species is not known from within 1 mile of the Project Area. **Not observed during survey.**
Long-styled sand-spurrey *Spergularia macrotheca* var. *longistyla* February – May	--/--/1B.2	Marshes and swamps, meadows and seeps. Alkaline. 0-835 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Bearded jewelflower *Streptanthus barbiger* May – July	--/--/4/LR	Serpentine chaparral. 656-4,921 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Green jewelflower *Streptanthus hesperidis* May – July	--/--/1B.2	Chaparral, cismontane woodland. Openings in chaparral or woodland; serpentine, rocky sites. 425-2,495 ft.	**None.** Suitable habitat is not present, no serpentine is present on site. **Not observed during survey.**
Slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina* May – July	--/--/2B.2	Marshes and swamps. Shallow, clear water of lakes and drainage channels. 980-7,055 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Suisun Marsh aster *Symphyotrichum lentum* (April) May – November	--/--/1B.2	Marshes and swamps (brackish and freshwater). Most often seen along sloughs with *Phragmites*, *Scirpus*, blackberry, *Typha*, etc. 0-10 ft.	**None.** Suitable wetland habitat is not present. **Not observed during survey**.
Short-podded thelypodium *Thelypodium brachycarpum* May – August	--/--/4/LR	Open flat serpentine seeps in chaparral. 2,624-7,644 ft.	**None.** Suitable habitat is not present. **Not observed during survey.**
Napa bluecurls *Trichostema ruygtii* June – October	--/--/1B.2	Cismontane woodland, chaparral, valley and foothill grassland, vernal pools, lower montane coniferous forest. Often in open, sunny areas. Has been found in vernal pools. 95-2,230 ft.	**None.** Suitable wetland habitat is not present. **Not observed during surveys**.

Two-fork clover *Trifolium amoenum* April – June	FE/--/1B.1	Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales. Most recently cited on roadside and eroding cliff face. 15-1,360 ft.	**None.** Suitable wetland habitat is not present. One CNDDB record is within 1 mile of the Project Area. **Not observed during survey**.
Saline clover *Trifolium hydrophilum* April – June	--/--/1B.2	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 0-985 ft.	**None.** Two CNDDB occurrences are within 1 mile of the Project Area but no suitable wetland habitat is present. **Not observed during surveys**.
dark-mouthed triteleia *Triteleia lugens* April – June	--/--/--/LR	Broadleaved upland forest, chaparral, coastal scrub, lower montane coniferous forest. 325-3,280 ft.	**None.** The Project Area is out of elevation range for these species. Suitable habitat is not present, volcanic substrates are not present within the Project Area. Not known from within 1 mile of the Project Area. **Not observed during survey.**
oval-leaved viburnum *Viburnum ellipticum* May – June	--/--/2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. 705-4,595 ft.	**None.** Project Area out of elevation range and suitable habitat is not present. **Not observed during survey**.

***Listing Status**

FE	=	Federally listed Endangered
FPD	=	Federally proposed for delisting
FC	=	Federal Candidate for listing
SE	=	State Endangered
ST	=	State listed Threatened
SCT	=	State Candidate for listing as Threatened
SR	=	State Rare
SSC	=	California Species of Special Concern
FP	=	State Fully Protected Species
LR	=	Napa County Locally Rare Taxa
---	=	No listing, tracked by CNDDB

Definitions Regarding Potential Occurrence:

Present:	Species or sign of their presence observed on the site
High:	Species or sign not observed on the site, but reasonably certain to occur
Moderate:	Species or sign not observed on the site, but conditions suitable for occurrence
Low:	Species or sign not observed on the site, conditions marginal for occurrence
None:	Species or sign not observed on the site, conditions unsuitable for occurrence

CRPR Listing (CNPS 2018)

List 1B	=	Plants rare, threatened, or endangered in California and elsewhere
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere
List 3	=	Plants about which we need more information, review list
List 4	=	Plants of limited distribution, a watch list

Extensions

.1	Seriously endangered in California
.2	Fairly endangered in California
.3	Not very endangered in California

Appendix B
Wildlife Species Observed in the Project Area

Scientific Name	Common Name
Birds	
Aphelocoma californica	California scrub-jay
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
Calypte anna	Anna's hummingbird
Cathartes aura	turkey vulture
Colaptes auratus	northern flicker
Corvus corax	common raven
Euphagus cyanocephalus	Brewer's blackbird
Haemorhous mexicanus	house finch
Junco hyemalis	dark-eyed junco
Melanerpes formicivorus	acorn woodpecker
Melozone crissalis	California towhee
Mimus polyglottos	northern mockingbird
Picoides nuttallii	Nuttall's woodpecker
Pipilo maculatus	spotted towhee
Sayornis nigricans	black phoebe
Setophaga coronata	yellow-rumped warbler
Sialia mexicana	western bluebird
Spinus psaltria	lesser goldfinch
Sturnus vulgaris	European starling
Turdus migratorius	American robin
Vireo huttoni	Hutton's vireo
Zenaida macroura	mourning dove

Appendix C
Plant Species Observed in the Project Area

Scientific Name	Common Name
Angiosperms- Dicots	
Adoxaceae	
Sambucus nigra ssp. *caerulea*	blue elderberry
Anacardiaceae	
Toxicodendron diversilobum	poison oak
Apiaceae	
Foeniculum vulgare	fennel
Asteraceae	
Achillea millefolium	yarrow
Calendula arvensis	field marigold
Cotula australis	brass buttons
Helminthotheca echioides	bristly ox-tongue
Matricaria discoidea	pineapple weed
Senecio vulgaris	common groundsel
Silybum marianum	milk thistle
Brassicaceae	
Brassica nigra	black mustard
Brassica rapa	common mustard
Raphanus sativus	wild radish
Caryophyllaceae	
Cerastium glomeratum	large mouse ears
Stellaria media	chickweed
Cactaceae	
Opuntia robusta	Nopal tapon
Fabaceae	
Trifolium repens	white clover
Vicia sativa	spring vetch
Geraniaceae	
Erodium botrys	big heron bill
Erodium cicutarium	coastal heron's bill
Geranium molle	crane's bill geranium
Malvaceae	
Malva nicaeensis	bull mallow
Montiaceae	
Calandrinia menziesii	red maids
Claytonia perfoliata	miner's lettuce
Myrtaceae	
Eucalyptus globulus	blue gum
Onagraceae	
Taraxia ovata	sun cup
Papaveraceae	
Eschscholzia californica	California poppy
Plantaginaceae	
Plantago lanceolata	ribwort
Polygonaceae	
Rumex acetosella	sheep sorrel
Rumex crispus	curly dock

Scientific Name	Common Name
Rubiaceae	
Galium aparine	bed straw
Salicaceae	
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
Rosaceae	
Malva sp.	apple
Prunus cerasifera	cherry plum
Rubus armeniacus	Himalayan blackberry
Angiosperms – Monocots	
Cyperaceae	
Carex nudata	torrent sedge
Poaceae	
Aira elegans	elegant hair grass
Avena barbata	slim oat
Bromus sp. (NF)	brome
Bromus diandrus	ripgut brome
Bromus tectorum	cheat grass
Dactylis glomerata	Orchard grass
Festuca perenne	Italian ryegrass
Hordeum sp. (NF)	barley
Hordeum murinum	foxtail barley
Poa annua	annual blue grass
Polypogon monspeliensis	annual beard grass
NF=No flowers	

Appendix D
Vegetation Features in the Biological Resource Evaluation Area

Vegetation Type[5] MCV1 (Sawyer et al. 1995)	Acres within 1 mile of Project Area	Acres within BREA
(Bulrush - Cattail) Fresh Water Marsh NFD[4] Super Alliance	1	98
(*Carex* spp. - *Juncus* spp - Wet Meadow Grasses) NFD Super Alliance	12	96
Agriculture*	**147**	**53,475**
Black Oak Alliance	None	720
Blue Oak Alliance	None	3173
Brewer Willow Alliance	None	83
California Annual Grasslands Alliance	2,124	19,804
California Bay - Leather Oak - (*Rhamnus* spp.) Mesic Serpentine NFD Super Alliance	None	1,161
California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD Super Alliance	None	15,798
California Coast Live Oak Alliance	50	50
Canyon Live Oak Alliance	None	275
Chamise - Wedgeleaf Ceanothus Alliance	None	159
Chamise Alliance	None	12,048
Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association	None	11,746
Coast Live Oak Alliance	37	11,261
Coast Redwood - Douglas-fir / California Bay NFD Association	None	2,790
Coast Redwood Alliance	None	291
Coyote Brush - California Sagebrush - (Lupine spp.) NFD Super Alliance	20	42
Douglas-fir - Ponderosa Pine Alliance	None	4,168
Douglas-fir Alliance	None	15,557
Eucalyptus Alliance	4	361
Foothill Pine / Mesic Non-serpentine Chaparral NFD Association	None	132
Foothill Pine Alliance	None	619

[5] From WICC of Napa County 2005 and M. Lamborn, GIS Department Coordinator, pers. comm., March 2018 using Sawyer et al. 1995)

[4] NFD- not formally defined

Vegetation Type[5] MCV1 (Sawyer et al. 1995)	Acres within 1 mile of Project Area	Acres within BREA
Interior Live Oak - Blue Oak - (Foothill Pine) NFD Association	None	353
Interior Live Oak Alliance	None	19
Knobcone Pine Alliance	None	3,312
Lacustrine	None	3
Leather Oak - California Bay - *Rhamnus* spp. Mesic Serpentine NFD Alliance	None	651
Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance	None	1,778
Mixed Manzanita - (Interior Live Oak -California Bay - Chamise) West County NFD Alliance	None	5,997
Mixed Oak Alliance	None	15,923
Mixed Willow Super Alliance*	**20**	**274**
Oregon White Oak Alliance	None	1,122
Ponderosa Pine Alliance	None	91
Riverine, Lacustrine, and Tidal Mudflats	None	6
Rock Outcrop	None	1,001
Saltgrass - Pickleweed NFD Super Alliance	None	1,446
Sargent Cypress Alliance	None	2
Sclerophyllous Shrubland Formation	None	3,006
Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County NFD Super Alliance	None	1,553
Serpentine Barren	None	1
Serpentine Grasslands NFD Super Alliance	None	228
Tanbark Oak Alliance	None	54
Urban or Built-up	132	23,324
Unknown	0	505
Upland Annual Grasslands and Forbs Formation	0	5,855
Vacant	36	1,443
Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association	None	3,164

Vegetation Type[5] MCV1 (Sawyer et al. 1995)	Acres within 1 mile of Project Area	Acres within BREA
Valley Oak - Fremont Cottonwood - (Coast Live Oak) Riparian Forest NFD Association	None	407
Valley Oak Alliance	None	901
Water	None	5,826
White Alder (Mixed Willow - California Bay - Big Leaf Maple) Riparian Forest NFD Association	None	729
White Leaf Manzanita - Leather Oak - (Chamise - *Ceanothus* spp.) Xeric Serpentine NFD Super Alliance	None	953
Winter-Rain Sclerophyll Forests and Woodlands Formation	None	618
Bigleaf Maple Forest	None	6
***Mapped within the Project Area.**		

Legend

- Napa River Watershed
- American Canyon Project Area One-mile Buffer
- Project Area
- Stream
- National Wetland Inventory (NWI) Wetland

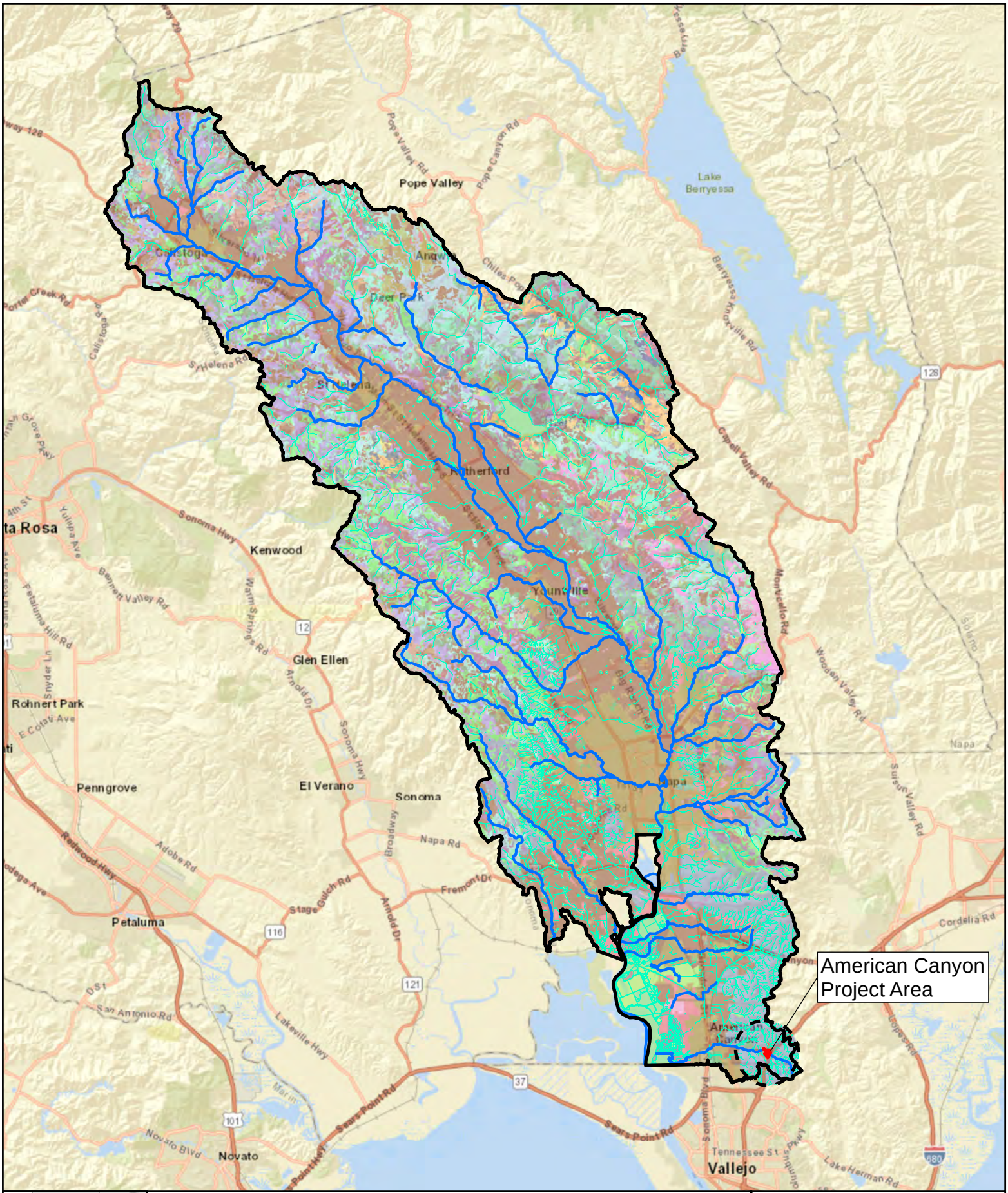
Manual of California Vegetation (MCV)

- (Bulrush - Cattail) Fresh Water Marsh NFD Super Alliance
- (Carex spp. - Juncus spp - Wet Meadow Grasses) NFD Super Alliance
- Agriculture
- Black Oak
- Blue Oak
- Brewer Willow
- California Annual Grasslands Alliance
- California Bay - Leather Oak - (Rhamnus spp.) Mesic Serpentine NFD Super Alliance
- California Bay - Madrone - Coast Live Oak - (Black Oak Big - Leaf Maple) NFD Super Alliance
- California coast live oak Alliance
- Canyon Live Oak
- Chamise - Wedgeleaf Ceanothus Alliance
- Chamise
- Coast Live Oak - Blue Oak - (Foothill Pine) NFD Association
- Coast Live Oak
- Coast Redwood - Douglas-fir / California Bay NFD Association
- Coast Redwood
- Coyote Brush - California Sagebrush - (Lupine spp.) NFD Super Alliance
- Douglas-fir - Ponderosa Pine Alliance
- Douglas-fir
- Eucalyptus
- Foothill Pine / Mesic Non-serpentine Chaparral NFD Association
- Foothill Pine
- Interior Live Oak - Blue Oak - (Foothill Pine) NFD Association
- Interior Live Oak
- Knobcone Pine
- Lacustrine
- Leather Oak - California Bay - Rhamnus spp. Mesic Serpentine NFD Alliance
- Leather Oak - White Leaf Manzanita - Chamise Xeric Serpentine NFD Super Alliance
- Mixed Manzanita - (Interior Live Oak -California Bay - Chamise) West County NFD Alliance
- Mixed Oak
- Mixed Willow Super
- Oregon White Oak
- Ponderosa Pine
- Riverine, Lacustrine and Tidal Mudflats
- Rock Outcrop
- Saltgrass - Pickleweed NFD Super Alliance
- Sargent Cypress
- Sclerophyllous Shrubland Formation
- Scrub Interior Live Oak - Scrub Oak - (California Bay - Flowering Ash - Birch Leaf Mountain Mahogany - Toyon - California Buckeye) Mesic East County NFD Super Alliance
- Serpentine Barren
- Serpentine Grasslands NFD Super Alliance
- Tanbark Oak
- Unknown
- Upland Annual Grasslands & Forbs Formation
- Urban or Built-up
- Vacant
- Valley Oak - (California Bay - Coast Live Oak - Walnut - Ash) Riparian Forest NFD Association
- Valley Oak - Fremont Cottonwood - (Coast Live Oak) Riparian Forest NFD Association
- Valley Oak
- Water
- White Alder (Mixed Willow - California Bay - Big Leaf Maple) Riparian Forest NFD Association
- White Leaf Manzanita - Leather Oak - (Chamise - Ceanothus spp.) Xeric Serpentine NFD Super Alliance
- Winter-Rain Sclerophyll Forests & Woodlands Formation

Source: Napa Vegetation, The Information Center for the Enviornment, UC Davis (March, 2018); National Wetland Inventory (NWI); Streams, Napa County Resource Conservation District; CALVEG (March, 2018); DeLorme Street Map, Ganda GIS 2018

Legend Appendix D: Vegetation Types within the BREA
2180 American Canyon Road, Napa County, CA.

March, 2018



Source: Napa Vegetation, The Information Center for the Enviornment, UC Davis (March, 2018); National Wetland Inventory (NWI); Streams, Napa County Resource Conservation District; CALVEG (March, 2018); DeLorme Street Map, Ganda GIS 2018

GANDA

0 2.5 5 Miles

N

Appendix D: Vegetation Types within the BREA
2180 American Canyon Road, Napa County, CA.

March, 2018

Appendix E
Representative Photos of Project Area

Photo 1. Access road and culvert facing east. March 2018.

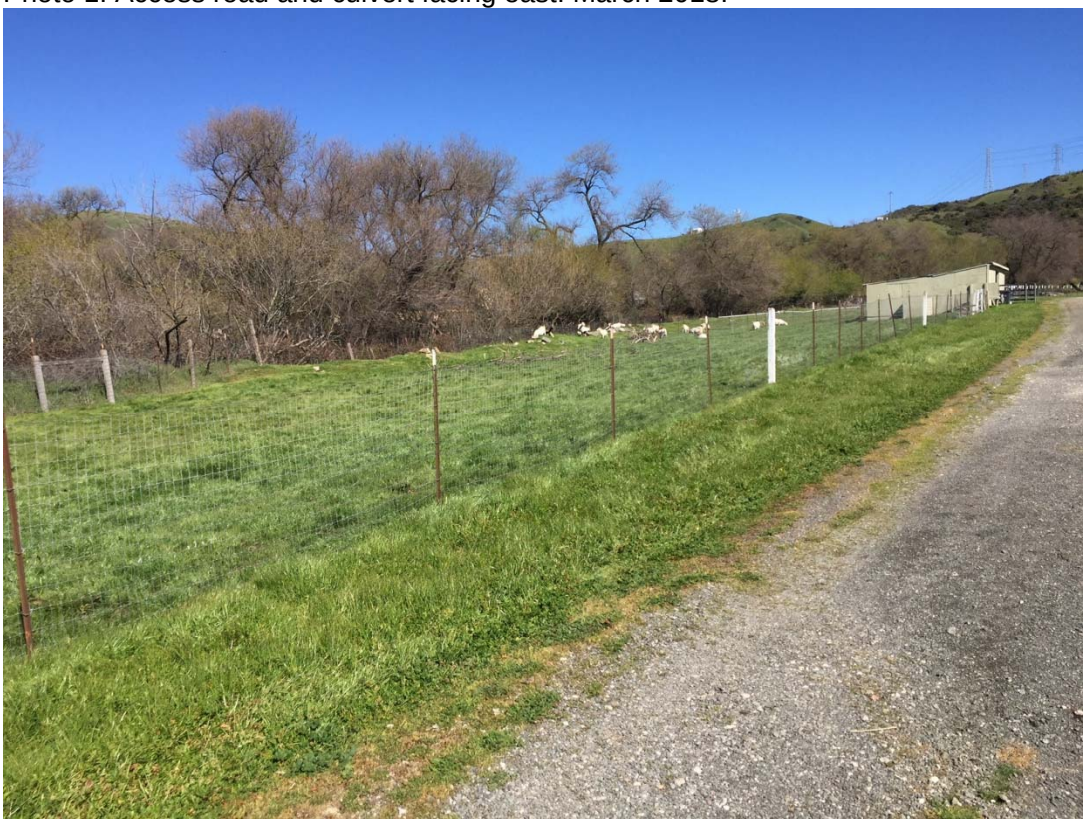


Photo 2. Access road and northwest pasture with riparian woodland (mixed willow alliance), facing north. March 2018.

Photo 3. Creek and riparian woodland outside of the fence and impact area, pasture inside the Project Area, facing south. March 2018.

Photo 4. Eastern edge of Project Area with horse stalls facing south. March 2018.

Photo 5. Main pasture facing east, towards horse stalls and U.S. Interstate 80. March 2018.

Photo 6. Animal stalls on the southern boundary of Project Area, facing west. March 2018.

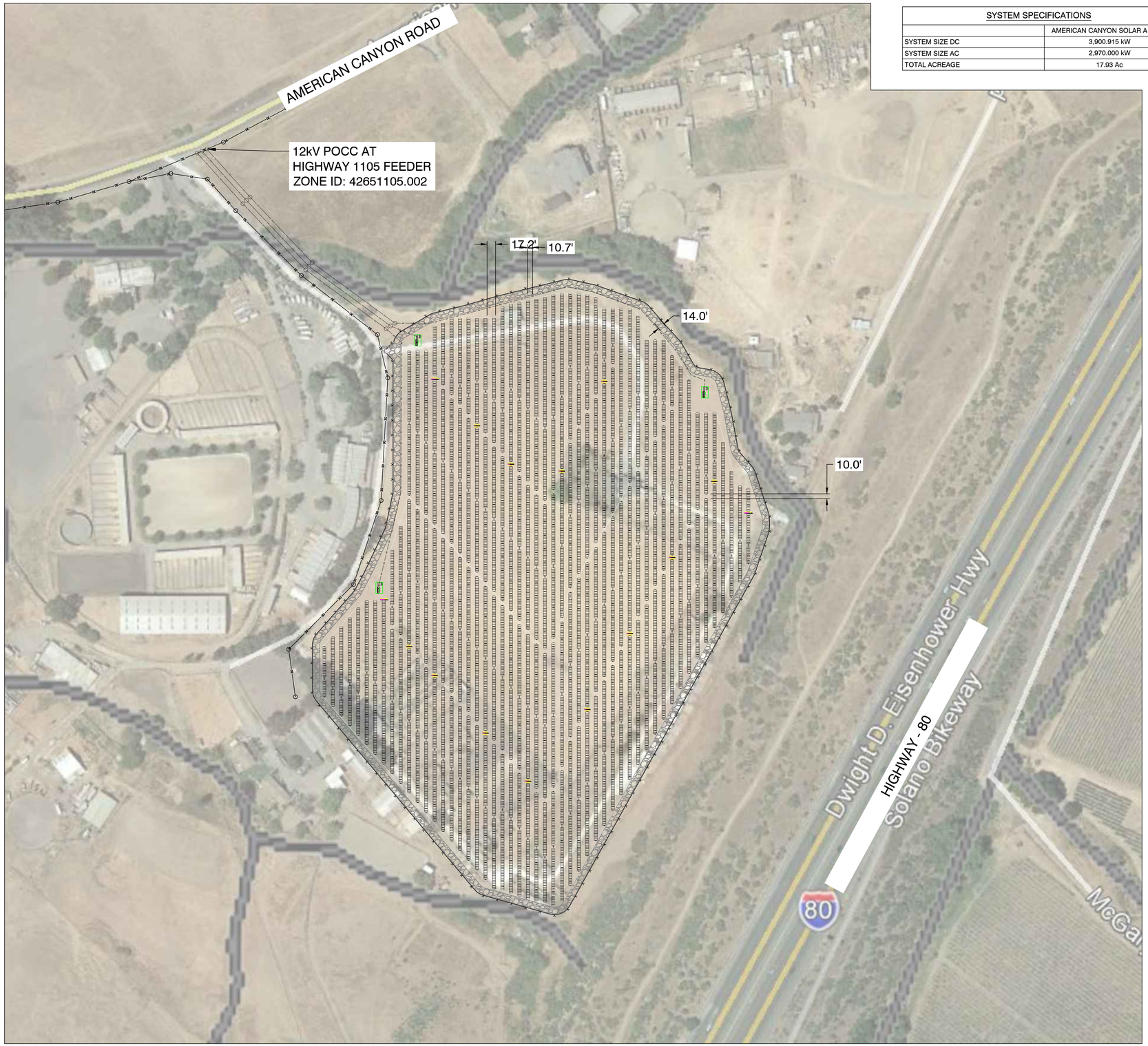
Photo 7. Access road with adjacent riparian woodland, facing west. March 2018.

Photo 8. Aquatic feature on northern boundary of Project Area, facing west. March 2018.

Photo 9. End of wetland feature on northern boundary of Project Area, facing west. March 2018.

Photo 10. Northern edge of Project Area with the riparian woodland (mixed willow alliance) along northern boundary, facing north. March 2018.

Appendix F
Layout Plan of the Solar Installation



1 ARRAY PLAN
SCALE:1"=100'

N

SYSTEM SPECIFICATIONS	
	AMERICAN CANYON SOLAR A+B+C
SYSTEM SIZE DC	3,900.915 kW
SYSTEM SIZE AC	2,970.000 kW
TOTAL ACREAGE	17.93 Ac

SYSTEM SPECIFICATIONS	
	AMERICAN CANYON SOLAR A
SYSTEM SIZE DC	1300.305 kW
SYSTEM SIZE AC	990.000 kW
DC/AC RATIO	1.31
MODULE MODEL	HANWHA Q-CELLS 345W
MODULE RATING	345 W
TOTAL MODULE QTY	3769
MODULES PER STRING	28
TOTAL NO. OF STRINGS	135
INVERTER MODEL	HUAWEI SUN2000-45KTL-US
INVERTER RATING	45 KW
INVERTER QTY	22
STEP-UP TRANSFORMER	12kV/600V, 990kVA
RACKING	NEXTRACKER
INTER-ROW SPACING	10.7'
PITCH	17.2'
GCR	38%

SYSTEM SPECIFICATIONS	
	AMERICAN CANYON SOLAR B
SYSTEM SIZE DC	1300.305 kW
SYSTEM SIZE AC	990.000 kW
DC/AC RATIO	1.31
MODULE MODEL	HANWHA Q-CELLS 345W
MODULE RATING	345 W
TOTAL MODULE QTY	3769
MODULES PER STRING	28
TOTAL NO. OF STRINGS	135
INVERTER MODEL	HUAWEI SUN2000-45KTL-US
INVERTER RATING	45 KW
INVERTER QTY	22
STEP-UP TRANSFORMER	12kV/600V, 990kVA
RACKING	NEXTRACKER
INTER-ROW SPACING	10.7'
PITCH	17.2'
GCR	38%

SYSTEM SPECIFICATIONS	
	AMERICAN CANYON SOLAR C
SYSTEM SIZE DC	1300.305 kW
SYSTEM SIZE AC	990.000 kW
DC/AC RATIO	1.31
MODULE MODEL	HANWHA Q-CELLS 345W
MODULE RATING	345 W
TOTAL MODULE QTY	3769
MODULES PER STRING	28
TOTAL NO. OF STRINGS	135
INVERTER MODEL	HUAWEI SUN2000-45KTL-US
INVERTER RATING	45 KW
INVERTER QTY	22
STEP-UP TRANSFORMER	12kV/600V, 990kVA
RACKING	NEXTRACKER
INTER-ROW SPACING	10.7'
PITCH	17.2'
GCR	38%

LEGEND

- NEXTRACKER 84 MODULE TRACKER ROW
- NEXTRACKER 56 MODULE TRACKER ROW
- NEXTRACKER 28 MODULE TRACKER ROW
- POWER STATION - (1) LV SWITCHGEAR, (1) MV TRANSFORMER, (1) DAS, (1) WEATHER STATION
- 45kW STRING INVERTER
- PANELBOARD
  X = PANEL NO.
- 14' WIDE SITE ACCESS GRAVEL ROAD
- PROJECT SITE SECURITY FENCE
- PROPERTY LINE
- MV — MV — PROJECT UG MV LINES TO RISER POLE
- OHL — PROJECT OH LINES TO POCC
- OHL — (E) OH LINES

GENERAL NOTES

1. REFER TO SINGLE LINE DIAGRAM FOR DETAILS.
2. INSTALLATION TO COMPLY WITH NEC 2014 ARTICLE 690 AND ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES OR REGULATIONS.
3. EQUIPMENT SHALL BE LABELED PER NEC 690 AND UTILITY REGULATIONS.
4. 14' ACCESS ROADS SHALL BE DESIGNED TO ACCOMMODATE ALL CONSTRUCTION, OPERATIONS, MAINTENANCE, AND UTILITY TRAFFIC THROUGHOUT THE SITE.
5. DIMENSIONS TO PROPERTY LINES AND EXISTING FEATURES ARE APPROXIMATE PENDING SURVEY.

RENEWABLE PROPERTIES

LICENSED PROFESSIONAL ENGINEER
TIM BROWN
E 20427
ELECTRICAL
STATE OF CALIFORNIA

AMERICAN CANYON SOLAR
A, B and C

2180 AMERICAN CANYON RD,
AMERICAN CANYON,
CA 94503, USA
LAT: 38.160724°
LON: -122.214178°

REV. NO	DESCRIPTION	DATE
0	PRELIMINARY	02/19/18

SHEET TITLE:

PRELIMINARY LAYOUT

DRAWING NO.:

PV-100

DRAWN BY: LR

REVIEWED BY:

DATE: 02/19/18

SCALE: AS SHOWN

PROJECT NO.: