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Revised Biological Evaluation Report (BER)

Redline and Clean Versions

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BIOLOGICAL EVALUATION REPORT

PITTSBURG DATA HUB PROJECT

City of Pittsburg
Contra Costa County, California

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Prepared February 2024, Revised September 2024

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1.0 INTRODUCTION

This report presents the methods and results of a biological habitat evaluation conducted within the Pittsburg Data Hub (PDH) project study area (study area), located on the outskirts of the City of Pittsburg, California (**Figure 1**). The report has been prepared by Vollmar Natural Lands Consulting (VNLC) on behalf of WSP USA. The evaluation was conducted to identify and characterize existing conditions within the study area, and to assess the potential for special-status species and sensitive habitats to occur within the study area. Pittsburg Data Hub LLC, a wholly owned subsidiary of Avaio Digital Partners I, LLC (Avaio) is proposing to redevelop a portion of the closed Delta View Golf Course as a data center. The proposed data center may contain facilities used to house information technology equipment including computers, telecommunications, auxiliary power, and storage systems, among other infrastructure.

The study area is approximately 75.9 acres. It comprises three separate parcels totaling 35.7 acres (project area), and a 250-foot buffer of the three parcels totaling 40.2 acres. The project area parcels are owned and managed by the project proponent. Surrounding parcels within the 250-foot buffer are owned and managed by a variety of public and private entities.

Information presented in this report is based on a combination of sources, including a rare plant survey and floristic inventory conducted by VNLC, a wetland delineation conducted by VNLC, additional VNLC reconnaissance-level surveys and database reviews, and on the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). Relevant sources are cited and/or attached as appendices. Sensitive information (i.e. exact locations of sensitive species occurrences) is provided separately under a confidential cover. This report was prepared to provide the information required by the California Energy Commission (CEC) for processing of a Small Power Plant Exemption (SPPE) application.

1.1 Potentially Occurring Special-status Species

Two special-status animals have been observed within the study area: White-tailed Kite (*Elanus leucurus*), a California Fully Protected bird species, and Cooper's Hawk (*Accipiter cooperii*), a California Department of Fish and Wildlife (CDFW) Watch List species, were each observed foraging in the vicinity of the study area. Based on habitat requirements and distribution, there are ~~28~~27 other special-status wildlife species and 24 special-status plants with at least low potential to occur within the study area. Among these are three animal species listed as Threatened or Endangered under the Endangered Species Act (ESA) and four animal species listed as Threatened or Endangered under the California Endangered Species Act (CESA). Two of these latter species are also included among the ESA-listed species. In addition, one ESA Proposed Threatened animal species, one ESA Candidate animal species and one CESA Candidate Endangered animal species have potential to occur. No ESA- or CESA-listed plant species are expected to occur in the study area. Special-status animals and plants are discussed in detail in **Section 6.~~1~~2** and **Section 6.~~2~~3**, respectively. Comprehensive lists of all special-status animals and plants known from the vicinity of the study area are provided as **Tables 2** and **3**, respectively.

Figure 1. Regional Vicinity Map

1.2 Designated Critical Habitat

The study area is located within designated critical habitat for Delta smelt (*Hypomesus transpacificus*). However, there is no habitat for this species within the study area, as the drainages are all seasonal to ephemeral. The nearest designated critical habitat for which suitable habitat is present on the study area is for California red-legged frog (*Rana draytonii*), which is approximately eight miles south of the site.

1.3 Sensitive Habitats

A wetland delineation conducted by VNLC identified a total of 1.916 acres of potential jurisdictional Waters within the study area, consisting of 1.909 acres of wetlands and 0.007 acre of other Waters, with habitats including forms of perennial and seasonal wetlands and drainage channels. The delineation also identified 1.597 acres of canal and 1.673 acres of artificial basins that were constructed in upland habitats. In addition to these aquatic resources, the plant survey identified 1.86 acres of riparian habitat which may be subject to jurisdiction of the CDFW. No other sensitive habitats were identified within the study area. Mature trees and other habitats may also provide potential habitat for a variety of bird and bat species, including special-status species.

2.0 PROJECT BACKGROUND INFORMATION

2.1 Study Area Location

The study area is located along the southern edge of the City of Pittsburg, California, and is mapped on the Honker Bay 7.5' United States Geological Survey (USGS) topographic quadrangle (**Figure 2**). The study area is within Sections 18 and 19 of Township 2 North, Range 1 East, and Sections 13 and ~~14~~24 of Township 2 North, Range 1 West, of the Mount Diablo Base & Meridian; this area is within the Los Medanos land grant. The study area may be accessed from State Highway 4 heading east by exiting at Bailey Road, then turning right (south) on to Bailey Road, then turning left (east) on West Leland Road. Golf Club Road, which heads south from West Leland Road 1.7 miles east of Bailey Road, dead-ends at the former Delta View Golf Course. Much of the study area is accessible via golf cart trails, though some areas have become inaccessible to vehicles because of trees falling onto the trails.

2.2 Physical Description of Study Area

The study area consists of rolling hills along the lower slopes of the eastern Los Medanos Hills, overlooking the City of Pittsburg. Elevation within the study area ranges from approximately 57 feet to 161 feet above sea level (USGS 1997), trending upward in elevation from the northeast to the southwest.

The study area is dominated by silt and clay soils that support annual grassland in undeveloped areas, though extensive areas have been partially leveled and native soils have been replaced by soils suited for golf course landscaping. The fine-textured soils within natural and excavated concave areas support seasonal wetlands.

Figure 2. USGS Topographic Map

The study area was formerly owned by the City of Pittsburg and managed as a public golf course for decades. Lands to the south and west of the study area are additional portions of the former golf course (undeveloped as of the writing of this report). Lands to the east consist of open space containing a transmission owned by Pacific Gas and Electric (see **Figure 5**, **Section 5.3**). To the north of the study area is medium-density residential development.

Following the closure of the golf course in 2018, previously managed areas have been colonized by dense and tall stands of invasive weeds. Portions of the study area that were never maintained as golf course grounds are also disturbed, either due to the planting of stands of exotic trees and shrubs, or due to a complete lack of grazing or other forms of management. Grazed areas outside of the fencing that surrounds the golf course, to the southwest, are dominated by non-native grasses and forbs, though localized areas of native wildflowers were observed during 2023 botanical surveys. The remnant intact drainages that flow through the study area support a few riparian tree species, but these are widely scattered and include many exotic trees, and do not form contiguous riparian forest or scrub.

2.3 Regional Setting

The open space to the south consists of grasslands typical of the dry slopes of the Diablo Range, and more generally of Mediterranean California as a whole. This habitat matches the description of "annual grassland" presented in the HCP/NCCP (in contrast to "native grassland", "alkali grassland", or "ruderal") (East Contra Costa County Habitat Conservation Plan Association, 2007). That is, it is dominated by introduced annual grasses, typically wild oats, (*Avena* spp.), brome grasses (*Bromus* spp.), and annual fescues (*Festuca* spp.). Trees are almost entirely absent, and shrubs are rare. The exceptions to this are low-density stands of native oaks (*Quercus* spp.) sheltered along ephemeral drainages, and growing on exposed hilltops. (These are mapped and described as oak savannah or oak woodland in the HCP/NCCP, but are very limited in area) Small unvegetated areas are present, including both rock outcrops, as well as areas denuded by grazing and/or erosion. These grasslands are primarily managed as dryland cattle pasture, though they may historically have been disked for increased productivity (ibid).

Immediately east of the project site is a transmission corridor containing open space. This is made up of a mix of annual grassland, ruderal habitat, and an intermittent stream with associated riparian habitat. The ruderal habitat, as described in the HCP/NCCP, includes a mix of non-native annual grasses and other weedy species (ibid). The riparian corridor supports small patches of riparian woodland/scrub as described in the HCP/NCCP. This is characterized by an open canopy of native riparian trees such as willows (*Salix* spp.) and cottonwoods (*Populus* spp.), with an understory of annual grassland, non-specialized seasonal wetland plants such as knotweed (*Polygonum* spp.) and dock (*Rumex* spp.), and occasional thickets of shrubs such as willows or Himalayan blackberry (*Rubus armeniacus*) (Vollmar Natural Lands Consulting 2024).

Immediately west of the project site is the remainder of the former golf course. Past that golf course lies another narrow riparian corridor, similar to the one east of the project site. Suburban development of medium-density housing lies beyond the riparian corridors to the east and west, and also immediately north of the project site.

3.0 PROJECT DESCRIPTION

The primary goal of the PDH is to be a state-of-the-art data center that provides greater than 99.999 percent reliability (five nines of reliability). The PDH has been designed to reliably meet the increased demand of digital economy, its customers, and the continued growth. The PDH's purpose is to provide its customers with mission critical space to support their servers, including space conditioning and a steady stream of high-quality power supply.

The components of the PDH will include:

- A three-story approximately 347,740 square foot data center building;
- A project substation;
- A PG&E switching station and transmission lines;
- A backup electrical generating facility;
- Site access and surface parking;
- Landscaping;
- Stormwater controls and features; and
- Water and sewer pipeline interconnections.

The PDH project's main component will be a three-story 347,740 square foot data center building which will house computer servers for private clients in a secure and environmentally controlled structure and would be designed to provide 60 megawatts (MW) of power to information technology (Critical IT) equipment.

The data center building will consist of two main components; the data center suites that will house client servers, and the administrative facilities including support facilities such as the building lobby, restrooms, conference rooms, landlord office space, customer office space, loading dock and storage.

The data center suite components will consist of three levels of data center space. Each level will contain two data center suites and corresponding electrical/UPS rooms.

The data center is expected to have between 20 and 30 employees and 12-15 visitors (including deliveries) visit the site per day.

Figure 3 depicts the location of planned project activities overlaid on study area habitats, including the acreage of each habitat type to be converted by the proposed project.

Figure 3. ~~Map of~~ Impacted ~~Areas within Study Area~~Communities Map

4.0 METHODS

4.1 Preliminary Review

The California Natural Diversity Database (CNDDB version dated September 2023) was reviewed to identify special-status species and habitat observations in the vicinity of the project area. We conducted a nine-quad search of the CNDDB centered on the Honker Bay quadrangle and including all surrounding quadrangles (Walnut Creek, Clayton, Antioch South, Vine Hill, Fairfield South, Denverton, Birds Landing, Antioch North). Per the CEC SPPE application requirements, we also selected all CNDDB element occurrence polygons within 10 miles of the project area. We requested and reviewed a US Fish and Wildlife Service (USFWS) Information Planning and Consultation list (IPaC) list for the study area. We conducted a nine-quad search for rare and listed plant species through the California Native Plant Society (CNPS) online "Inventory of Rare and Endangered Plants." In addition, we reviewed relevant sections of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). We reviewed the California Essential Habitat Connectivity project to identify major habitat corridors (Spencer 2010). Finally, we reviewed site aerial imagery, topographic maps, and soil maps. This information guided the development of field survey strategies for those special-status species with potential to occur in the study area.

4.2 Field Surveys

A reconnaissance-level habitat assessment survey and additional surveys were conducted throughout the study area by VNLC Senior Ecologists Jake Schweitzer and Eric Smith. The initial reconnaissance survey was conducted on November 28, 2018, and involved traversing the entire site and looking for sensitive habitats and habitats with potential to support special-status plants and animals. Specifically, the site was investigated for bird nests, mammal burrows, and aquatic features. Mr. Schweitzer and Mr. Smith conducted a reconnaissance-level nighttime spotlight survey ~~was conducted~~ for special-status adult amphibians and other wildlife within the deeper ponds. Mr. Smith is approved by the HCP/NCCP agency to conduct planning surveys for California tiger salamander (CTS, *Ambystoma californiense*), California red-legged frog, covered shrimp, and giant garter snake (*Thamnophis gigas*); resumes of all surveyors are presented in **Appendix F**. All animal species and dominant plant species observed were recorded and the locations of sensitive habitats (e.g., wetlands and other waters) were recorded as points with professional global positioning systems unit (Trimble GeoXH 6000). Many additional biological surveys have been conducted since; these are summarized below, and presented in greater detail in **Appendix B** and **Appendix C**. Representative photographs of habitat conditions were recorded throughout the study area over the timeframe spanning from April ~~2022~~2019 to July 2023 (**Appendix A**).

A formal wetland delineation survey was initially conducted in the project area in Spring 2019. Fieldwork supporting this delineation and the overall habitat assessment included additional surveys by Mr. Schweitzer in February 2019 and April, 2019. An updated delineation was conducted December 2022, with an additional survey of the 250-foot buffer zone in July 2023. ~~Both~~The original surveys were conducted by VNLC Senior Ecologist Jake Schweitzer and Staff Ecologist Kristen Chinn. The delineation update surveys were conducted by VNLC Senior Ecologist Eric Smith with assistance by VNLC Staff Ecologist Anton Bokisch. Potentially jurisdictional Waters that were initially documented during the reconnaissance survey were

investigated more carefully, and their boundaries were mapped based on the dominance of hydrophytic vegetation as well as the presence of hydrologic indicators and hydric soils. Methods and results of this study are described in detail in **Appendix B**.

VNLC conducted a protocol rare plant survey and floristic inventory in the study area in 2023. VNLC Botanist Rachel Miller conducted three surveys were scheduled during the peak blooming period (April 12, May 19, and July 12) of all special-status plants with potential to occur within the study area, in order to maximize the potential to detect such species. Methods and results of this study are described in detail in **Appendix C**.

~~In addition, multiple surveys have been~~VNLC conducted ~~within the~~a study ~~area~~ to document hydrologic conditions within basins that hold ponded water in 2019. The purpose of the hydrology surveys was to document ponding depth and duration as well as other parameters (e.g., water temperature and turbidity), in order to determine whether any of the features provide suitable breeding habitat for special-status amphibians. These surveys also included an effort to detect the presence of animal species that could prey upon or compete with special-status amphibians. However, the surveys did not involve the use of aquatic dipnets or seines to capture and confirm the presence of breeding amphibians or other animals. A total of ten rounds of hydrologic surveys were conducted between February 6 and June 25, ~~2018~~2019, with surveys scheduled in a manner that enabled the survey team to document maximum ponding depth (i.e., some surveys conducted following the intense and/or extended rain events) as well as contiguous hydroperiod (i.e., some surveys conducted following extended dry periods) for each basin. These studies were conducted by VNLC Staff Biologist Kristen Chinn.

The study area experienced higher than normal rainfall during the 2018-2019 wet season. This allowed for conservative estimation of pond hydrology parameters and wetland extent. Conditions were considered wetter than average during the December 2022 delineation fieldwork, and also during the spring 2023 rare plant surveys. Precipitation conditions were considered average during the July 2023 delineation fieldwork (**Appendix B**).

VNLC conducted additional wildlife surveys and habitat evaluations of the study area focusing on protected raptors and nesting birds in 2023. These were conducted by VNLC Staff Biologist Misaki Yonashiro on April 12 and May 21, 2023. Further site biological surveys are ongoing, and to date have included various survey visits on March 15, 2024 (Mr. Smith, assisted by VNLC Staff Biologist Trevor Hurd), April 15, 2024 (Mr. Smith, assisted by VNLC Staff Biologist August Maners, May 9, 2024 (Mr. Smith and VNLC Senior Biologist Roxanne Foss), June 6, 2024 (Mr. Smith), and August 6, 2024 (Mr. Smith). These studies are not reported in depth here, but have not produced any additional documentations of special-status species occurrences, nor any new special habitats or jurisdictional features.

5.0 EXISTING CONDITIONS

5.1 Climate

The climate of the study area and surrounding vicinity is characterized as “Mediterranean,” with cool, wet winters and warm, dry summers as well as high inter- and intra-annual variability in precipitation. On average, nearly 98% of precipitation occurs during the “wet season,” from

October through May. According to the Parameter-elevation Regression on Independent Slopes Model (PRISM) climate data model (2023), mean annual temperature and precipitation at the study area from 1991 to 2020 are 60.9° Fahrenheit (F) and 17.5 inches, respectively. In contrast, mean precipitation along the coast, at approximately the same latitude and elevation, amounts to over 32 inches, and features a mean temperature of 54° F. Areas of equal distance to the east experience less than half the annual precipitation than at the study area and are hotter on average, due to a complete lack of coastal influence.

The field surveys were conducted during and following a growing season which was wetter than normal, due to the influence of an El Niño-Southern Oscillation (ENSO) weather pattern during the 2022-23 wet season (October-April). According to the PRISM climate data model, the total precipitation for the wet season (October-April) preceding the 2023 field surveys was 30.16 inches, 180% of the normal precipitation for that period. However, most of that precipitation fell during December, January, and March. Despite the erratic precipitation patterns, average temperatures during the same timeframe were quite similar to the mean: 52.3° compared to 54.6° (F). It is expected that the 2022-2023 wet season provided above average conditions for plant growth and persistence, including for most special-status plants with potential to occur in the area.

5.2 Substrates

Three soil units are mapped within the study area: Altamont clay, Capay clay, and Rincon clay loam (Figure 4). As Table 1 below shows, all of these are residuum or alluvium derived from sedimentary rocks, primarily sandstone and shale. The parent geologic formations are Pliocene (~2.5 to 3.6 million years old) Tulare Formation along the hill slopes, and Quaternary (< 2 million years old) surficial deposits along the lowlands. The Tulare Formation consists of poorly consolidated, non-marine sandstone as well as conglomerate and tuff. The surficial deposits are undivided recent materials, including landslide materials (USGS 1994). The pH of the soils is generally neutral to slightly alkaline, with pH values ranging from 6.8 to 7.5 in the top 24 inches ~~Figure 4. Soil Units and Geologic Formations Map~~

(USDA 2023). Though none of these are rated as hydric soils, all of them consist of high amounts of clay materials, ranging from 35% to 51% clay (ibid), and thus are fairly poorly drained. There are extensive areas where heavy clay soils feature large and deep cracks in the surface. There are very few rock outcroppings and areas of thin, rocky, or sandy soils are limited or absent altogether.

Because the soils are derived from common, unspecialized parent material and are generally fertile, they support primarily generalist, relatively competitive plant species. The areas of heavy clay have moderate potential to support special-status plants, and often do support wetland habitats within concave areas. However, these areas were dominated by introduced plant species. From a wildlife standpoint, the large soil cracks also provide potential aestivation habitat for special-status animals, such as ~~California tiger salamander *(Ambystoma californiense*; CTS).~~CTS.

Figure 4. Soil Units and Geologic Formations Map

TABLE 1. Soil Units Mapped within the Study Area

Soil Unit	Parent Material	Surface Texture[1]	pH Rating[2]	Pct of Study Area
Altamont clay, 15-30% slopes	Residuum weathered from sandstone and shale	Clay	7.0	11.3%
Capay clay, 1-15% slopes	Alluvium derived from sedimentary rock	Clay	6.8	45.6%
Rincon clay loam, 2-9% slopes	Clayey alluvium derived from sedimentary rock	Clay loam	7.0	43.1%

1. At least 50% clay in top 24 inches. Dominant Condition.
2. Top 24 inches. Dominant Condition.

Source: USDA Web Soil Survey, 2023

5.3 Study Area Habitats

The study area encompasses a variety of upland and wetland habitat types, including areas formerly managed as the Delta View Golf Course, un-managed (not irrigated or mowed) grasslands and remnant patches of landscaping trees within the golf course, seasonal and perennial wetlands as well as other aquatic habitats, and annual grassland outside of the golf course (**Figure 5**). There are also areas of constructed buildings that are surrounded by paved roads and parking areas. All habitats are described in detail below. Microhabitats are limited within the study area—there are areas of heavy clay soils (including large and deep cracks), but no significant areas of rock outcrops, sandy soils, alkaline soils, or the like. There are moderate numbers of ground squirrel burrow complexes along areas of gentle slopes within the former golf course and surrounding grassland habitats.

Portions of the golf course area are bounded by chain link fencing. The fencing, which spans western and southern portions of the site, prevents larger wildlife from accessing the golf course area.

Upland Habitat

Upland habitat accounts for 68.9 acres of the total 75.9 acres in the study area. Much of the upland area consists of annual grasslands, covering 49.3 acres. Grassland area can be split into 2 categories, areas previously managed as a golf course and those not previously managed as such.

~~**Figure 5. Map of Habitats within the Study Area**~~

Areas previously part of the Delta View Golf Course were intensively managed as such since the late 1940s. Soils have been replaced or amended, and a wide range of trees, shrubs, and grasses have been imported and maintained via irrigation, mowing, and pruning. Grasslands within the managed golf course areas have undergone dramatic changes following the closure of the golf course. Once intensively managed to maintain turf grass, the herb layer has been colonized by a variety of invasive weeds, which at the time of the delineation and rare plant surveys formed extensive, dense, and tall stands within the study area. Two distinct plant communities have formed within this area, wild oat and brome grasslands, and upland mustards or star-thistle fields. Oat and brome grasslands within the study area was dominated by non-native annuals including Italian rye grass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*), as well as wild oat (*Avena fatua*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*),

Figure 5. Natural Communities

wall barley (*Hordeum murinum*), horseweed (*Erigeron canadensis*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), and bristly ox-tongue (*Helminthotheca echioides*). Upland mustard or star-thistle fields were dominated by black mustard (*Brassica nigra*) and some cheeseweed (*Malva parviflora*), or yellow star-thistle (*Centaurea solstitialis*).

Grassland areas not previously managed as a golf course, mostly within the 250-foot buffer zone on the eastern and southwestern edges of the study area, contained a higher diversity of plants. This includes native wildflowers such as several species of lupine (*Lupinus affinis, L. bicolor, L. formosus* var. *formosus, L. nanus*), California poppy (*Eschscholzia californica*), purple owl's clover (*Castilleja exserta* ssp. *exserta*), and common fiddleneck (*Amsinckia menziesii*). The previously-described plant communities consisting of primarily non-native species are also present in these areas.

Landscaping trees comprise 6.08 acres of mostly exotic trees. These trees were originally planted as part of the golf course landscaping and have persisted after its closure. This community is dominated by Peruvian pepper tree (*Schinus mole*), with Bishop pine (*Pinus muricata*) and some lodgepole pine (*Pinus contorta* ssp. *murrayana*) and ponderosa pine (*Pinus ponderosa*). Other species of tree likely planted as landscape plants include shamel ash (*Fraxinus uhdei*), Italian stone pine (*Pinus pinea*), deodar cedar (*Cedrus deodara*), and several gum trees (*Eucalyptus camaldulensis* and *E. globulus*). Scattered throughout these exotic species are a few coast live oaks (*Quercus agrifolia* var. *agrifolia*), valley oaks (*Quercus lobata*), and other upland tree species which are native to the region. However, historical aerial photography of the area suggests these species may not have existed in the area prior to the golf course. Many of the planted trees throughout the study area are mature and quite large, particularly the gum trees.

The 13.5 acres of paved area, mostly in the northern part of the study area, includes the now abandoned parking lot, sidewalks, and developed areas included in the study area due to the 250-foot buffer zone surrounding the project area. This area has minimal vegetation, consisting of weedy species that have managed to grow through cracks such as black mustard, rough cat's-ear (*Hypochaeris radicata*), slender wild oat (*Avena barbata*), cheeseweed, yellow star-thistle, Mediterranean barley, and ripgut brome.

Riparian Habitat

Riparian habitat in the study area accounts for 1.87 acres of the total. Of this 0.44 acre is considered Himalayan blackberry thickets. These thickets are dominated (>75% absolute cover) by Himalayan blackberry. This community is present in the northeast portion of the study area adjacent to a seasonal and perennial wetland drainage.

The remaining 1.43 acres of riparian habitat are considered Valley Foothill Riparian. This area is comprised of riparian trees along the seasonal wetlands and seasonal wetland drainages identified in the 2023 wetland delineation (**Appendix B**)**.** This habitat is located primarily in the eastern portion of the study area and is dominated by Fremont cottonwood (*Populus fremontii*), Siberian elm (*Ulmus pumila*), Mexican fan palm (*Washingtonia robusta*), northern California black walnut (*Juglans hindsii*), olive (*Olea europa*), and occasional Bishop pine. These trees formed only intermittent cover (approximately 30% absolute cover). Riparian areas in the southern portion of the site were primarily composed of Peruvian pepper trees, a remnant landscape plant.

Both the Himalayan blackberry thickets and Valley Foothill Riparian areas are classified as a sensitive habitat due to their status as riparian areas; they may be subject to CDFW jurisdiction under the California Fish and Game Code §1600 *et seq*.

Aquatic Habitats

The study area encompasses a variety of natural, created, and enhanced wetlands and other Waters. Though there are natural drainages, the hydrology in the study area has been significantly altered to support and protect the golf course landscaping. This has resulted in the concentration of water in some areas at the expense of other areas.

Many of the basin and drainage features within the study area were variably vegetated as a function of hydroperiod, amount of scouring from water flow, and/or degree of water turbidity. Some features were sparsely vegetated as result of long ponding duration and/or high water turbidity, while stretches of narrow channel appeared to have limited plant growth as a result of scouring from water flow. Most of the basin features in the study area hold water for only short periods, or have sufficiently clear and/or shallow water that photosynthesis has enabled relatively dense plant growth.

There are a total of 1.91 acres of potentially jurisdictional waters identified by VNLC during the 2023 wetland delineation (**Figure 6-8**). Identified natural aquatic habitats are all considered to be sensitive communities by CDFW. These habitats may be subject to CDFW jurisdiction under the California Fish and Game Code §1600 *et seq* (FGC 1600); they may also be Jurisdictional Waters of the State of California under the Porter-Cologne Water Quality Act (Porter-Cologne) and/or Jurisdictional Waters of the United States under the Clean Water Act (CWA).

Seasonal wetland drainage accounted for 0.79 acre and was concentrated in the eastern portion of the study area. This habitat was dominated by species including Italian rye grass, prickly lettuce (*Lactuca serriola*), tall annual willowherb (*Epilobium brachycarpum*), annual beard grass (*Polypogon monspeliensis*), knotweed (*Polygonum aviculare*), curly dock (*Rumex crispus*), and spiny cocklebur (*Xanthium spinosum*).

~~**Figure 6. Potential Jurisdictional Aquatic Resources Overview**~~

~~**Figure 7. Potential Jurisdictional Aquatic Resources North**~~

~~**Figure 8. Potential Jurisdictional Aquatic Resources South**~~

Perennial wetland within drainages accounted for 0.17 acre and was split between two wetlands both in the northern portion of the study area. These wetlands were dominated by species such as broad-leaved cattail (*Typha latifolia*), curly dock, dallis grass (*Paspalum dilatatum*), alkali mallow (*Malvella leprosa*), and rescue grass (*Bromus catharticus* var. *catharticus*).

Seasonal wetland within drainages accounted for 0.95 acre spread throughout the study area. These wetlands were dominated by species such as lamb's quarters (*Chenopodium album*), curly dock, cocklebur (*Xanthium strumarium*), tall annual willowherb, horseweed, dallis grass, tall flatsedge (*Cyperus eragrostis*), and barnyard grass (*Echinochloa crus-galli*).

Unvegetated channel covered 0.01 acre of the study area and did not contain any vegetation.

Figure 6. Potential Jurisdictional Aquatic Resources Overview

Figure 7. Potential Jurisdictional Aquatic Resources North

Figure 8. Potential Jurisdictional Aquatic Resources South

In addition to the natural aquatic habitats identified, there are 3.27 acres of artificially constructed aquatic features. These features are not likely to be considered Jurisdictional Waters of the United States as they do not obstruct natural flow of wetlands or waters of the US, or replace the original channel of wetlands or waters. They may be Jurisdictional Waters of the State of California and/or subject to FGC 1600. These aquatic features include the Contra Costa Canal and two golf course landscaping ponds.

The Contra Costal Canal covered 1.60 acres within the study area and was unvegetated.

Two golf course landscape ponds totaling 1.67 acres were constructed in the upland part of the study area. Since closure of the golf course, these have transitioned into seasonal, rain-fed features. Dominant species within the basins include dotted smartweed (*Persicaria punctata*), Mediterranean barley, knotweed, and Italian rye grass. Other common species within the ponds included rattail sixweeks grass (*Festuca myuros*), stinkwort (*Dittrichia graveolens*), and lamb's quarters. The margins of the golf course ponds had been invaded with species common in the annual grassland.

6.0 SPECIAL-STATUS SPECIES

Table 2 and **Table 3,** below, list all species identified in the 9-quad searches, IPaC list, and 10-mile-buffer CNDDB search. In total, occurrences are presented from all of the USGS 1:24,000 Honker Bay, Walnut Creek, Clayton, Antioch South, Vine Hill, Fairfield South, Denverton, Birds Landing, and Antioch North quadrangles, as well as portions of the Brentwood, Diablo, Jersey Island, and Tassajara quadrangles. The potential of these special-status species to occur within the study area is discussed below.

6.1 Regulatory Background

For the purposes of this analysis, special-status animal species include those listed (including proposed or candidate species) under ESA or CESA; species receiving consideration during environmental review under California Environmental Quality Act (CEQA) Guidelines Section 15380; species identified as state Fully Protected; species covered by the Migratory Bird Treaty Act; species and habitats identified by local, state, and federal agencies as needing protection, including but not limited to those identified by the CNDDB, California Fish and Game Code, Title 14 of the California Code of Regulations, or where applicable, in Local Coastal Programs or in relevant decisions of the California Coastal Commission or other responsible agency; locally significant species that are rare or uncommon in a local context such as county or region or is so designated in local or regional plans, policies, or ordinances; and plant species listed as rare under the California Native Plant Protection Act.

Animals listed as Threatened or Endangered under the ESA or CESA are protected from "take", which broadly includes activities which harm individuals of the species or disrupt their life history. Plants listed under the CESA are similarly protected (plants listed under the ESA are protected from take only on public lands, or from actions taken by public entities). Public agencies are required to consider the effects of discretionary actions on listed species. Species which are Candidates or Proposed for listing under the ESA do not receive take protections, though USFWS

encourages that they be considered in project analyses. Species which are Candidates for CESA listing receive full CESA take protections while under review.

The listing of "Endangered, Rare, or Threatened" is defined in Section 15380 of the *California Environmental Quality Act* (*CEQA*) *Guidelines*. Section 15380(b) states that a species of animal or plant is "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is "Rare" when either "(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become Endangered if its environment worsens; or (B) the species is likely to become Endangered within the foreseeable future throughout all or a portion of its range and may be considered "Threatened" as that term is used in the ESA.

Animal species may be designated as "Species of Special Concern" (SSC) by CDFW. This designation does not provide coverage under CESA, but the CDFW recommends their protection as their populations are generally declining and they could be listed as Threatened or Endangered (under CESA) in the future. "Watch List" species are taxa that were previously SSCs but do not currently meet SSC criteria, and for which there is concern and a need for additional information to clarify status.

Species designated as "Fully Protected" by CDFW generally may not be taken or possessed at any time. CDFW may only authorize take for necessary scientific research and may authorize live capture and relocation of "fully protected" birds to protect livestock.

USFWS designates some birds as "Birds of Conservation Concern" (BCC). Although these species have no legal status under ESA, the USFWS recommends their protection as their populations are generally declining, and they could be listed as Threatened or Endangered (under ESA) in the future.

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 704) and the California Fish and Game Code (Section 3503) prohibit the take of migratory birds as well as disturbance to the active nests of most native birds.

Special-status plants include species that are designated Rare, Threatened, or Endangered as well as candidate species for listing by the USFWS. Special-status plants also include species considered Rare or Endangered under the conditions of Section 15380 of the California Environmental Quality Act (CEQA) Guidelines, such as those plant species identified by the CNPS as California Rare Plant Rank (CRPR) 1A, 1B, and 2 in the Inventory of Rare and Endangered Vascular Plants of California by the CNPS. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included as CRPR List 3 or 4 in the CNPS Inventory.

CDFW tracks some species in the CNDDB which do not have any of the special statuses discussed above. This is generally because CDFW is studying them to determine if they merit some special status. These species are also included in our results.

6.2 Special-status Animals

Two special-status animals have been observed within the study area: White-tailed Kite, a California Fully Protected bird species, and Cooper's Hawk, a CDFW Watch List species, were each observed foraging in the vicinity of the study area during VNLC surveys. **Figure 9** shows the location of all occurrences of special-status species and sensitive habitats as documented in the CNDDB at a scale of 1:350,000. **Figure 10** (provided under confidential cover) presents vicinity CNDDB occurrences at a scale of 1:6,000**.** Locations of the White-tailed Kite and Cooper's Hawk occurrences are not depicted, as these were overflights by foraging individuals.

These and other special-status wildlife species documented in the database searches are identified in **Table 2**, which provides a summary of the legal status and habitat requirements of these species, as well as an assessment of the likelihood of occurrence of each species within the study area. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations. There is no designated critical habitat within the study area, aside from Delta smelt, a fish species with no potential to occur in the study area.

As noted in **Table 2**, the following special-status animal species have some potential to occur within the study area: Cooper's Hawk, Tricolored Blackbird *(Agelaius tricolor*), Grasshopper Sparrow (*Ammodramus savannarum*), Golden Eagle *(Aquila chrysaetos*), Short-eared Owl *(Asio flammeus*), Burrowing Owl *(Athene cunicularia*), Ferruginous Hawk *(Buteo regalis*), Northern Harrier *(Circus hudsonius*), White-tailed Kite, California Horned Lark *(Eremophila alpestris actia*), Merlin *(Falco columbarius*), Prairie Falcon (*Falco mexicanus*), American Peregrine Falcon (*Falco peregrinus anatum*), Bald Eagle *(Haliaeetus leucocephalus*), Loggerhead Shrike *(Lanius ludovicianus*), California Gull *(Larus californicus*), pallid bat *(Antrozous pallidas*), western red bat *(Lasiurus frantzii*), hoary bat *(Lasiurus cinereus*), San Joaquin pocket mouse *(Perognathus inornatis*), American badger *(Taxidea taxus*), San Joaquin kit fox *(Vulpes macrotis mutica*), California tiger salamander, western pond turtle *(Emys marmorata*), California red-legged frog, obscure bumble bee (*Bombus caliginosus*), crotch bumblebee *(Bombus crotchii*), American bumble bee (*Bombus pensylvanicus*), and monarch butterfly *(Danaus plexippus*). The study area also has potential to support the nesting of protected migratory birds not included in the above list. The potential for these species to occur within the study area, as well as potential impacts to these species from significant disturbances within the study area, are discussed below. Recommended avoidance, minimization, and mitigation measures for project impacts are presented in **Section 11**.

Figure 9. Regional Special-Status ~~Species~~Animals Map

Figure 10. ~~Large-Scale~~Local Special-status Species Map

TABLE 2. Special-status Animals Documented in the Vicinity of the Study Area.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Birds			
Cooper's Hawk* *Accipiter cooperii*	WL	Forest, woodlands, and often suburbs with trees. Nest in dense woods of pines, oaks, Douglas firs, beeches, spruces and other trees, often on flat ground.	**Present (foraging).** Species was observed foraging in the vicinity of the study area. Scattered landscaping trees provide limited nesting opportunities. This species is tolerant of suburban development and may nest in the project vicinity, though the nearest CNDDB documentation is more than 10 miles away.
Tricolored Blackbird *Agelaius tricolor*	ST, BCC, SSC	Forages in a variety of open habitats including pastures, agricultural fields, rice fields, feedlots, and grasslands with scattered seasonal wetlands. Nests in large freshwater marshes with tules or cattails, or in other dense thickets of willow, thistle, blackberry, or wild rose in close proximity to open water.	**Low Potential.** Stands of marsh vegetation large enough to support breeding colonies are absent from the site vicinity, but the site is mapped as suitable habitat for the species as modeled in the HCP/NCCP. The nearest CNDDB occurrence considered potentially extant is over 8 miles away.
Grasshopper Sparrow *Ammodramus savannarum*	SSC	Frequents dense, dry or well-drained grassland, especially native grassland with a mix of grasses and forbs for foraging and nesting. Uses scattered shrubs for singing perches.	**Low Potential.** Suitable nesting and foraging habitat present. The nearest CNDDB occurrence is more than 10 miles away.
Golden Eagle *Aquila chrysaetos*	FP, WL	Rolling foothills, mountain areas, sage-juniper flats, desert. Nests are constructed on cliffs or in large trees in open areas.	**Potential.** The site provides suitable foraging habitat. The species has also been observed foraging at the Concord Naval Weapons Station, approximately 4 miles away. The CNDDB does not contain any nesting occurrences in the project area. Potentially suitable nesting habitat is absent. The site is mapped as suitable habitat for the species as modeled in the HCP/NCCP.
Short-eared Owl *Asio flammeus*	BCC, SSC	Breeds in extensive marshes and moist grasslands; forages over wetlands, grasslands, and ruderal habitats.	**Low Potential.** Suitable nesting habitat not present given the absence of moist areas and/or large wetlands. Onsite grasslands provide foraging habitat (though limited). The nearest CNDDB documentations are from 5 miles away, though these date to the 1980s. No recent documentations are present in the region.
Burrowing Owl *Athene cunicularia*	BCC, SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**Potential.** The on-site grasslands provide potential nesting and wintering habitat. The nearest occurrence of nesting burrowing owls is 2.2 miles west of the site (CNDDB). The site is mapped as suitable habitat for the species as modeled in the HCP/NCCP.
Ferruginous Hawk *Buteo regalis*	WL	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. Roosts in open areas, usually in a lone tree or utility pole. Does not nest in California.	**Potential (wintering only).** This species occurs in the vicinity of the study area as an infrequent winter migrant but does not nest in California. Could forage on the site during the winter. There is one occurrence of this species in the CNDDB, 3.3 miles southwest.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Swainson's Hawk *Buteo swainsoni*	ST	Breeds in stands of tall trees in open areas. Requires adjacent suitable foraging habitats such as grasslands or alfalfa fields supporting rodents.	**Not Expected.** There are some potentially suitable nesting trees within the study area, and suitable foraging habitat is present. However, based on the CNDDB, the closest documented occurrence of the species is over 6 miles north and east of the site and the site appears to be along or outside of the extreme western edge of the species' nesting range. Consistent with this finding, the site is not mapped as suitable nesting or foraging habitat for the species as modeled in the HCP/NCCP.
Mountain Plover *Charadrius montanus*	BCC, SSC	Winters in central and southern California.	**Not Expected.** No longer winters in eastern Bay Area, historical occurrences (>100 years ago) exist in Concord. No recent occurrences documented within 10 miles.
Western Snowy Plover *Charadrius nivosus nivosus*	FT, SSC	Coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. along the Pacific Coast.	**Not Expected.** Rare species with no suitable habitat nearby. No documented occurrences within 10 miles.
Northern Harrier *Circus hudsonius*	BCC, SSC	Found throughout California breed and forage in open habitats with sufficient vegetation	**Low Potential.** No native grasslands present in the study area; limited open habitat provides some potential for foraging. Nearest CNDDB occurrence is 4 miles away.
Yellow Rail *Coturnicops noveboracensis*	BCC, SSC	Nests and winters in marshes and wet meadows. Most common along the coast.	**Not Expected.** Rare species with suitable habitat on site. No documented occurrences within 10 miles.
White-tailed Kite *Elanus leucurus*	FP	Undisturbed open grasslands, meadows, farmlands, and emergent wetlands for foraging. Nests near top of dense oak, willow, or other tree stands.	**Present (foraging).** Suitable nesting and foraging habitat present within the study area, and the species was observed foraging on the site during surveys.
California Horned Lark *Eremophila alpestris actia*	WL	Nests in open areas that contain relatively barren ground with short grass and scattered bushes.	**Low Potential.** Limited open habitat provides some potential for nesting and foraging. Not documented in the CNDDB within 10 miles of the study area.
Merlin* *Falco columbarius*	WL	Winter migrant found uncommonly in coastlines, open grasslands, savannahs, wetlands etc.	**Low Potential.** Limited winter habitat on site in the form of grasslands. Not documented in the CNDDB within 10 miles of the study area.
Prairie Falcon* *Falco mexicanus*	WL	Uncommonly found in Central Valley, along inner Coast Ranges and Sierra Nevadas, southeast to desert. Associated with perennial grasslands, savannah, rangeland, agricultural fields, and desert scrub.	**Low Potential.** Open grassland habitat in the study area may provide marginal foraging habitat for the species. Nearest CNDDB occurrences are approximately 9 miles away.
American Peregrine Falcon *Falco peregrinus anatum*	SA (delisted)	Adaptable, and can be seen in a wide range of habitats; often encountered in areas with steep cliffs, as well as around coastal mudflats and open areas with shorebirds.	**Low Potential.** Open grassland habitat in the study area may provide marginal foraging habitat for the species. Nesting habitat is absent. Nearest CNDDB occurrences are approximately 9 miles away.
Saltmarsh Common Yellowthroat *Geothlypis trichas sinuosa*	BCC, SSC	San Francisco Bay fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging.	**Not Expected**: The study area does not provide suitable habitat given the absence of salt/brackish marsh habitat.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Bald Eagle *Haliaeetus leucocephalus*	SE, FP	Requires large water bodies or rivers, primarily a resident of northern California, scattered nests elsewhere.	**Low Potential.** No large freshwater bodies are present nearby, and there are no CNDDB occurrences within 10 miles.
Yellow-breasted Chat *Icteria virens*	SSC	Frequents dense, brushy thickets and tangles near water, and thick understory in riparian woodland.	**Not Expected.** No appropriate riparian habitat present on site, and there are no CNDDB occurrences within 10 miles.
Loggerhead Shrike *Lanius ludovicianus*	SSC	Habitat consists of open spaces such as grasslands with scattered trees, shrubs, utility lines, and/or fences for perching. Typically nest in densely vegetated trees and shrubs.	**Potential.** Suitable nesting and foraging habitat present. No CNDDB occurrences documented within 10 miles.
California Gull* *Larus californicus*	BCC, WL	Nests on isolated islands. Common along coasts, landfills, and pastures.	**Potential.** No suitable nesting habitat in study area, but species may visit nearby landfills. No CNDDB occurrences documented within 10 miles.
California Black Rail *Laterallus jamaicensis coturniculus*	ST, FP	Occurs in freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. Requires permanent water and dense vegetation for nesting. Dependent upon upper zones of saline emergent wetlands, especially with pickleweed, and brackish fresh emergent wetlands.	**Not Expected.** The study area does not provide suitable habitat for this species given the absence of tidal and brackish marshes.
Suisun Song Sparrow *Melospiza melodia maxillaris*	SSC	Resident of brackish water marshes surrounding Suisun Bay. Inhabits cattails, tules, and tangles bordering sloughs.	**Not Expected.** The study area does not provide suitable habitat for this species given the absence of brackish marsh.
Song Sparrow ("Modesto" population) *Melospiza melodia* pop. 1	SSC	Found primarily in wetlands, but can be found along riparian corridors and sufficiently vegetated artificial waterways.	**Not Expected.** No suitable wetland or riparian habitat is present within the study area**.** Nearby occurrences are restricted to bayland edge.
Double-crested Cormorant *Nannopterum auritum*	WL	Found along entire coast of California and inland waters.	**Not Expected.** No suitable habitat in study area. Nearby occurrences are restricted to bayland edge.
Long-billed Curlew *Numenius americanus*	WL	Winters in coastal estuaries, open grasslands, and croplands. Nests in upland shortgrass prairies and wet meadows.	**Not Expected.** Grasslands present on site provide limited habitat. Species is strongly associated with bay margin in the Bay Area. No CNDDB occurrences within 10 miles.
Osprey *Pandion haliaetus*	WL	Large trees in forested habitats, prefers coniferous, with large, fish-bearing waters.	**Not Expected.** No forest ecosystem present within the study area. No CNDDB occurrences within 10 miles. Occurrence in the eastern Bay Area is strongly associated with bayland and forested East Bay hills.
Bryant's Savannah Sparrow *Passerculus sandwichensis alaudinus*	SSC	Occupies low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands.	**Not Expected.** Study area is not within the fog belt; nearest occurrence is located in Hayward.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
American White Pelican *Pelecanus erythrorhynchos*	BCC, SSC	Winters in the Pacific coast and lowlands. Breeds primarily in the intermountain west.	**Not Expected.** No suitable habitat in study area. No CNDDB occurrences within 10 miles. Occurrence in the eastern Bay Area is strongly associated with bay margin and forested East Bay hills.
White-faced Ibis *Plegadis chihi*	WL	Shallow, emergent wetlands. Forages in wet meadows, irrigated pasture, pond edges, wet cropland.	**Not Expected.** No suitable habitat is present within the study area. No CNDDB occurrences within 10 miles.
California Ridgway's Rail (formerly California clapper rail) *Rallus obsoletus obsoletus*	FE, SE, FP	Saltwater and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed and cordgrass, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Not Expected.** The study area does not provide suitable habitat for this species given the absence of tidal or brackish marshes.
California Least Tern *Sternula antillarum browni*	FE, SE, FP	Nests along the coast and around bays/estuaries from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**Not Expected.** The study area does not provide suitable habitat for this species given its distance from tidal areas.
Mammals			
Pallid bat* *Antrozous pallidus*	SSC	Occurs in mountainous areas, intermontane basins, lowland desert scrub, arid deserts, and grasslands, often near rocky outcrops and water; in some areas, this species also inhabits open coniferous forest and woodland. Prefers open dry lands with rocky areas for roosting.	**Potential.** No cavities within large trees were observed within the study area, though more targeted surveys might reveal such trees. Other roosting habitat is limited given a lack of caves/crevices and accessible buildings. Foraging habitat is present on the site. Nearest documented occurrences are 4.6 miles away, dating to the 1940s. No recent CNDDB occurrences within 10 miles.
Northern California ringtail *Bassariscus astutus raptor*	FP	Chapparal, rocky hillsides and riparian areas. Strongly associated with steep, rocky slopes.	**Not Expected.** No suitable habitat is present within the study area. No CNDDB occurrences within 10 miles.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	Occurs in a wide variety of habitats including grasslands, shrublands, oak woodlands, and forests. Prefers mesic habitats. Roosts in caves, cliffs, rock ledges, tunnels, mines, and man-made structures.	**Not Expected (roosting).** The site does not contain expected roosting habitat given the absence caves, mines, and abandoned buildings. Nearest CNDDB occurrence is approximately 8 miles away.
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	SA	Bare ridge tops, rocky outcrops, thin soils, scattered chaparral, and small annual grasses.	**Not Expected.** Species is considered extirpated from most of its range; only known populations are in the Ohlone wilderness.
Western red bat* *Lasiurus frantzii* [*L. blossevillii*]	SSC	Roosts in trees in a wide variety of habitats between the coast and western Sierra Nevada mountains. Strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore.	**Low Potential.** This species is strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore; suitable habitat is absent from the study area. Nearest CNDDB documentations are approximately 5 miles away, dating to the 1990s. No recent documentations exist in the vicinity.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Hoary bat* *Lasiurus cinereus*	SA	Primarily occurs in deciduous and coniferous forests and woodlands, including areas altered by humans, roosting at the edge of clearings. Foraging habitat includes various open areas, including spaces over water and along riparian corridors.	**Low Potential.** This foliage roosting species may fly over, forage, or roost within the study area on occasion. Nearest CNDDB occurrences are 5-8 miles away, dating to more than 20 years ago.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Occurs in dense woodlands and chaparral throughout the Santa Cruz Mountains and foothills. Build nests which are often the result of work by several generations of woodrats by piling up sticks, rocks, and other available material.	**Not Expected.** Suitable habitat is absent from the project vicinity. East Bay occurrences are generally restricted to steep, wooded hills, which are not present within the study area.
Big free-tailed bat *Nyctinomops macrotis*	SSC	Rugged, rocky habitats in arid landscapes. Habitats include desert shrub, woodlands, and evergreen forests. Typically associated with lowlands. Primary roosts include cliff crevices, and secondary roosts may include tree cavities, caves, and buildings.	**Not Expected.** Species' range within California limited to the south. Lone occurrence in Alameda County thought to be a vagrant
San Joaquin pocket mouse *Perognathus inornatus*	SA	This species inhabits grasslands and blue oak woodlands with friable soils in the foothills and valley bottoms of the Central Valley	**Low Potential.** The study area lacks characteristic friable soils, but there is some potential the species could occur on the site. CNDDB occurrences are present 3-5 miles southeast of the study area, but date to the 1990s or earlier.
Salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, FP	Restricted to saline emergent wetlands of the San Francisco Bay and its tributaries. Primary habitat is pickleweed, but may occur in other salt and brackish marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires high ground to escape high tides and floods.	**Not Expected.** The study area does not provide suitable tidal marsh habitat.
Suisun shrew *Sorex ornatus sinuosus*	SSC	Occurs in tidal and brackish marshes along northern San Pablo and Suisun bays.	**Not Expected.** No suitable habitat in the study area; only documented occurrences are on the north side of the San Francisco Bay.
American badger* *Taxidea taxus*	SSC	Most abundant in drier, open stages of shrub, forest, and herbaceous habitats with friable soils where they can dig burrows.	**Low Potential.** No badger dens have been observed in the study area vicinity and soils are not particularly friable. The nearest documented occurrence in the CNDDB is nearly 9 miles southeast of the site. However, as the species is known from the region, and general habitat requirements are present, there is potential that a badger could dig a den on the site.
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Inhabits open, dry grasslands and scrublands with loose textured soils. Live in dens in friable soils or enlarge smaller holes created by other animals.	**Low Potential**. The on-site grasslands are mostly steep, but may provide marginal suitable habitat for San Joaquin kit fox. The site is mapped as suitable core habitat for the species as modeled in the HCP/NCCP. The site is either along the extreme northern edge, or just outside of the range of this species. CNDDB occurrences 2.6 miles to the south date to the 1990s.

Reptiles and Amphibians			
California tiger salamander – central California DPS *Ambystoma californiense pop. 1*	FT, ST, WL	Primarily found in annual grasslands. Adults spend most of the year in upland subterranean refugia, especially burrows of California ground squirrels and occasionally man-made structures, migrating during rainy nights to vernal pools, seasonal ponds, or stock ponds for breeding. Aquatic larvae seek cover in turbid water, clumps of vegetation, and other submerged debris.	**Potential**. There are numerous documented occurrences of the species in the project vicinity, including multiple breeding ponds. Potential breeding habitat is present within the study area. Portions of the project site are within the known maximum dispersal distance of the species (1.3 miles) from documented breeding ponds, though the Contra Costa Canal is a barrier between the site and those ponds. The study area is not within designated critical habitat for California tiger salamander. The site is mapped as suitable migration and aestivation habitat for the species as modeled in the HCP/NCCP.
Northern California legless lizard *Anniella pulchra*	SSC	Sandy or loose loamy soils under sparse vegetation.	**Not Expected.** The study area does not provide suitable habitat for the species given the absence of natural sandy and loose soils (sand is present only within golf course sand traps). There are no documented occurrences of this species within 10 miles of the site in the CNDDB. The site is not mapped as suitable habitat for the species as modeled in the HCP/NCCP.
California glossy snake *Arizona elegans occidentalis*	SSC	Most common in desert regions of southern California, but can be found north to Mt. Diablo in a variety of habitats including annual grassland.	**Not Expected.** The study area is just outside of the species' northernmost range. Potential habitat exists on site, but the nearest occurrence is from 1958, 7 miles east of the site in the Antioch Dunes. The nearest populations known to be extant are more than 20 miles to the southeast, in the vicinity of Tracy.
Western pond turtle *Emys marmorata*	FPT, SSC	Perennial ponds, deep slow-moving streams, marshes, irrigation ditches, small lakes, and permanent pools along intermittent streams are habitat for this species at 6,000 ft. and below in elevation. Logs, rocks, cattail mats, and exposed banks are required for basking.	**Potential.** Low-quality habitat is present within the study area, in the form of man-made ponds and seasonal stream/swale corridors. Two potential movement corridors are modeled in the HCP/NCCP. Nearest CNDDB occurrences are 3.1 miles away.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Found in chaparral, northern coastal sage scrub, and coastal sage habitats, but also forages in grassland and open woodlands. Grassland habitats are used before and after mating season in the spring. Rock outcrops with deep crevices and abundant rodent burrows are crucial for whipsnakes as overnight dens, as refuges from predators and excessive heat, and for foraging.	**Not Expected.** The study area does not provide optimal habitat for Alameda whipsnake given the absence of chaparral and scrub habitats on or near the study area. In addition, the study area is not located between or near areas of suitable core habitat. The site is not mapped as suitable core or movement habitat for the species as modeled in the HCP/NCCP. The nearest CNDDB documentation is approximately 3.3 miles away.
Coast horned lizard *Phrynosoma blainvillii*	SSC	Inhabits open areas of loose, sandy soil and low vegetation in valleys, foothills, and semiarid mountains. Often found in lowlands along sandy washes with scattered shrubs, along dirt roads, and near ant hills. Occurs in coniferous forest, woodland, riparian, chaparral, and annual grassland habitats in the Sierra Nevada foothills throughout the central and southern California coast.	**Not Expected.** The study area does not provide suitable habitat for the species given the absence of natural sandy and loose soils or significant rock outcrops. The nearest documented CNDDB occurrence of this species is over 6 miles southwest of the study area.

Foothill yellow-legged frog – central coast DPS *Rana boylii pop. 4*	FT, SE	Generally occurs in partially shaded and shallow streams with a rocky substrate in a variety of habitats, including valley-foothill riparian, mixed chaparral, and coastal scrub. Requires aestivation habitat and enough permanent water for larval development.	**Not Expected.** Study Area lacks suitable habitat for the species. The nearest documented CNDDB occurrence of this species is over 6 miles away.
California red-legged frog *Rana draytonii*	FT, SSC	Breeds in perennial and seasonal ponds and quiet pools in slow-moving freshwater streams; shelters in adjacent uplands and shrubby or emergent riparian vegetation. Prefers shorelines with extensive vegetation. Requires permanent or nearly permanent pools for larval development.	**Potential.** There are multiple occurrences of this species documented in the vicinity of the study area, including an occurrence less than one mile southwest of the site (mapped as specific in year 2000). Given the presence of known and potential breeding habitat, and the known maximum dispersal distance of the species (up to 2 miles), much of the study area provides potential upland/aestivation habitat. The study area is not within designated critical habitat for California red-legged frog. The site is mapped as suitable migration and aestivation habitat for the species as modeled in the HCP/NCCP. The nearest documented occurrence is less than one mile away.
Western spadefoot *Spea hammondii*	FPT, SSC	Primarily found in grasslands with shallow temporary pools, but sometimes in valley-foothill hardwood woodlands throughout the Central Valley and foothills.	**Not Expected.** The nearest documented occurrences are >10 miles away, and the site is outside of the species' current range.
Giant garter snake *Thamnophis gigas*	FT, ST	Freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches, primarily for dispersal or migration.	**Not Expected.** The study area does not provide suitable aquatic habitat for giant garter snake. The study area is not modeled as habitat for the species in the HCP/NCCP, and the nearest CNDDB occurrences is nearly six miles to the north, across Suisun Bay.
Crustaceans			
Conservancy fairy shrimp *Branchinecta conservatio*	FE	Large, cool-water vernal pools with moderately turbid water located in the Central Valley.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The only occurrences within 10 miles are on the opposite side of Suisun Bay, at Montezuma Wetlands.
Longhorn fairy shrimp *Branchinecta longiantenna*	FE	Inhabits clear to rather turbid vernal pools. These include clear-water depressions in sandstone outcroppings near Tracy, grass-bottomed pools in Merced County and claypan pools around Soda Lake in San Luis Obispo County.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. There are no documented occurrences within 10 miles of the study area.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Vernal pools, seasonal wetlands, and stagnant ditches that fill with water during fall and winter rains and dry up in spring and summer.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrence is approximately 3.3 miles to the northeast, in an area that has since been developed.
Midvalley fairy shrimp *Branchinecta mesovallensis*	SA	Vernal pools and other seasonally ponded areas.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrence is 9.9 miles away, on the opposite side of Suisun Bay.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	Known habitats range from small, clear, well-vegetated vernal pools to highly turbid, alkali scald pools to large winter lakes.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrences are on the other side of Suisun Bay; other documented occurrences are approximately 6.9 miles east of the study area.

California fairy shrimp *Linderiella occidentalis*	SA	Found in a variety of natural and artificial seasonally ponded habitat types.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrences are approximately 3 miles away on Concord Naval Weapons Station.
Insects			
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	SA	Dried vernal pools and associated flowers.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. Only nearby documentations are from non-specific polygon described only as "Somersville".
Antioch Dunes anthicid beetle *Anthicus antiochensis*	SA	Sand dunes.	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.
Lange's metalmark butterfly *Apodemia mormo langei*	FE	Antioch dunes along the San Joaquin River.	**Not Expected.** Associated with Antioch Dunes. Only remaining habitat is located in Antioch Dunes National Wildlife Refuge 6 miles to the east.
Obscure bumble bee* *Bombus caliginosus*	SA	Relatively humid and often foggy areas, pollinates plants of the pea, heath, and sunflower families.	**Low Potential.** Nearest documented occurrences are from approximately 9 miles away at Mount Diablo State Park. Some potential pollinator resources are present in study area.
Crotch bumble bee* *Bombus crotchii*	SCE	Open grasslands, shrublands, chaparral, desert margins, and semi-urban habitat.	**Low Potential.** Multiple historical occurrences in present Antioch and Mount Diablo State Park. Closest recent occurrence is at Brentwood Lake in iNaturalist. Some potential pollinator resources are present in study area.
Western bumble bee *Bombus occidentalis*	SCE	High elevation meadows, forests, riparian areas in the Sierra Nevada's and cascades, as well as coastal grasslands of northern California.	**Not Expected.** No suitable habitat present in the study area. All nearby occurrences are historical, with the most recent being from 1979.
American bumble bee* *Bombus pensylvanicus*	SA	Nests in long grass, hay, or underground.	**Low Potential.** Multiple historical occurrences are present around Suisun Bay. Some potential pollinator resources are present in study area.
San Joaquin dune beetle *Coelus gracilis*	SA	Sand dunes (Antioch Dunes).	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.
Antioch cophuran robberfly *Cophura hurdi*	SA	Sand dunes (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Monarch butterfly – California overwintering population* *Danaus plexippus plexippus pop. 1*	FC	Found in a variety of habitat types wherever flowering plants can be seen. Require milkweed for reproduction.	**Potential.** Many nearby occurrences, one less than a half mile from study area from iNaturalist. Milkweed, the species' larval host plant, is present within the study area and vicinity.

Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Mature blue elderberry shrubs, particularly in riparian zones.	**Not Expected.** There are no blue elderberry shrubs and no significant riparian habitat present in the study area. No CNDDB documentations exist within 10 miles of project site.
Delta green ground beetle *Elaphrus viridis*	FT	Margins of vernal pools and other seasonal wetlands, especially large 'playa' pools.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. No CNDDB documentations exist within 10 miles of project site.
Antioch efferian robberfly *Efferia antiochi*	SA	Sand dunes (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Redheaded sphecid wasp *Eucerceris ruficeps*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Curved-foot hygrotus diving beetle *Hygrotus curvipes*	SA	Vernal pools.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. Only nearby documentations are from non-specific polygon described only as "Oakley".
Middlekauff's shieldback katydid *Idiostatus middlekauffi*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Molestan blister beetle *Lytta molesta*	SA	Dried vernal pools and associated flowers.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. No CNDDB documentations exist within 10 miles of project site.
Hurd's metapogon robberfly *Metapogon hurdi*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Antioch multilid wasp *Myrmosula pacifica*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Yellow-banded andrenid bee *Perdita hirticeps luteocinctabal*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Antioch andrenid bee *Perdita scitula antiochensis*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Antioch specid wasp *Philanthus nasalis*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.
San Joaquin Valley giant flower-loving fly *Rhaphiomidas trochilus*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.

Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Occurs only in grasslands containing California golden violet (*Viola pedunculata*).	**Not Expected.** No suitable habitat is present nearby; distinct non-listed silverspot butterfly is the only species to currently inhabit Contra Costa County. No CNDDB documentations exist within 10 miles of project site.
Antioch Dunes halcitid bee *Sphecodogastra antiochensis*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Species distribution is limited to Antioch Dunes.
Fishes			
Green sturgeon – southern DPS *Acipenser medirostris pop. 1*	FT	Marine waters along the coasts of CA, OR, and WA. Feed in bays or brackish estuaries in summer. Need freshwater rivers to spawn.	**Not Expected.** There is no suitable aquatic habitat within the study area.
White sturgeon *Acipenser transmontanus*	SSC	Coastal waters of western North America. Found in ocean, estuaries, and large rivers.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Sacramento perch *Archoplites interruptus*	SSC	Extirpated from historic range. Currently lives as introduced species in isolated waterbodies throughout the western US.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Pacific lamprey *Entosphenus tridentatus*	SSC	Oceanic and riverine. Nests in gravel or soft sediment dependent on life stage. Requires cold, clear water for spawning.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Delta smelt *Hypomesus transpacificus*	FT, SE	Endemic to the Sacramento–San Joaquin River Delta.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Western river lamprey *Lampetra ayresii*	SSC	Primarily inhabit rivers and their tributaries. Nests in gravel or soft sediment dependent on life stage. Requires cold, clear water for spawning.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Sacramento hitch *Lavinia exilicauda exilicauda*	SSC	Scattered populations in warm, lowland, waters including clear streams, turbid troughs, lakes, and reservoirs.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Hardhead *Mylopharodon conocephalus*	SSC	Low to mid-elevations in mostly undisturbed and high-quality habitats of larger streams. Primarily in the central valley.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Coho salmon – central California coast ESU *Oncorhynchus kisutch pop. 4*	FE, SE	Coastal watersheds of central California north to Alaska.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Steelhead – central California coast DPS *Oncorhynchus mykiss irideus pop. 8*	FT	Found along much of the coast of western North America an associated streams to spawn.	**Not Expected.** There is no suitable aquatic habitat within the study area.

Chinook salmon – Central Valley fall/late fall-run ESU *Oncorhynchus tshawytscha pop. 13*	SSC	Spawn in the Sacramento-San Joaquin River system. Migrate upstream as adults from July through December and spawn from early October through late December.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Chinook salmon – Central Valley spring-run ESU *Oncorhynchus tshawytscha pop. 11*	FT, ST	Spawn in the Sacramento-San Joaquin River system. Enter the Sacramento River from late March through September and spawn in the fall.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Chinook salmon – Sacramento River winter-run ESU *Oncorhynchus tshawytscha pop. 7*	FE, SE	Spawn in the Sacramento-San Joaquin River system. Pass under the Golden Gate Bridge from November through May and pass into the Sacramento River from December through early August.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	San Francisco Estuary, river-edge and floodplain.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Longfin smelt *Spirinchus thaleichthys*	FC, ST	Coastal lagoons, bays, estuaries, sloughs, tidal areas.	**Not Expected.** There is no suitable aquatic habitat within the study area.

Species marked with "*" have potential to occur but are not covered by the HCP/NCCP.
Species with potential to occur are highlighted

[1] Status definitions:

FT – Federal Threatened;
FE – Federal Endangered;
FPT – Federal Proposed Threatened;
FC – Federal Candidate;
ST – State Threatened;
SE – State Endangered;
SCE – State Candidate Endangered;
BCC – USFWS Bird of Conservation Concern;
SSC – CDFW Species Special Concern;
FP – CDFW Fully Protected;
WL – CDFW Watch List;
SA – CDFW Special Animals List (2023).

Federally and/or State Listed Species

California Red-legged Frog

California red-legged frog (CRF) is a federally listed Threatened species and a CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

Breeding takes place in streams, deep pools, backwaters within streams and creeks, ponds, marshes, and stock ponds. CRF can occur in ephemeral ponds or permanent streams and ponds; however, populations probably cannot persist in ephemeral streams (Jennings and Hayes 1985). Breeding ponds are typically deep (greater than 2 feet) with still or slow-moving water and dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988), although CRF have also been observed in shallow sections of streams and ponds that are devoid of vegetative cover. Habitats with the highest densities of CRF are deep-water ponds with dense stands of overhanging willows and a fringe of cattails (Jennings 1988; Rathbun et al. 1993). CRF breeds during the winter and early spring, from as early as late November through April and May. From late November to late April, adult CRF are typically found in or near the breeding ponds (Hayes and Jennings 1989, 1994; Jennings 1988). On rainy nights during this time, however, they may leave the ponds and move up to 300 feet away (Zeiner et al. 1988). Starting in late spring, CRF often move out of the breeding ponds, at first staying nearby but often moving farther away into nearby moist locations, grasslands with squirrel burrows, or similar habitats (under logs, debris, etc.). Generally, these dispersal areas or corridors have mesic (moist) cover, such as would be found in a riparian zone, but CRF have also been documented dispersing through areas with sparse vegetative cover. Dispersal patterns are dependent on habitat availability and environmental conditions (Scott and Rathbun 1998). CRF are likely to remain near the breeding ponds if sufficient moist habitat and cover are available, but may also move significant distances if this habitat is not available or if they are dispersing to other ponds. If water is not available, summer habitat could include spaces under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks. California red-legged frogs also use small mammal burrows and moist leaf litter for refuge habitat (Jennings and Hayes 1994). When the rains begin in late fall, CRF move back into the breeding ponds.

Occurrence in the Vicinity of the Study Area

CRF have been documented at multiple locations in the vicinity of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. There are three documented occurrences within two miles of the study area, including one occurrence that is less than one mile to the southwest—a CNDDB occurrence from the year 2000 with precision coded as ‘Specific.’ The study area is not within designated critical habitat for California red-legged frog—the nearest critical habitat is approximately eight miles south of the site.

Potential Occurrence within the Study Area

The study area lacks any ponds or pools that hold water long enough to support breeding CRF. During a reconnaissance-level nighttime spotlight survey, no CRF were detected in any features in the study area. Reconnaissance surveys of the nearest ponds to the study area (also on the former golf course, but outside of the 250-foot buffer) detected bullfrogs (*Lithobates catesbeiana*) and mosquito fish (*Gambusia* sp.), which are known to prey upon and compete with CRF.

Given the close proximity of a documented occurrence of CRF, the species could utilize upland habitats within study area for dispersal and/or refugia (i.e., large soil cracks and/or mammal burrows).

Potential Project Impacts

The entire project site is within dispersal distance of a documented breeding pond. The proposed project would eliminate or degrade upland habitat. Should construction activities occur when frogs are present within the study area, individual CRF could be harmed by construction activities. Recommended project design measures (PDMs) to reduce impacts to CRF are provided in **Section 11**. The PDMs are based on the recommendations in the HCP/NCCP.

California Tiger Salamander

California tiger salamander – Central California Distinct Population Segment (DPS) is a federally and state listed Threatened species. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

CTS is a relatively large, mostly terrestrial salamander. CTS is restricted to relatively deep vernal pools, stock ponds, or similar habitats. Compared to other amphibians, its larvae take a long amount of time to transform into juvenile adults and thus require relatively lengthy hydroperiods (typically around three months). CTS is relatively secretive and difficult to find outside of the breeding ponds or during its nocturnal breeding migrations, which begin with the first heavy rains of the season in November or December. From late November to early March, sexually mature adults move at night from underground refugia (such as squirrel burrows) to breeding ponds, and individuals may move significant distances—as much as 1.3 miles—from a breeding pool (USFWS 2015). Breeding occurs from late winter into early spring.

After breeding, the adults return to their underground burrows or other refugia. The eggs then hatch and the resulting gilled aquatic larvae metamorphose into juveniles that also move at night into terrestrial habitats (Zeiner et al. 1988). Beginning in late spring and early summer, juveniles migrate from the ponds into refugia where they aestivate (similar to hibernation). Juveniles can travel up to 1 mile from their breeding site to upland refugia (Austin and Shaffer 1992). Juvenile CTS typically spend up to four to five years in their upland burrows before they reach sexual maturity and migrate to breeding ponds for the first time (Trenham et al. 2000).

While the maximum documented dispersal distance of CTS is 1.3 miles (USFWS 2015), this distance is normally less when there are large numbers of refugia sites in close proximity to breeding sites. Trenham and Shaffer (2005) found that 50-95% of adult CTS were trapped between 150 (0.1 mile) to 620 meters (0.4 mile) from a breeding pond, respectively. A more recent study (Orloff 2011), which was conducted in the project vicinity, found that the majority of salamanders were captured at least 800 meters (0.5 mile) from the nearest breeding pond while a smaller number of salamanders were captured as far as 2.2 kilometers (1.4 miles) from the nearest breeding pond.

Occurrence in the Vicinity of the Study Area

CTS have been documented at numerous locations in the vicinity of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. The documented occurrences

are primarily south of the study area, within the undeveloped open grasslands. There is one occurrence within 1.3 miles of the study area, which is listed as a 'Specific' location and includes either larvae or juvenile individuals, suggesting it is a breeding site. These occurrences are separated from the study area by the Contra Costa Canal, which represents a significant barrier to movement.

Potential Occurrence in the Study Area

At least one pond within the study area provides potential breeding habitat for CTS. During hydrologic surveys conducted during the 2019 wet season, a golf course landscape pond located in the northern portion of the study area (**Figure 10**) remained ponded from February to June. This long hydroperiod, combined with other parameters noted within the pond (e.g., potential prey species for CTS and no predators), suggests that the pond could support breeding CTS. The hydrologic surveys did not include targeted surveys for the species, so it is unknown whether the pond is occupied. Other ponded basins within the study area provide sub-optimal breeding conditions for CTS, either because they do not hold water long enough (i.e., well under three months) or because biotic conditions are not typically associated with CTS breeding (e.g., due to dense perennial marsh vegetation and/or the presence of predators such as mosquito fish and bullfrogs—see CRF section above).

Regardless of whether CTS are breeding within ponds in the study area, given the proximity of nearby breeding ponds, and the known maximum dispersal distance of the species (1.3 miles), nearly the entire study area provides potential upland/aestivation habitat. CTS could utilize the study area as dispersal habitat, and could use the mammal burrows and soils cracks throughout much of the study area as aestivation habitat. The study area is not within designated critical habitat for California tiger salamander. The site is mapped as suitable migration and aestivation habitat for the species as modeled in the HCP/NCCP.

Potential Project Impacts

Potential CTS breeding habitat within the study area is fairly limited, though most of the entire study area provides potential upland refuge/aestivation and dispersal habitat. The pond which provides potentially-suitable CTS breeding habitat is not within the proposed project work area; however, development of the study area would reduce upland habitat available to CTS breeding in this other nearby ponds. Individual CTS may be present in subterranean refuge habitat on portions of the study area and could be harmed by construction activities. Following any development of the site, CTS could still move on or off the site during breeding migrations and could be subject to harm or mortality while crossing roads. As with CRF, PDMs based on the HCP/NCCP are provided below.

San Joaquin Kit Fox

San Joaquin kit fox (SJKF) is a federally listed Endangered species and state listed Threatened species. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

SJKF is known for its use of and dependence upon dens, which are typically found in enlarged ground squirrel or other species' dens (O'Farrell 1980). However, SJKF may also be found in manmade structures, including abandoned pipelines, banks in roadbeds or sumps, and culverts

(USFWS 1998). Dens are critical for protection from predators, but also provide shelter from inclement weather and thermal regulation. SJKF typically occupies a number of dens at any one time and may change dens often throughout the year. This species forages primarily for small mammals and insects in annual grasslands, pasturelands, cultivated fields, and along the edges of orchards.

Occurrence in the Vicinity of the Study Area

The study area is located just north of the known range of the SJKF. However, the HCP/NCCP identifies the area and vicinity as being suitable core habitat for the species. The closest documented occurrence of this species is approximately 2.6 miles southeast of the study area; though this occurrence was documented in 1992 and its location is listed as 'Non-specific.' As discussed in *Conservation of San Joaquin Kit Foxes in Western Merced County, California* prepared by the California State University Stanislaus Endangered Species Recovery Program (May 2009), the current status of SJKF in the northern range is unclear:

> *The status of kit foxes from Santa Nella northward is unclear. This region is commonly referred to as the "northern range", and even the historical distribution and abundance of kit foxes in this region is uncertain. Grinnell et al. (1937) found little evidence of kit foxes north of Merced County. They speculated that the historic range may have extended further to the north along the west side of the San Joaquin Valley, but offered no information to support this other than the location for the type specimen near Tracy in San Joaquin County (Merriam 1902).*
>
> *An extensive survey was conducted throughout the northern range during May 2001-February 2003. This effort likely constitutes the most comprehensive survey conducted to date in the northern range. Trained scat-detection dogs were used to survey 213 km of transects on 24 different properties. Of 17 fox scats found and genetically identified to species, all were from red foxes (Smith et al. 2006). No kit fox scats were located.*
>
> *Available data offers little support for the presence of resident kit fox populations in the northern range. Currently, kit fox presence in the northern range may consist primarily of occasional dispersing animals from populations to the south of Santa Nella. It is conceivable that such animals might even persist for multiple years resulting in reports of sightings. However, there have been no recent and indeed only two historical records of documented reproduction by kit foxes in the northern range. If self-supporting kit fox populations are not present in the northern range, then this region could be functioning as a dispersal sink, as suggested by Smith et al. (2006).*

Potential Occurrence in the Study Area

The study area is located to the north of the commonly accepted range of the species and there have been no recent documented occurrences in the study area vicinity. Therefore, it is considered unlikely that the species would occur within the study area. However, the potential of a kit fox to occasionally wander outside of its expected range and to occur within the study area cannot be completely ruled out.

Potential Project Impacts

The available evidence indicates that a resident or breeding SJKF population does not occur on or near the study area, and that potential use of the study area and surrounding area by the species would be limited to very occasional dispersal. Should an individual SJKF move through the project area during the construction period, the animal could be harmed. In addition, while considered unlikely, an individual SJKF could also temporarily occupy a den within the study area. In addition to the potential loss of habitat, if the species is present construction activities could result in the loss of one or more kit foxes. PDMs for this species are provided in **Section 11**.

Tricolored Blackbird

Tricolored Blackbird is listed as Threatened under CESA, and is a USFWS BCC and CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

This species typically nests in large colonies in dense stands of cattails or tules in freshwater emergent wetlands. Tricolored Blackbird has also been observed nesting in dense stands of willows, blackberry, wild rose, and tall herbs (Zeiner et al. 1990). It is found throughout the Central Valley and along the south coast of Sonoma, and forages in grasslands, cropland, and along edges of ponds for insects, seeds, and grains. Tricolored Blackbirds have three basic requirements for selecting their breeding colony sites: open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony (Hamilton et al. 1995; Beedy and Hamilton 1997, 1999). There are no mapped occurrences of Tricolored Blackbird in the vicinity of the study area, though the study area is within mapped primary foraging habitat by the HCP/NCCP.

Occurrence in the Vicinity of the Study Area

The nearest occurrence of Tricolored Blackbird is 7.2 miles north of the study area. This occurrence is from 2014 and is north of the Suisun Bay. The area where the occurrence is located is predominately in a wetland/riparian zone. Though the study area is near the Suisun Bay, there's marginal wetland/riparian habitat for the species in the study area.

Potential Occurrence in the Study Area

The two perennial wetlands within the study area include small stands of cattails, and there are a few small stands of willows within the study area. However, these stands are too small to provide suitable nesting habitat for Tricolored Blackbird. Open areas within the study area provide potential foraging habitat.

Potential Project Impacts

The study area provides marginal foraging habitat for Tricolored Blackbird. The proposed project would eliminate or degrade this habitat. Should construction activities occur when birds are present within the study area, individual Tricolored Blackbirds could be disturbed by construction activities. PDMs for this species are provided in **Section 11**.

Western Pond Turtle

Western pond turtle is Proposed for listing as Threatened under ESA, and is a CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.

This turtle primarily inhabits aquatic habitats, including ponds, slow moving streams, lakes, marshes, and canals. The species frequently basks on logs or other objects out of the water. Western pond turtles also require upland oviposition (i.e., egg-laying) sites in the vicinity (typically within 200 meters, but as far as 400 meters) of the aquatic site. Mating typically occurs in late April or early May and most oviposition occurs during May and June, although some individuals may deposit eggs as early as late April and as late as early August (Rathbun et al. 1992). Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed, dry, silt or clay soils (Rathbun et al. 1992; Holland 1994; Reese and Welsh 1997).

"Movement Habitat" is documented adjacent to the study area by the HCP/NCCP. However, in reality, there is limited aquatic habitat within the study area, as there are no perennial ponds or streams present. The closest documented occurrence of the species is approximately three miles northeast of the study area. There are no documented occurrences in the hills surrounding the site, and the site is separated by dense urban and suburban development from the documented occurrences within the lowlands north of the study area. Project development could interrupt potential movement habitat for this species, and if present, the species could be harmed or disturbed by construction activities. PDMs consistent with East Contra Costa County HCP/NCCP conservation measures for this species are provided in **Section 11**. Note that because the East Contra Costa County HCP/NCCP includes a "no surprises" provision, no additional measures will be required even if Western pond turtle becomes state or federally listed.

Burrowing Owl

Burrowing Owl is a USFWS BCC and CDFW SSC. In March 2024, CDFW received a petition to list the species under CESA. CDFW's review of the petition, which concluded in August 2024 (see https://fgc.ca.gov/cesa#wbo), concluded that "there is sufficient scientific information to indicate that … petitioned action(s) to list the western burrowing owl as threatened or endangered may be warranted" and recommended that the state Fish and Game Commission accept the petition for further consideration. This species is covered by the East Contra Costa County HCP/NCCP.

Burrowing Owl is a small, ground-dwelling owl that lives in open, dry grasslands, agricultural and range lands, and desert habitats associated with burrowing mammals. Burrowing Owls nest and shelter in ground squirrel and other suitable small mammal burrows or artificial structures (Poulin 2020). The species prefers areas of short grass or bare ground and few trees to reduce the potential for predators to hide near the nest or foraging grounds (Poulin 2020).

The species is known from the vicinity of the study area—the nearest CNDDB occurrence is approximately 2.2 miles west of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. Furthermore, ground squirrel burrow complexes were observed within the site. However, no evidence of Burrowing Owls was observed during reconnaissance-level habitat and wildlife surveys or other surveys within the study area. Regardless, focused surveys may result in documentation of this species within the study area. Project development

would destroy or degrade potential habitat for this species, and if present, the species could be harmed or disturbed by construction activities. PDMs consistent with East Contra Costa County HCP/NCCP conservation measures for this species are provided in **Section 11**. Note that because the East Contra Costa County HCP/NCCP includes a "no surprises" provision, no additional measures will be required even if Burrowing Owl becomes state or federally listed.

Crotch's Bumble Bee

Species Profile

Crotch's bumble bee is a CESA candidate Endangered species. The bee has a hotter and dryer climactic range than other bee species. Crotch's bumble bee lives in grasslands and shrublands and found predominately in Southern to Central California (LPFW n.d.). There are, however, historical occurrences of the bee near the study area. The bee is a short-tongued bee, meaning the flowers the bee feeds from are specific. Examples include milkweeds, dusty maidens, lupines, medics, phacelias, sages, clarkias, poppies, and wild buckwheats (LPFW n.d.). These bees nest in underground colonies or above ground in tufts of grass, old bird nests, rock piles, and cavities in dead trees (LPFW n.d.). While the grasslands offer marginal habitat for Crotch's bumble bee, the species has potential to be found in the study area and project-related disturbance could impact the species.

Occurrence in the Vicinity of the Study Area

The nearest occurrence of the species according to the CNDDB is 4.8 miles to the east of the study area in Antioch. This occurrence is from 1926. Next closest occurrence is 7.7 miles south of the study area around Mt. Diablo from 1951. Both areas have similar habitat to the study area.

Potential Occurrence in the Study Area

The study area provides suitable grassland habitat for the species and plants accessible to short-tongued bees. Specifically, milkweed and multiple species of lupine provide food for the bee. Though the occurrences in the vicinity are historical, the plant species present could provide enough foraging habitat for the bee.

Potential Project Impacts

With there being loss of grassland habitat, this could impact negatively impact the bee. Crotch's bumble bee is also a ground nester so any ground disturbing activities could negatively impact the species. The bee could also be disturbed by construction activities if they are conducted when the bee is in flying season. PDMs for this species are provided in **Section 11**.

Bald Eagle

Species Profile

Bald Eagle is state listed as Endangered and is a CDFW Fully Protected species. This species is not covered by the East Contra Costa County HCP/NCCP.

Bald Eagles have a wingspan of 168-244 centimeters and have very distinct plumage, with its body a dark brown and head, tail and tail coverts being a stark white (Buehler 2022). The species is found throughout California, predominately near large bodies of water where the bird forages. The

species breeds in woodlands and is mainly found near water, though it can be found in more arid areas depending on prey availability. The Bald Eagle roosts in trees at least 50 meters away from their foraging habitat (Buehler 2022).

Occurrence in the Vicinity of the Study Area

Most Bald Eagle occurrences in the state are in northern California; there are no documented nesting occurrences of the species within 10 miles of the project site.

Potential Occurrence in the Study Area

The study area provides limited suitable foraging habitat for the species in the form of grassland. Scattered mature trees provide limited suitable nesting habitat. Nonetheless, a conservative evaluation is that Bald Eagles could forage or nest in the study area.

Potential Project Impacts

Project-related disturbance could potentially impact the onsite foraging and roosting habitat for Bald Eagle. PDMs for this species are provided in **Section 11**.

Other Special-status Species Covered by the HCP/NCCP

Golden Eagle

Golden Eagle is a CDFW Fully Protected species. This species is covered by the East Contra Costa County HCP/NCCP.

Golden Eagle is a resident and migrant throughout California, except for the Central Valley. Its habitat typically includes foothills, mountain areas, sage-juniper flats, and desert, and the species utilizes secluded cliffs with overhanging ledges and large trees for cover (Katzner 2020). Nests are constructed on cliffs and in large trees in open areas.

The study area is within modeled habitat for the species by the HCP/NCCP. The species has been observed foraging nearby at the Concord Naval Weapons Station, approximately 3.8 miles southwest of the study area. The study area provides suitable foraging habitat, and there are a limited number of large, mature trees that could provide nesting habitat. Project-related disturbance could potentially impact the onsite foraging and nesting habitat for Golden Eagle. PDMs for this species are provided in **Section 11**.

~~**Western Pond Turtle**~~

~~Western pond turtle is a CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.~~

~~This turtle primarily inhabits aquatic habitats, including ponds, slow moving streams, lakes, marshes, and canals. The species frequently basks on logs or other objects out of the water. Western pond turtles also require upland oviposition (i.e., egg-laying) sites in the vicinity (typically within 200 meters, but as far as 400 meters) of the aquatic site. Mating typically occurs in late April or early May and most oviposition occurs during May and June, although some individuals may deposit eggs as early as late April and as late as early August (Rathbun et al.~~

~~1992). Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed, dry, silt or clay soils (Rathbun et al. 1992; Holland 1994; Reese and Welsh 1997).~~

~~"Movement Habitat" is documented adjacent to the study area by the HCP/NCCP. However, in reality, there is limited aquatic habitat within the study area, as there are no perennial ponds or streams present. The closest documented occurrence of the species is approximately three miles northeast of the study area. There are no documented occurrences in the hills surrounding the site, and the site is separated by dense urban and suburban development from the documented occurrences within the lowlands north of the study area. Project development could interrupt potential movement habitat for this species, and if present, the species could be harmed or disturbed by construction activities.~~ ~~PDMs for this species are provided in **Section 11**.~~

~~**Burrowing Owl**~~

~~Burrowing Owl is a USFWS BCC and CDFW SSC.~~ ~~This species is covered by the East Contra Costa County HCP/NCCP.~~

~~Burrowing Owl is a small, ground-dwelling owl that lives in open, dry grasslands, agricultural and range lands, and desert habitats associated with burrowing mammals. Burrowing Owls nest and shelter in ground squirrel and other suitable small mammal burrows or artificial structures (Poulin 2020). The species prefers areas of short grass or bare ground and few trees to reduce the potential for predators to hide near the nest or foraging grounds (Poulin 2020).~~

~~The species is known from the vicinity of the study area—the nearest CNDDB occurrence is approximately 2.2 miles west of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. Furthermore, ground squirrel burrow complexes were observed within the site. However, no evidence of Burrowing Owls was observed during reconnaissance-level habitat and wildlife surveys or other surveys within the study area. Regardless, focused surveys may result in documentation of this species within the study area. Project development would destroy or degrade potential habitat for this species, and if present, the species could be harmed or disturbed by construction activities.~~ ~~PDMs for this species are provided in **Section 11**.~~

Special-status Species Not Protected by the HCP/NCCP

Other Special-status Birds

The following special-status bird species (which are not covered by the HCP/NCCP) could nest and/or forage within the study area:

- **Cooper's Hawk** is a CDFW Watch List species. Cooper's Hawks are crow-sized raptors that breed in forests throughout North America. Sexes have similar plumage with males being noticeably more colorful (Rosenfield 2020). The hawk is found in deciduous, mixed and conifer forests and suburban and urban areas. The hawk hunts small to medium-sized songbirds and doves, while having a higher proportion of mammals in their diet in western states (Rosenfield 2020). The species is found year-round in California. The study area provides marginally suitable habitat for nesting and suitable habitat for foraging. This species was observed foraging within the vicinity of the Study Area during VNLC surveys.

- **Grasshopper Sparrow** is a CDFW SSC. The species inhabits grasslands and nests on the ground. The nest is a well-concealed open cup on the ground under vegetation. They forage on the ground in vegetation, mainly eating insects, especially grasshoppers, as well as seeds (Dobkin and Granholm 2008). This species could nest and forage within the study area.

- **Short-eared Owl** is a USFWS BCC and CDFW SSC. Short-eared Owls are a medium-sized owl with a wingspan of 95-110 centimeters with plumage that is dorsally mottled brown and buff (Wiggins 2020). The species is a ground nester that can be found in marshes, grasslands, and tundra throughout North America. Small mammals make up most of the species' diet and population dynamics fluctuate based on their prey (Wiggins 2020). The bird is active both day and night and tends to hunt low to the ground. In California, the species is an uncommon and irregular breeder around the San Francisco Bay Area. The species could nest and forage in the study area.

- **Ferruginous Hawk** is a CDFW Watch List species. The Ferruginous Hawk is a large, narrow-winged hawk. It winters in open habitats, including deserts and grasslands, between September and April in the Modoc Plateau, Central Valley, and Coast Ranges (Zeiner et al. 1990), but it does not nest in California. This hawk prefers low elevations and avoids canyons and forests (Bechard and Schmutz 1995) and forages over open areas for birds, reptiles, amphibians, mice, and ground squirrels. It is an uncommon winter resident and migrant in northern California, and a more common winter resident in southwestern California (Garrett and Dunn 1981). The species does not nest in the project region but could occasionally forage within the study area in the winter.

- **Northern Harrier** is a USFWS BCC and CDFW SSC. Northern Harriers are slender, white-rumped raptors found in tundra, grasslands, and weedy agricultural fields (Smith 2020). The bird can also be found in fresh and saltwater marshes. The species is a ground nesting bird, nesting in dense clumps of vegetation either alone or in loose colonies. It primarily feeds on small to medium sized mammals and birds (Smith 2020). Northern Harrier is most active during dawn and dusk and can also be found in dry upland habitat. The species could nest and forage in the study area.

- **White-tailed Kite** is a CDFW Fully Protected species. White-tailed Kite typically nests in trees, often in isolated stands, surrounded by open foraging habitat. Nests are built on top of oaks, willows, or other dense, broad-leaved deciduous trees within partially cleared or cultivated fields, grasslands, marsh, riparian, woodland, and savanna habitats (Polite 2008). This species was observed foraging within the study area, near the southern edge. The study area also provides suitable nesting habitat for the species.

- **California Horned Lark** is a CDFW Watch List species. The species typically nests in open country, tundra, grassland, and agricultural areas that contain relatively barren ground with short grass and scattered bushes (Green 2008). This subspecies lives year-round throughout most of California, except in the Sierra Nevada and some parts of northwestern California, where it is only a migrant (Green 2008). In the winter, it can be found in large flocks that often include other species of birds. This species could nest and forage in the on-site grasslands.

- **Merlin** is a CDFW Watch List species. Merlins are small falcons with wingspans between 53-73 centimeters (Warkentin 2020). The species can be found in a variety of habitats but tends to avoid dense forests and steep, mountainous areas. The species is most associated with coniferous boreal forests, deciduous parkland, shrub steppe, moorland, and open prairies (Warkentin 2020). During the bird's wintering period, they may also be found in tidal flats and marshes, cultivated areas and urban settings. The species hunts small to medium sized birds, usually under 50 grams (Warkentin 2020). Since the bird winters in California, it is unlikely there will be breeding pairs in or around the study area. The study area, however, does provide suitable foraging habitat for the species.

- **Prairie Falcon** is a CDFW Watch List species. Prairie Falcons are large, pale brown falcons with wingspans of around 90-113 centimeters (Steenhof 2020). The species is found in open areas and nests in cliffs or bluffs. The falcon eats primarily ground squirrels and horned larks, while also eating lizards and other species of passerines, shorebirds, and small rodents (Steenhof 2020). In California, the bird breeds throughout the state and winters in the state. The study area does not provide suitable nesting habitat but does provide suitable foraging habitat for the species.

- **American Peregrine Falcon** is on the CDFW Special Animals list, and was formerly listed as Endangered under ESA and CESA (now delisted)**.** American Peregrine Falcons are medium to large sized falcons with a wingspan of 79-114 centimeters (White 2020). The species is found all over the globe but is a year-round resident in California. The falcon prefers open spaces over confined areas. The species nests on cliffs but may also nest on hillsides and artificial structures. The bird hunts other smaller birds, along with small mammals like bats and rarely amphibians and reptiles (White 2020). The species prefers to forage in open habitat. The study area provides marginal nesting and foraging habitat for the species.

- **Loggerhead Shrike** is a CDFW SSC. Loggerhead Shrike is a predatory passerine bird species. It is a resident in the lowlands and foothills throughout California, where its habitat consists of open spaces such as grasslands with scattered trees, shrubs, utility lines, and/or fences for perching. Loggerhead Shrikes typically nest in densely vegetated trees and shrubs (Granholm 2008). This species could nest and forage within the study area.

- **California Gull** is a USFWS BCC and CDFW Watch List species. California Gulls are medium-sized white-headed gulls with definitive plumage, a combination of dark gray mantle, yellow-green legs, and black and red spots on gonys (Winkler 2020). The species forages in open habitat and nests near natural lakes, rivers, or reservoirs. Foraging habitat can be as far away as 60 km from the nesting colony (Winkler 2020). The species is an opportunistic feeder. Large amounts of California Gulls can be found in the San Francisco Bay. While the study area does not provide suitable nesting habitat, it does provide suitable foraging habitat for the species.

The trees, grasslands, and shrubs within the study area provide nesting habitat for numerous bird species. Should an active nest of these species be present, construction activities could result in the loss or abandonment of the nest. In addition, project-related disturbances would result in the loss of grassland foraging habitat potentially used by these species. Therefore, the loss of a nest of

a special-status bird species and associated foraging habitat is considered a potentially significant impact. In addition, the active nests of most native bird species are protected by the Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503). PDMs for these species are provided in **Section 11**.

Other Migratory Birds

Other birds protected under the MBTA have potential to nest in the study area. Tree or vegetation removal could result in direct loss of birds protected by the MBTA. Additionally, construction-related noise could result in the abandonment of an active nest adjacent to the project area. PDMs for these species are provided in **Section 11**.

American Badger

American badger is a CDFW SSC. This species is not covered by the East Contra Costa County HCP/NCCP.

American badgers range throughout California but are most abundant in drier, open stages of shrub, forest, and herbaceous habitats, particularly with friable soils where the badgers can dig burrows. No badger occurrences are documented in the CNDDB in the vicinity of the study area, and no potential dens were observed within the study area. In addition, soils within the study area are not particularly friable—soils are predominantly of clay texture. However, the species is known from the broader vicinity, and based on overall habitats present, there is some potential that a badger could be present in the study area. If present in a den, the species could be harmed by construction activities. In addition, the proposed project would result in the loss of grassland habitat potentially used by the species. PDMs for this species are provided in **Section 11**.

San Joaquin Pocket Mouse

San Joaquin pocket mouse is included on the CDFW Special Animals List. This species is not covered by the East Contra Costa County HCP/NCCP.

This species inhabits grasslands and blue oak woodlands with friable soils in the foothills and valley bottoms of the Central Valley. The study area does not contain the characteristic friable soils required by the species, and therefore, onsite habitat is considered of lower quality. Based on the CNDDB, this species has been documented approximately 3.3 miles southeast of the study area. Given that the species is known from areas with habitat connectivity to the study area, it could occur on the site. PDMs for this species are provided in **Section 11**.

Obscure Bumble Bee

Obscure bumble bee is on the CDFW Special Animals list. The bee is found in grasslands and shrubland. The species is found from southern California to southern British Columbia with most occurrences being found along the coast range (Hatfield 2014). Specifically, the bee inhabits grassy coastal prairies and coast range meadows. The species nests underground and in abandoned bird nests. The species is considered a medium-long tongued species of bee (Hatfield 2014). The bee is seeing a decline in populations and is threatened by habitat loss and extensive development in California. The species is not adaptable to heavy agricultural areas and is also threatened by pesticides, disease, and competition with non-native bees (Hatfield 2014). The study area provides marginal habitat for the species to nest and provides suitable foraging habitat. PDMs for this species are provided in **Section 11**.

American Bumble Bee

American bumble bee is on the CDFW Special Animals list. The bee is found throughout the US, Mexico, and very southern British Columbia. The species is found in open farmlands and fields throughout its range (Hatfield 2015). The species nests on the surface among tall grass but can be an underground nester. The species is also one of the more aggressive bumble bee species, most likely as an adaptation to protect their colonies (Hatfield 2015). Populations of the species are in decline and are threatened by pathogens, low genetic diversity, and pesticide use (Hatfield 2015). The study area provides marginal grassland and foraging habitat for the species. PDMs for this species are provided in **Section 11**.

Monarch Butterfly

Monarch butterfly is an ESA candidate species. The species is found throughout California feeding on various flowers but only lays eggs on milkweed (*Asclepias* sp.) stands. Monarch butterflies can be found roosting in eucalyptus, Monterey pines and Monterey cypress trees (USFWS 2023). In grasslands the species prefers to be in grasslands with predominately grass and forbs. With milkweed present in and around the study area, there is potential for monarch butterflies and their larvae to be present. PDMs for this species are provided in **Section 11**.

Special-status Bats

- **Pallid bat** is a CDFW SSC. Pallid bats are found in various habitats throughout California but are mainly found in dry, open habitats like grasslands. The species has three distinct types of roosts, the day roost, night roost and hibernation roost (Zeiner 1990). The species may also be found in shrublands, mixed conifer forests and woodlands. The species day roosts under bridges, in caves, crevices, mines, and occasionally hollow trees. Night roosts tend to be open sites such as porches or open buildings. The bat forages 1 to 3 miles from its day roost (Zeiner 1990). The bat hunts hard-shelled invertebrates found on the ground or while flying. The species is very susceptible to roost disturbance. The study area provides marginal roosting habitat for the species and provides suitable foraging habitat. While bridges are present in the study area (over the Contra Costa canal), these are low over the water, and thus unsuitable for bat roosting.

- **Western red bat** is a CDFW SSC. Western red bat roosts primarily in trees, but this species forms nursery colonies. The western red bat is strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore (Pierson et al. 2004). Limited potential roosting habitat for this species is present in the form of a few mature riparian trees.

- **Hoary bat** is included on the CDFW Special Animals List. The hoary bat is a solitary rooster and it roosts exclusively in trees. It could potentially roost within the study area in trees that have potential to be removed. If the species was to occur on the site, it is likely that it would abandon its tree roost at the onset of construction and/or tree removal and relocate to another tree in the area.

PDMs for these species are provided in **Section 11**.

6.3 Special-status Plants

Special-status plant taxa documented in the vicinity of the study area are listed in **Table 3**. The table provides a summary of the listing status and habitat requirements of special-status plant species that have been documented in the project vicinity and also notes whether there is suitable habitat with the potential to support each taxon in the study area. This table also includes an assessment of the likelihood of occurrence of each of these species in the study area. The evaluation of the potential for occurrence of each species is based on the proximity of occurrences (if any), habitat suitability, and, for HCP/NCCP no-take taxa, field observations (the study area was surveyed for these taxa).

As indicated in **Table 3**, the study area provides limited or no habitat for special-status plant species known from the region. The study area is dominated by the former golf course, which features artificial soils over extensive areas and was intensively managed for over seven decades. With the exception of a few planted oaks and remnant cottonwoods and willows, all of the dominant plant species throughout the golf course area are exotic. Once golf course management ceased, nearly all areas where artificial soils predominate have been colonized by invasive weeds, which at the time of habitat surveys, formed tall, dense stands. Steeper slopes within the fenced portion of the study area, which were never managed as part of the golf course, feature semi-natural habitats, with scattered planted trees and un-grazed annual grassland. The grasslands and understory areas are dominated by tall and dense exotic grasses as well as scattered invasive weeds. As with the majority of the study area where native soils remain, there are localized areas of heavy clay soils, but the soils are otherwise unspecialized—they are not derived from serpentine or limestone rock, and are not sandy, gravely, or alkaline. In general, where such areas are not actively managed for habitat values, there is very limited potential for special-status plants to occur. However, the southern portion of the study area that is outside of the fencing supports a moderate cover of native plant species, including a number of showy wildflowers (see **Section 5.3** and **Appendix A**).

Three botanical surveys were conducted on April 12, May 19, and July 12, 2023 throughout the study area, focusing on less disturbed habitats occurring on native soils. The botanical survey was scheduled to optimize the potential to detect HCP/NCCP no-take plants and other special-status plant species. None of the no-take taxa, nor any other special-status plants, were documented within the study area. The potential of each taxon listed in **Table 3** to occur in the study area, taking into consideration factors such as regional distribution, habitat quality, and other factors, is further discussed below.

In general, take of these species is not expected to occur based on the limited habitat availability, and the lack of detections during the surveys. PDMs for these species (including additional surveys, if appropriate) are provided in **Section 11**.

TABLE 3. Special-status Plants Documented in the Vicinity of the Study Area.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Amsinckia grandiflora large-flowered fiddleneck (Boraginaceae)	annual herb	FE/CE/ 1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: none; 885-1,805 feet; (March) April-May	**Not Expected.** All natural populations in Contra Costa County have been extirpated. Suitable hill slopes are absent. Not observed during 2023 surveys.
Androsace elongata ssp. *acuta* California androsace* (Primulaceae)	annual herb	--/--/4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland; Microhabitat: none; 490-4,280 feet; March-June	**Low Potential.** Suitable habitat on site in from of valley and foothill grassland. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Anomobryum julaceum slender silver moss (Bryaceae)	moss	--/--/4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest; Microhabitat: damp rock and soil on outcrops, usually on roadcuts, Roadsides (usually); 330-3,280 feet; no bloom period listed	**Not Expected**. No forest habitat occurs on project site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Arabis blepharophylla coast rockcress (Brassicaceae)	perennial herb	--/--/4.3	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub; Microhabitat: Rocky; 10-3,610 feet; February-May	**Not Expected.** No suitable forest, scrub, or prairie habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Arctostaphylos auriculata Mt. Diablo manzanita (Ericaceae)	perennial evergreen shrub	--/--/1B.3	Chaparral (sandstone), Cismontane woodland; Microhabitat: none; 445-2,135 feet; January-March	**Not Expected**. No chaparral or cismontane woodland habitats occur within the study area. Nearest CNDDB occurrences are approximately 4 miles away. Not observed during 2023 surveys.
Arctostaphylos manzanita ssp. *laevigata* Contra Costa manzanita (Ericaceae)	perennial evergreen shrub	--/--/1B.2	Chaparral (rocky); Microhabitat: none; 1,410-3,610 feet; January-March (April)	**Not Expected**. No chaparral habitat occurs within the study area. Nearest CNDDB occurrences are approximately 4 miles away. Not observed during 2023 surveys.
Astragalus tener var. *tener* alkali milk-vetch (Fabaceae)	annual herb	--/--/1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools; Microhabitat: Alkaline; 5-195 feet; March-June	**Not Expected.** Clays in study area are not adobe and not alkaline. Not observed during 2023 surveys. Only occurrence within 10 miles is on the north side of the bay.
Atriplex cordulata var. *cordulata* heartscale (Chenopodiaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy); Microhabitat: sometimes saline, Alkaline (sometimes); 0-1,835 feet; April-October	**Not Expected**. No suitable habitat occurs within the study area. No saline or alkaline soils. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Atriplex coronata var. *coronata* crownscale* (Chenopodiaceae)	annual herb	--/--/4.2	Chenopod scrub, Valley and foothill grassland, Vernal pools; Microhabitat: Alkaline, Clay (often); 5-1,935 feet; March-October	**Not Expected.** Vernal pools, saline, and alkaline soils absent from site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Atriplex depressa brittlescale (Chenopodiaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools; Microhabitat: Alkaline, Clay; 5-1,050 feet; April-October	**Not Expected**. No suitable habitat occurs within the study area. No saline or alkaline soils. Nearest CNDDB occurrences on the same side of the bay are approximately 8.8 miles away. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Atriplex persistens vernal pool smallscale (Chenopodiaceae)	annual herb	--/--/1B.2	Vernal pools (alkaline); Microhabitat: none; 35-375 feet; June-October	**Not Expected.** No vernal pool habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Blepharizonia plumosa big tarplant (Asteraceae)	annual herb	--/--/1B.1	Valley and foothill grassland; Microhabitat: Clay (usually); 100-1,655 feet; July-October	**Potential**. Extensive but moderately disturbed valley and foothill grasslands and clay soils occur within the study area. The nearest documented CNDDB occurrence is approximately 1.1 mile from the study area. After a careful protocol-level search, this species was not observed within the study area.
Calandrinia breweri Brewer's calandrinia (Montiaceae)	annual herb	--/--/4.2	Chaparral, Coastal scrub; Microhabitat: Burned areas, Disturbed areas, Loam (sometimes), Sandy (sometimes); 35-4,005 feet; (January) March-June	**Not Expected.** No suitable chaparral or coastal scrub habitat present in the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Calochortus pulchellus Mt. Diablo fairy-lantern (Liliaceae)	perennial bulbiferous herb	--/--/1B.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland; Microhabitat: none; 100-2,755 feet; April-June	**Potential**. Valley and foothill grassland occurs within the study area. The nearest documented CNDDB occurrence is approximately 4 miles from the study area, from 2003. After a careful protocol-level search, this species was not observed within the study area.
Calochortus umbellatus Oakland star-tulip (Liliaceae)	perennial bulbiferous herb	--/--/4.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland; Microhabitat: Serpentinite (often); 330-2,295 feet; March-May	**Not Expected.** No serpentinite soils within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Carex lyngbyei Lyngbye's sedge (Cyperaceae)	perennial rhizomatous herb	--/--/2B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-35 feet; April-August	**Not Expected.** No marsh or swamp habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Castilleja ambigua var. *ambigua* johnny-nip* (Orobanchaceae)	annual herb (hemiparasitic)	--/--/4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools (margins); Microhabitat: none; 0-1,425 feet; March-August	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No occurrences in CNDDB within 10 miles of the study area. Not observed during 2023 surveys.
Centromadia parryi ssp. *congdonii* Congdon's tarplant (Asteraceae)	annual herb	--/--/1B.1	Valley and foothill grassland (alkaline); Microhabitat: none; 0-755 feet; May-October (November)	**Not Expected**: No suitable habitat due to absence of alkaline soils. Nearest CNDDB occurrence is 7 miles away. Not observed during 2023 surveys.
Centromadia parryi ssp. *parryi* pappose tarplant* (Asteraceae)	annual herb	--/--/1B.2	Chaparral, Coastal prairie, Marshes and swamps (coastal salt), Meadows and seeps, Valley and foothill grassland (vernally mesic); Microhabitat: Alkaline (often); 0-1,380 feet; May-November	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No occurrences in CNDDB within 10 miles of the study area. Not observed during 2023 surveys

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Centromadia parryi ssp. *rudis* Parry's rough tarplant* (Asteraceae)	annual herb	--/--/4.2	Valley and foothill grassland, Vernal pools; Microhabitat: Alkaline, Roadsides (sometimes), Seeps, Vernally Mesic; 0-330 feet; May-October	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Chloropyron molle ssp. hispidum hispid salty bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	--/--/1B.1	Meadows and seeps, Playas, Valley and foothill grassland; Microhabitat: Alkaline; 5-510 feet; June-September	**Not Expected.** No suitable alkaline soil present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Chloropyron molle ssp. *molle* soft salty bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	FE/CR/1B.2	Marshes and swamps (coastal salt); Microhabitat: none; 0-10 feet; June-November	**Not Expected**. No coastal marsh/swamp habitats occur within the study area. Nearest CNDDB occurrence is 3 miles away. Not observed during 2023 surveys.
Cicuta maculata var. *bolanderi* Bolander's water-hemlock (Apiaceae)	perennial herb	--/--/2B.1	Marshes and swamps (brackish, coastal, freshwater); Microhabitat: none; 0-655 feet; July-September	**Not Expected**. No coastal marsh/swamp habitats occur within the study area. Nearest CNDDB occurrence is 2.3 miles away. Not observed during 2023 surveys.
Cirsium hydrophilum var. *hydrophilum* Suisun thistle (Asteraceae)	perennial herb	FE/--/1B.1	Marshes and swamps (salt); Microhabitat: none; 0-5 feet; June-September	**Not Expected.** No marsh or swamp habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Collomia diversifolia serpentine collomia (Polemoniaceae)	annual herb	--/--/4.3	Chaparral, Cismontane woodland; Microhabitat: Gravelly (sometimes), Rocky (sometimes), Serpentinite (sometimes); 655-1,970 feet; May-June	**Not Expected.** No suitable chaparral or woodland habitat in the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Convolvulus simulans small-flowered morning-glory* (Convolvulaceae)	annual herb	--/--/4.2	Chaparral (openings), Coastal scrub, Valley and foothill grassland; Microhabitat: Clay, Seeps, Serpentinite; 100-2,430 feet; March-July	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Cordylanthus nidularius Mt. Diablo bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	--/CR/1B.1	Chaparral (serpentinite); Microhabitat: none; 1,970-2,625 feet; June-August	**Not Expected**. No chaparral habitat occurs within the study area. Nearest CNDDB occurrence is 7.1 miles away, on Mt. Diablo. Not observed during 2023 surveys.
Cryptantha hooveri Hoover's cryptantha (Boraginaceae)	annual herb	--/--/1A	Inland dunes, Valley and foothill grassland (sandy); Microhabitat: none; 30-490 feet; April-May	**Not Expected**. Marginal suitable habitat occurs within the study area (grassland is not sandy). All CNDDB occurrences within 10 miles are considered extirpated (Antioch dunes). Not observed during 2023 surveys.
Delphinium californicum ssp. *interius* Hospital Canyon larkspur (Ranunculaceae)	perennial herb	--/--/1B.2	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub; Microhabitat: none; 640-3,595 feet; April-June	**Not Expected**. No suitable chaparral, cismontane woodland, or coastal scrub occur within the study area. Nearest CNDDB occurrence is 5.5 miles away. Not observed during 2023 surveys.

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Dirca occidentalis western leatherwood (Thymelaeaceae)	perennial deciduous shrub	-/-/1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland; Microhabitat: mesic; 80-1,395 feet; January-March (April)	**Not Expected**. None of the preferred habitats occur within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Downingia pusilla dwarf downingia (Campanulaceae)	annual herb	--/--/2B.2	Valley and foothill grassland (mesic), Vernal pools; Microhabitat: none; 5-1,460 feet; March-May	**Not Expected**. No mesic grassland or vernal pool habitats occur within the study area. Only CNDDB occurrences within 10 miles are on the north side of the bay. Not observed during 2023 surveys.
Eleocharis parvula small spikerush (Cyperaceae)	perennial herb	--/--/4.3	Marshes and swamps; Microhabitat: none; 5-9,910 feet; (April) June-August (September)	**Not Expected.** No suitable marsh or swamp habitat present within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eriastrum ertterae Lime Ridge eriastrum (Polemoniaceae)	annual herb	--/CC/1B.1	Chaparral (edges, openings); Microhabitat: sometimes semi-alkaline, Alkaline (sometimes), Sandy; 655-950 feet; June-July	**Not Expected**. No chaparral habitat occurs within the study area. Nearest CNDDB occurrence is 6.7 miles away. Not observed during 2023 surveys.
Erigeron biolettii streamside daisy (Asteraceae)	perennial herb	--/--/3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest; Microhabitat: Mesic, Rocky; 100-3,610 feet; June-October	**Not Expected.** No suitable forest or woodland habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eriogonum nudum var. *psychicola* Antioch Dunes buckwheat (Polygonaceae)	perennial herb	--/--/1B.1	Inland dunes; Microhabitat: none; 0-65 feet; July-October	**Not Expected**. No inland dunes habitat occurs within the study area. Nearest CNDDB occurrence is 5.9 miles away. Not observed during 2023 surveys.
Eriogonum truncatum Mt. Diablo buckwheat* (Polygonaceae)	annual herb	--/--/1B.1	Chaparral, Coastal scrub, Valley and foothill grassland; Microhabitat: Sandy; 10-1,150 feet; April-September (November-December)	**Low Potential.** The nearest extant CNDDB occurrence of this species is approximately 4.9 miles away, from 2016. Valley and foothill grassland and limited sandy soils occur within the study area. Not observed during 2023 surveys.
Eriogonum umbellatum var. *bahiiforme* bay buckwheat (Polygonaceae)	perennial herb	--/--/4.2	Cismontane woodland, Lower montane coniferous forest; Microhabitat: Rocky, Serpentinite (often); 2,295-7,220 feet; July-September	**Not Expected.** No suitable forest or woodland habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eriophyllum jepsonii Jepson's woolly sunflower (Asteraceae)	perennial herb	--/--/4.3	Chaparral, Cismontane woodland, Coastal scrub; Microhabitat: Serpentinite (sometimes); 655-3,365 feet; April-June	**Not Expected.** No chaparral, scrub, or woodland habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Eryngium jepsonii Jepson's coyote-thistle* (Apiaceae)	perennial herb	--/--/1B.2	Valley and foothill grassland, Vernal pools; Microhabitat: Clay; 10-985 feet; April-August	**Not Expected.** Valley and foothill grassland and clay soils occur within the study area, however, there is no suitable vernal pool microhabitat within the study area. The nearest documented CNDDB occurrence is approximately 3.5 miles from the study area from 1998. Not observed during 2023 surveys.
Erysimum capitatum var. *angustatum* Contra Costa wallflower (Brassicaceae)	perennial herb	FE/CE/1B.1	Inland dunes; Microhabitat: none; 10-65 feet; March-July	**Not Expected**. No inland dunes habitat occurs within the study area. Nearest CNDDB occurrence is 2.3 miles away. Not observed during 2023 surveys.
Erythranthe inconspicua small-flowered monkeyflower (Phrymaceae)	annual herb	--/--/4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: Mesic; 900-2,495 feet; May-June	**Not Expected.** No chaparral, woodland or forest habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eschscholzia rhombipetala diamond-petaled California poppy (Papaveraceae)	annual herb	--/--/1B.1	Valley and foothill grassland (alkaline, clay); Microhabitat: none; 0-3,200 feet; March-April	**Not Expected**: Marginal habitat occurs within the study area due to absence of alkaline soil conditions. The species is presumed extirpated from Contra Costa County (CNPS 2019). Not observed during 2023 surveys.
Extriplex joaquinana San Joaquin spearscale* (Chenopodiaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland; Microhabitat: Alkaline; 5-2,740 feet; April-October	**Not Expected**. Suitable wetland saline/alkaline habitat is absent. The nearest occurrence on the same side of the bay is 5.7 miles away. Not observed during 2023 surveys.
Fritillaria agrestis stinkbells* (Liliaceae)	perennial bulbiferous herb	--/--/4.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland; Microhabitat: Clay, Serpentinite (sometimes); 35-5,100 feet; March-June	**Low Potential.** Some suitable valley and foothill grassland occurs on site (clay soils). Nearest CNDDB record is 9.1 miles away, dating to 1989. Not observed during 2023 surveys.
Fritillaria liliacea fragrant fritillary (Liliaceae)	perennial bulbiferous herb	--/--/1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland; Microhabitat: Serpentinite (often); 10-1,345 feet; February-April	**Not Expected**. Valley and foothill grassland occur within the study area. The only occurrences within 10 miles of the study area are from the north side of the bay. Not observed during 2023 surveys
Galium andrewsii ssp. *gatense* phlox-leaf serpentine bedstraw (Rubiaceae)	perennial herb	--/--/4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: Rocky, Serpentinite; 490-4,755 feet; April-July	**Not Expected.** No chaparral, woodland, or forest habitat present within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Grimmia torenii Toren's grimmia (Grimmiaceae)	moss	--/--/1B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: boulder and rock walls, Carbonate, Openings, Rocky, Volcanic; 1,065-3,805 feet; no bloom period listed	**Not Expected**. No chaparral, cismontane woodland, or forest habitats occur within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Helianthella castanea Diablo helianthella (Asteraceae)	perennial herb	--/--/1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; Microhabitat: Azonal soil, often partial Shade, Rocky (usually); 195-4,265 feet; March-June	**Potential**. The nearest documented CNDDB occurrence is approximately 2.4 miles from the study area, from 2012. Disturbed valley and foothill grassland and riparian woodland habitats occur within the study area. However, suitable rocky microhabitats do not occur within the study area. After a careful protocol-level search, this species was not observed within the study area.
Hesperevax caulescens hogwallow starfish* (Asteraceae)	annual herb	--/--/4.2	Valley and foothill grassland (mesic clay), Vernal pools (shallow); Microhabitat: Alkaline (sometimes); 0-1,655 feet; March-June	**Low Potential.** Clay flats and vernal pools are lacking; marginal habitat on site in form of valley and foothill grassland (mesic clay). No vernal pool habitat on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Hesperolinon breweri Brewer's western flax (Linaceae)	annual herb	--/--/1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland; Microhabitat: Serpentinite (usually); 100-3,100 feet; May-July	**Not Expected**. Marginal habitat occurs within the study area (no serpentinite). Nearest CNDDB occurrence is 4.4 miles away. Not observed during 2023 surveys.
Iris longipetala coast iris (Iridaceae)	perennial rhizomatous herb	--/--/4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps; Microhabitat: Mesic; 0-1,970 feet; March-May (June)	**Not Expected.** No forest, prairie, or meadow habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Isocoma arguta Carquinez goldenbush (Asteraceae)	perennial shrub	--/--/1B.1	Valley and foothill grassland (alkaline); Microhabitat: none; 5-65 feet; August-December	**Not Expected**. Marginal suitable habitat occurs within the study area, but soils are not alkaline. Nearest CNDDB occurrence on the same side of the bay is 9.8 miles away. Not observed during 2023 surveys.
Lasthenia conjugens Contra Costa goldfields (Asteraceae)	annual herb	FE/--/1B.1	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 0-1,540 feet; March-June	**Not Expected.** All HCP/NCCP inventory areas are extirpated. Only occurrence in the region occurs on a soil type not present in the study area. Mesic habitat is limited to constructed ponds and stream habitats. Not observed during 2023 surveys.
Lasthenia ferrisiae Ferris' goldfields (Asteraceae)	annual herb	--/--/4.2	Vernal pools (alkaline, clay); Microhabitat: none; 65-2,295 feet; February-May	**Not Expected.** No vernal pool habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields (Asteraceae)	annual herb	--/--/1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools; Microhabitat: none; 5-4,005 feet; February-June	**Not Expected.** No suitable marsh, swamp, or vernal pool habitat on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Lathyrus jepsonii var. *jepsonii* Delta tule pea (Fabaceae)	perennial herb	--/--/1B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-15 feet; May-July (August-September)	**Not Expected**. No coastal marsh/swamp habitat occurs within the study area. The site is above the elevation range. Nearest CNDDB occurrence is from 1.8 miles away, on an island. Not observed during 2023 surveys.
Legenere limosa legenere (Campanulaceae)	annual herb	--/--/1B.1	Vernal pools; Microhabitat: none; 5-2,885 feet; April-June	**Not Expected.** No vernal pools exist within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Leptosiphon ambiguus serpentine leptosiphon (Polemoniaceae)	annual herb	--/--/4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland; Microhabitat: Serpentinite (usually); 395-3,710 feet; March-June	**Not Expected.** No woodland or scrub habitat present within the study area. Valley and foothill grassland occurs below the elevation range. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Leptosiphon grandiflorus large-flowered leptosiphon (Polemoniaceae)	annual herb	--/--/4.2	Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Valley and foothill grassland; Microhabitat: Sandy (usually); 15-4,005 feet; April-August	**Not Expected.** Valley and foothill grassland present within the study areas but no serpentinite soil. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Lessingia hololeuca woolly-headed lessingia* (Asteraceae)	annual herb	--/--/3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; Microhabitat: Clay, Serpentinite; 50-1,000 feet; June-October	**Low Potential.** Valley and foothill grassland on site (clay soil). No CNDDB occurrences within 10 miles. Not observed during 2023 surveys
Lilaeopsis masonii Mason's lilaeopsis (Apiaceae)	perennial rhizomatous herb	--/CR/1B.1	Marshes and swamps (brackish, freshwater), Riparian scrub; Microhabitat: none; 0-35 feet; April-November	**Not Expected**. No coastal marsh/swamp habitat occurs within the study area. The site is above the elevation range. Nearest CNDDB occurrence is 1.8 miles away. Not observed during 2023 surveys.
Lilium rubescens redwood lily (Liliaceae)	perennial bulbiferous herb	--/--/4.2	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest; Microhabitat: Roadsides (sometimes), Serpentinite (sometimes); 100-6,265 feet; (March) April-August (September)	**Not Expected.** No forest or chaparral habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Limosella australis Delta mudwort (Scrophulariaceae)	perennial stoloniferous herb	--/--/2B.1	Marshes and swamps (brackish, freshwater), Riparian scrub; Microhabitat: Usually mud banks, Streambanks (usually); 0-10 feet; May-August	**Not Expected**. No coastal marsh/swamp habitat or riparian scrub habitats occur within the study area. The site is above the elevation range. Nearest CNDDB occurrence is 3.1 miles away, on an island. Not observed during 2023 surveys.
Lupinus albifrons var. *abramsii* Abrams' lupine (Fabaceae)	perennial herb	--/--/3.2	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; Microhabitat: Serpentinite (sometimes); 410-6,560 feet; April-June	**Not Expected.** No forest, chaparral, or ~~scurb~~scrub habitat within the study area. Valley and foothill grassland is below the elevation range. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Madia radiata showy golden madia (Asteraceae)	annual herb	--/--/1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: none; 80-3,985 feet; March-May	**Low Potential**. The only documented CNDDB occurrence within 5 miles is a historical occurrence approximately 2.8 miles from the study area, from 1938. No recent documentations within 10 miles. Valley and foothill grassland occurs within the study area. After a careful protocol-level search, this species was not observed within the study area.
Malacothamnus hallii Hall's bush-mallow (Malvaceae)	perennial deciduous shrub	--/--/1B.2	Chaparral, Coastal scrub; Microhabitat: none; 35-2,495 feet; (April) May-September (October)	**Not Expected**. No chaparral or coastal scrub habitats occurs within the study area. Nearest CNDDB documentation is 2.9 miles away, from 1931. Nearest recent documentation is 6.5 miles away. Not observed during 2023 surveys.
Meesia triquetra three-ranked hump moss (Meesiaceae)	moss	--/--/4.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest (mesic); Microhabitat: soil; 4,265-9,690 feet; July	**Not Expected.** No wetland, meadow, or forest habitat occurs within the study area. Site is outside the species' elevation range. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Microseris paludosa marsh microseris (Asteraceae)	perennial herb	--/--/1B.2	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland; Microhabitat: none; 15-1,165 feet; April-June (July)	**Not Expected.** No suitable marsh or wetland habitat on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Microseris sylvatica sylvan microseris* (Asteraceae)	perennial herb	--/--/4.2	Chaparral, Cismontane woodland, Great Basin scrub, Pinyon and juniper woodland, Valley and foothill grassland; Microhabitat: Serpentinite (rarely); 150-4,920 feet; March-June	**Low Potential.** Valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys
Monolopia gracilens woodland woollythreads (Asteraceae)	annual herb	--/--/1B.2	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland; Microhabitat: Serpentinite; 330-3,935 feet; (February) March-July	**Not Expected**. No serpentinite. Nearest CNDDB record is 6.5 miles away. Not observed during 2023 surveys.
Myosurus minimus ssp. *apus* little mousetail* (Ranunculaceae)	annual herb	--/--/3.1	Valley and foothill grassland, Vernal pools (alkaline); Microhabitat: none; 65-2,100 feet; March-June	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Navarretia gowenii Lime Ridge navarretia (Polemoniaceae)	annual herb	--/--/1B.1	Chaparral; Microhabitat: none; 590-1,000 feet; May-June	**Not Expected**. No suitable habitat occurs within the study area. Nearest CNDDB record is 6.6 miles away. Not observed during 2023 surveys.
Navarretia heterandra Tehama navarretia* (Polemoniaceae)	annual herb	--/--/4.3	Valley and foothill grassland (mesic), Vernal pools; Microhabitat: none; 100-3,315 feet; April-June	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

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Navarretia leucocephala ssp. *bakeri* Baker's navarretia* (Polemoniaceae)	annual herb	--/--/1B.1	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 15-5,710 feet; April-July	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Navarretia nigelliformis ssp. *nigelliformis* adobe navarretia (Polemoniaceae)	annual herb	-/-/4.2	Valley and foothill grassland (vernally mesic), Vernal pools (sometimes); Microhabitat: clay, sometimes serpentinite; 330-3,280 feet; April-June	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Navarretia nigelliformis ssp. *radians* shining navarretia* (Polemoniaceae)	annual herb	--/--/1B.2	Cismontane woodland, Valley and foothill grassland, Vernal pools; Microhabitat: Clay (sometimes); 215-3,280 feet; (March) April-July	**Low Potential**. The nearest CNDDB occurrence is approximately 5.5 miles from the study area, from 2008. Disturbed valley and foothill grassland and mesic areas occur within the study area.
Neostapfia colusana Colusa grass (Poaceae)	annual herb	FT/CE/1B.1	Vernal pools (adobe clay); 15-655 feet; May-August	**Not Expected**. No vernal pool habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose (Onagraceae)	perennial herb	FE/CE/1B.1	Inland dunes; Microhabitat: none; 0-100 feet; March-September	**Not Expected**. No dune habitat occurs within the study area. Nearest CNDDB record is 2.3 miles away, on an island. Not observed during 2023 surveys.
Phacelia phacelioides Mt. Diablo phacelia (Hydrophyllaceae)	annual herb	--/--/1B.2	Chaparral, Cismontane woodland; Microhabitat: Rocky; 1,640-4,495 feet; April-May	**Not Expected**. No chaparral or cismontane habitats occur within the study area. Nearest CNDDB record is 6.9 miles away. Not observed during 2023 surveys.
Piperia michaelii Michael's rein orchid (Orchidaceae)	perennial herb	--/--/4.2	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal scrub, Lower montane coniferous forest; Microhabitat: none; 10-3,000 feet; April-August	**Not Expected.** No chaparral, scrub, woodland, or forest habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Plagiobothrys hystriculus bearded popcornflower (Boraginaceae)	annual herb	--/--/1B.1	Valley and foothill grassland (mesic), Vernal pools (margins); Microhabitat: often vernal swales; 0-900 feet; April-May	**Not Expected**. No mesic grasslands, vernal pools, or vernal swales. Nearest CNDDB record is 7.6 miles away. Not observed during 2023 surveys.
Puccinellia simplex California alkali grass* (Poaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Microhabitat: sinks, Alkaline, Flats, Lake Margins, Vernally Mesic; 5-3,050 feet; March-May	**Low Potential.** Vernal pools, chenopod, meadows, and seeps absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Ranunculus lobbii Lobb's aquatic buttercup* (Ranunculaceae)	annual herb (aquatic)	--/--/4.2	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 50-1,540 feet; February-May	**Low Potential.** Limited area of seasonal wetland (within) drainage present in valley and foothill grassland within study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Ravenella exigua chaparral harebell (Campanulaceae)	annual herb	--/--/1B.2	Chaparral (rocky, usually serpentinite); Microhabitat: none; 900-4100 feet; May-June	**Not Expected.** No suitable chaparral habitat present in the study area. Nearest CNDDB record is 7.2 miles away. Not observed during 2023 surveys.
Sanicula saxatilis rock sanicle (Apiaceae)	perennial herb	--/CR/1B.2	Broadleafed upland forest, Chaparral, Valley and foothill grassland; Microhabitat: Rocky, Scree, Talus; 2,035-3,855 feet; April-May	**Not Expected**. Marginal habitat occurs within the study area. Dominated by tall, dense grass cover. No rocky soils. Nearest CNDDB record is 6.6 miles away. Not observed during 2023 surveys.
Senecio aphanactis chaparral ragwort (Asteraceae)	annual herb	--/--/2B.2	Chaparral, Cismontane woodland, Coastal scrub; Microhabitat: Alkaline (sometimes); 50-2,625 feet; January-April (May)	**Not Expected**. No chaparral, cismontane woodland, or coastal scrub habitats. Nearest CNDDB record is 2.9 miles away. Not observed during 2023 surveys.
Senecio hydrophiloides sweet marsh ragwort (Asteraceae)	perennial herb	--/--/4.2	Lower montane coniferous forest, Meadows and seeps; Microhabitat: Mesic; 0-9,185 feet; May-August	**Not Expected.** No forest or meadow occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Sidalcea keckii Keck's checkerbloom* (Malvaceae)	annual herb	FE/--/1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: Clay, Serpentinite; 245-2,135 feet; April-May (June)	**Low Potential.** Suitable habitat on site in the form of valley and foothill grassland. Only records from within 10 miles are on the north side of the bay. Not observed during 2023 surveys.
Spergularia macrotheca var. *longistyla* long-styled sand-spurrey (Caryophyllaceae)	perennial herb	--/--/1B.2	Marshes and swamps, Meadows and seeps; Microhabitat: Alkaline; 0-835 feet; February-May	**Not Expected.** No suitable marsh, swamp, or meadow habitat present in the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Streptanthus albidus ssp. *peramoenus* most beautiful jewelflower (Brassicaceae)	annual herb	--/--/1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland; Microhabitat: Serpentinite; 310-3,280 feet; (March) April-September (October)	**Not Expected.** No serpentinite soils present on site. Nearest CNDDB record is 7.5 miles away. Not observed during 2023 surveys.
Streptanthus hispidus Mt. Diablo jewelflower* (Brassicaceae)	annual herb	--/--/1B.3	Chaparral, Valley and foothill grassland; Microhabitat: Rocky; 1,200-3,935 feet; March-June	**Low Potential.** Valley and foothill grassland present on site, but no chaparral. Nearest CNDDB record is 7.2 miles away. Not observed during 2023 surveys.
Stuckenia filiformis ssp. *alpina* northern slender pondweed (Potamogetonaceae)	perennial rhizomatous herb (aquatic)	--/--/2B.2	Marshes and swamps (shallow freshwater); Microhabitat: none; 9,85-7055 feet; May-July	**Not Expected.** No marsh or swamp habitat present in the study area. Nearest CNDDB record is 8.5 miles away at base of Mt. Diablo. Not observed during 2023 surveys.
Symphyotrichum lentum Suisun Marsh aster (Asteraceae)	perennial rhizomatous herb	--/--/1B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-10 feet; (April) May-November	**Not Expected.** No marsh or swamp habitat present in the study area. Study area is above elevation range. Nearest CNDDB record is 2.1 mils away. Not observed during 2023 surveys.
Trifolium hydrophilum saline clover* (Fabaceae)	annual herb	--/--/1B.2	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools; Microhabitat: none; 0-985 feet; April-June	**Low Potential.** Limited habitat present on site in the form of valley grassland. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Triquetrella californica coastal triquetrella (Pottiaceae)	moss	--/--/1B.2	Coastal bluff scrub, Coastal scrub; Microhabitat: soil; 35-330 feet; no bloom period listed	**Not Expected.** No suitable coastal bluff scrub or coastal scrub habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Tropidocarpum capparideum caper-fruited tropidocarpum (Brassicaceae)	annual herb	--/--/1B.1	Valley and foothill grassland (alkaline hills); Microhabitat: none; 5-1,495 feet; March-April	**Not Expected.** Species is presumed extinct, and no alkali soils present within study area. Not observed during 2023 surveys.
Viburnum ellipticum oval-leaved viburnum (Viburnaceae)	perennial deciduous shrub	--/--/2B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: none; 705-4,595 feet; May-June	**Not Expected.** No chaparral, cismontane woodland, or lower montane coniferous forest in the study area. Nearest CNDDB record is 8.8 miles away. Not observed during 2023 surveys.

Notes:
Compiled from a CNPS 9-Quad search of the centered on the Honker Bay quadrangle and including all surrounding quadrangles (Walnut Creek, Clayton, Antioch South, Vine Hill, Fairfield South, Denverton, Birds Landing, Antioch North).
Bloom Periods in parentheses indicate that the species *occasionally* blooms during that period.
Species marked with "*" have potential to occur but are not covered by the HCP/NCCP.
Species with potential to occur are highlighted

[1]**Rarity Status Codes**:
E = Federally or State listed as Endangered
T = Federally or State listed as Threatened
R = State listed as Rare
C = State candidate for listing

CRPR Codes:
CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere; CRPR List 1B = Plants rare, threatened or endangered in CA and elsewhere; CRPR 2B = Plants rare, threatened or endangered in California but more common elsewhere; CRPR 3 = More information is needed about plant; CRPR 4 = Plants of limited distribution, a watch list

CRPR: '.1' = Seriously threatened in CA; '.2' = Fairly threatened in CA; '.3' = Not very threatened in CA

California androsace (*Androsace elongata subsp. acuta*) (CRPR 4.2) is an annual herb that is native to California. The plant is found on dry, grassy slopes in the San Francisco Bay Area, Inner South Coast Ranges, and the south Sierra Nevada foothills (Calflora 2023). The plant can also be found in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley, and foothill grassland. The species blooms from March to June and is found at elevations less than 1,200 meters (Jepson 2023). The species is possibly threatened by grazing, trampling, non-native plants, alteration of fire regimes, recreational activities, and wind energy development (CNPS 2024).

Big tarplant (*Blepharizonia plumosa*) (CRPR 1B.1): This species is covered by the HCP/NCCP. The onsite annual grassland habitat with heavy clay soils provides suitable habitat for this species. There are several occurrences mapped within the CNDDB in the vicinity of the study area. The species would have been in bloom during the July 12 botanical survey but was not observed.

Mt. Diablo fairy-lantern (*Calochortus pulchellus*) (CRPR 1B.2): This species is covered by the HCP/NCCP. The onsite annual grassland habitat provides suitable habitat for the species. The closest documented occurrence of the species is just under 4 miles southeast of the study area. The species would likely have been in bloom during the April 12 and May 19 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings, this species is presumed absent from the site.

Johnny-nip (*Castilleja ambigua* var. *ambigua*) (CRPR 4.2) is a hemiparasitic annual herb in the Orobanchaceae family that is found in coastal bluffs and grasslands (Calflora 2023). The species is native to California. The plant can also be found in coastal prairies, coastal scrub, marshes, swamps and the margins of vernal pools. Most occurrences of the species are found in the Central Coast and the North Coast ranges. Johhny-nip blooms from May to August and is found at elevations less than 1640 feet (Jepson 2023). Threats to the species include different types of development (CNPS 2024).

Pappose tarplant (*Centromadia parryi* ssp. *parryi*) (CRPR 1B.2) is an annual herb in the Asteraceae family that is endemic to California. The species is found in grasslands, coastal salt marshes, alkaline springs, and seeps (Calflora 2023). Alkaline soils in general are preferred by the species. Most occurrences of the species are found in the Sacramento Valley and Outer to Inner North Coast Ranges. The plant blooms from May to November and is found at elevations less than 1312 feet (Jepson 2023). Threats to the species include agriculture, competition, development, grazing, foot traffic, habitat disturbance and road maintenance (CNPS 2024).

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) (CRPR 4.2) is an annual herb in the Asteraceae family that is endemic to California. The species is found in grasslands, edges of marshes, vernal pools, and disturbed sites (Calflora 2023). The species is predominately found in the Inner North Coast Ranges and the Sacramento Valley. The plant blooms between May and October and is found at elevations less than 500 meters (Jepson 2023). Threats to the species include development, habitat alteration, habitat disturbance, grazing and road maintenance (CNPS 2024).

Small-flowered morning-glory (*Convolvulus simulans*) (CRPR 4.2) is an annual herb in the Convolvulaceae family that is native to California. The species is found in clay substrates, occasionally serpentine, annual grassland, coastal-sage scrub, and chaparral (Calflora 2023). The species is predominately found in the South Coast and Peninsular ranges with some occurrences being found in the San Francisco Bay Area. The plant blooms from March to July and is found at elevations from 30 to 875 meters (Jepson 2023).

Mt. Diablo buckwheat (*Eriogonum truncatum*) (CRPR 1B.1) is an annual herb in the Polygonaceae family that is native to California. The species is found in sand, northern coastal scrub, chaparral and valley grassland (Calflora 2023). All occurrences of the species are found in either the San Francisco Bay Area or the Sacramento Valley. The plant blooms from April to September and is found at elevations between 200-400 meters (Jepson 2023).

Stinkbells (*Fritillaria agrestis*) (CRPR 4.2) is a perennial herb in the Liliaceae family that is endemic to California. The species is found in clay, often vertic, occasionally serpentine soils (Calflora 2023). The species is predominately found in the San Francisco Bay Area as well as the Inner South Coast Ranges. The plant blooms between March to June and is found at elevations less than 500 meters (Jepson 2023). Threats to the species include development, grazing, vehicles, and non-native plants (CNPS 2024). Populations of the species are also small, which may lead to issues like genetic drift.

Diablo helianthella (*Helianthella castanea*) (CRPR 1B.2): This species is covered by HCP/NCCP. The species is known to occur in open annual grassland but as described in the HCP/NCCP, Diablo helianthella is more associated with thin, rocky, well-drained soils, and is found in grassy openings within woodlands, chaparral, and coastal scrub, often at the transition zone between grasslands and woodland or chaparral habitats. The types of habitat transition zones and openings this species is most commonly associated with do not occur in the study area given the dominance of grassland and golf course habitats. The nearest CNDDB occurrence is approximately two miles southeast of the study area. The species would likely have been in bloom during the April 12 and May 19 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings and the fact that optimal habitat is not present in the study area, this species is presumed absent from the site.

Hogwallow starfish (*Hesperevax caulescens*) (CRPR 4.2) is an annual herb in the Asteraceae family that is native to California. The plant is found in drying shrink-swell clay of vernal pools, flats, and steep slopes, along with being found in serpentine soil (Calflora 2023). The plant is also found around vernal pools and can be found in alkaline soils. Most occurrences of the species are found throughout the Central Valley of California. Hogwallow starfish blooms from March to June and is found at elevations less than 984 feet (Jepson 2023). Threats to the species include agriculture, development, and over-grazing (CNPS 2024).

Woolly-headed lessingia (*Lessingia hololeuca*) (CRPR 3) is an annual herb in the Asteraceae family that is endemic to California. The species is found in coastal scrub, chapparal, grassland, roadsides, as well as serpentine or alkaline soils (Calflora 2023). The species is also found in clay soils. Most occurrences of the plant are found in the San Francisco Bay Area and the Outer South Coast Ranges. The plant blooms from June to October and is found at elevations between 33 and

1969 feet (Jepson 2023). Threats to wooly-headed lessingia include grazing and non-native plants. The species is suspected to be more prevalent in the southern Sacramento Valley, southern North Coast ranges and Northern San Francisco Bay.

Showy golden madia (*Madia radiata*) (CRPR 1B.1): This species is covered by the HCP/NCCP. The onsite annual grassland habitat provides suitable habitat for the species. According to the CNPS Rare and Endangered Plant Inventory, this species is presumed extirpated from Contra Costa County. There is an occurrence mapped within the CNDDB that is just over three miles southeast of the study area, but the occurrence date is 1938 and its location is listed as non-specific. The species would likely have been in bloom during the April 12 botanical survey by VNLC in the study area but was not observed. Given the negative survey findings and that the species is presumed extirpated from Contra Costa County, it is presumed absent from the site.

Sylvan microseris (*Microseris sylvatica*) (CRPR 4.2) is a perennial herb, in the Asteraceae family, endemic to California. The species is found in grassland and open woodland (Calflora 2023). Most occurrences of the species are found in the south Sierra Nevada foothills with some occurrences being found in the San Francisco Bay Area. The plant blooms from March to June and is found at elevations less than 1,700 meters (Jepson 2023). The species is threatened by wind energy development, grazing, agriculture, vehicles, recreational activities, and non-native plants (CNPS 2024).

Little mousetail (*Myosurus minimus* ssp. *apus*) (CRPR 3.1) is an annual herb in the Ranunculaceae family, native to California. The species is found in vernal pools and alkali flats (Calflora 2023). Most occurrences of the species are found in the Sacramento and San Joaquin Valley. The plant blooms from March to June and is found at elevations from 3-1,600 meters (Jepson 2023).

Tehama navarretia (*Navarretia heterandra*) (CRPR 4.3) is an annual herb, in the Polemoniacea family, native to California. The species can be found in heavy soils, vernal pools, and wet or drying flats (Calflora 2023). Most occurrences are found in the San Francisco Bay Area as well as the Inner North Coast Ranges. The plant blooms from April to June and is found at elevations less than 1,100 meters (Jepson 2023). The species can also be found in mesic valley and foothill grasslands.

Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) (CRPR 1B.1) is an annual herb in the Polemoniaceae family that is endemic to California. The plant is found in vernal pools, cismontane woodland, lower montane coniferous forest, meadows, seeps, and valley/foothill grassland, with a preference for mesic areas (Calflora 2023). Most occurrences of the species are found in the San Francisco Bay Area. Baker's Navarretia blooms from April until July and is found at elevations less than 5577 feet (Jepson 2023). The species may be more widespread, but more information is needed (CNPS 2024).

Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*) (CRPR 4.2): This species is covered by the HCP/NCCP. Adobe navarretia occurs on heavy clay soils of vernal pools and other low, usually seasonally moist areas in grasslands (Baldwin et al. 2012). The species does occasionally occur along clay slopes within grasslands (author's observation). Five occurrences of

this species have been documented in HCP/NCCP inventory area, but there are no occurrences in the CNDDB. The species would likely have been in bloom during the April 12 and May 19 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings, this species is presumed absent from the study area.

Shining navarretia (*Navarretia nigelliformis* ssp. *radians*) (CRPR 1B.2): Shining navarretia occurs in heavy clay soils of vernal pools and other low, usually seasonally moist areas in grasslands (Baldwin et al. 2012). Like the adobe navarretia, the species does occasionally occur along clay slopes within grasslands. Based on the CNDDB, this species was documented about five miles from the study area. The species would likely have been in bloom during all 3 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings, this species is presumed absent from the study area.

California alkali grass (*Puccinellia simplex*) (CRPR 1B.2) is an annual grasslike herb in the Poaceae family that is native to California. The plant is found in saline flats and mineral springs. The plant can also be found in alkaline soils, lake margins and vernally mesic areas (Calflora 2023). Most occurrences of the species are found in the Central Valley with some occurrences being found in the San Francisco Bay Area. California alkali grass blooms from March to May and is found at elevations less than 900 meters (Jepson 2023). Threats to the species include hydrological alterations, urbanization, agricultural conversion, development, and habitat fragmentation, disturbance, alteration, and loss. The species may also be threatened by solar energy, grazing and proximity to roads (CNPS 2024).

Lobb's aquatic buttercup (*Ranunculus lobbii*) (CRPR 4.2) is an aquatic annual herb in the Ranunculaceae family that is endemic to California. The plant is found in ponds as well as cismontane woodland, North Coast coniferous forest, valley and foothill grassland and vernal pools, with a preference for mesic areas (Calfora 2023). Most occurrences of the species are found in the San Francisco Bay Area. Lobb's aquatic buttercup blooms from February until May and is found at elevations less than 1,640 feet (Jepson 2023). Threats to the species include urbanization, habitat alteration, agriculture, and development (CNPS 2024).

Keck's checkerbloom (*Sidalcea keckii*) (CRPR 1B.1) is an annual herb in the Malvaeceae family that is endemic to California. The plant is found on grassy slopes. The species may also be found in clay or serpentinite soils (Calflora 2023). Most occurrences of the species are found in the Inner North Coast Ranges. Keck's checkerbloom blooms from April to May and is found at elevations between 75-650 meters (Jepson 2023). The species is endangered federally.

Mt. Diablo jewelflower (*Streptanthus hispidus*) (CRPR 1B.3) is an annual herb in the Brassicaceae family that is endemic to California. The species is found in rocky chapparal and grasslands (Calflora 2023). All occurrences of the species are found in the San Francisco Bay Area. Mt. Diablo jewelflower blooms from March until June and is found at elevations between 600 to 1,200 meters (Jepson 2023). Most pressing threat to the species is habitat degradation (Calflora 2023).

Saline clover (*Trifolium hydrophilum*) (CRPR 1B.2) is an annual herb in the Fabaceae family that is native to California. The species is found in salt marshes and open areas in alkaline soils. The

plant is also found in swamps, valley/foothill grassland and vernal pools (Calflora 2023). Most occurrences of the plant are found in the San Francisco Bay Area and the San Joaquin Valley. Saline clover blooms from April until June and is found at elevations less than 984 feet (Jepson 2023). Threats to the species include development, trampling, road construction and vehicles, while possibly being threatened by non-native plants. Many sites are extirpated but more information needs to be gathered on the rarity of the species (CNPS 2024).

7.0 AQUATIC AND RIPARIAN RESOURCES

7.1 Regulatory Background

Non-isolated wetlands, streams, and permanent and intermittent drainages are subject to the joint jurisdiction of the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) under the CWA. The CDFW also generally has jurisdiction over these resources under Porter-Cologne, together with other aquatic features that provide an existing fish and wildlife resource pursuant to FGC 1600. While CWA jurisdiction extends to the ordinary high-water mark, the CDFW asserts FGC 1600 jurisdiction to the top of bank or to outer edge of vegetation associated with a riparian corridor, whichever is greater. Placement of dredge or fill material in jurisdictional waters of the U.S. would require a CWA Section 404 permit. Impacts to Waters of the State of California (which are not Waters of the U.S.) would be subject to Waste Discharge Requirements under Porter-Cologne. Impacts to riparian habitats would require a Lake and Stream Bed Alteration Notification, and possibly a Lake and Streambed Alteration Agreement under FGC 1600. Each of these may be subject to required avoidance, minimization, and mitigation measures.

7.2 Waters and Wetlands

Wetlands are those areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted to life in saturated soil. Section 404 jurisdictional wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the USACE Wetlands Delineation Manual and Regional Supplement. Waters of the U.S. are drainage features or water bodies as described in 33 CFR 328.4.

VNLC conducted an aquatic resources delineation of the study area. The delineation identified a total of 1.916 acres of potential jurisdictional waters and wetlands within the study area. The acreage of each habitat type is listed in **Table 4** below and the habitat types are mapped on **Figure 5**. Of the features described, only a portion are within the proposed project work limits. These include 0.150 acres of perennial wetland within drainage, 0.014 acres of seasonal wetland drainage, and 0.114 acres of seasonal wetland within drainage; for a total of 0.278 acres of aquatic resources. These areas are displayed on **Figure 3**. Not all of these features will necessarily be filled by the proposed project.

The delineation also identified 1.597 acres of canal and 1.673 acres of artificial basins that were constructed in upland habitats. (Note that the study area for this document differs slightly from the study area for the delineation report; the aquatic resource areas reported here differ slightly due to that change in study area boundary). Basin features in the study area include golf course landscape ponds. These basin features are isolated features that are unlikely to be considered jurisdictional

as Waters of the United States but may be considered Waters of the State of California. None of the artificial basin or canal features will be filled by the proposed project.

Recommended PDMs to reduce project impacts to aquatic and riparian habitats are presented in **Section 11**.

7.3 Riparian Habitats

As described above, the study area includes 1.87 acres of riparian habitat beyond the edge of CWA/Porter-Cologne jurisdiction. This includes 0.44 acre of Himalayan blackberry thickets and 1.43 acres of Valley Foothill Riparian. Both the Himalayan blackberry thickets and Valley Foothill Riparian areas are classified as a sensitive habitat due to their status as riparian areas; they may be subject to CDFW jurisdiction under the California Fish and Game Code §1600 *et seq*. These habitats occur along the stream in the utility corridor east and south of the project area. None occur within the proposed limits of work for the project area.

TABLE 4. Acreage of Mapped Potential Jurisdictional Waters and Other Features within the Study Area.

Habitat Type	Acreage
Potentially Jurisdictional Wetlands	
Seasonal Wetland Drainage	0.787
Perennial Wetland within Drainage	0.169
Seasonal Wetland within Drainage	0.953
Total	**1.909**
Other Potentially Jurisdictional Features	
Un-vegetated Channels and Basins	0.007
Total	**0.007**
TOTAL	**1.916**
Artificial Basins Constructed in Uplands (presumed non-jurisdictional)	
Canals	1.597
Golf Course Landscape Pond	1.673
Total	**3.270**

Representative photographs of potential jurisdictional Waters are provided in **Appendix A**. Additional information is available in a separate report that documents such habitats.

8.0 SENSITIVE PLANT COMMUNITIES

Sensitive plant communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special-status species or their habitat. The most current version of the CDFW's *List of California Terrestrial Natural Communities* as well as the Manual of California Vegetation (Sawyer et al. 2009) indicate which natural communities are of special status given the current state of the California classification. As previously discussed, the study area is dominated by annual grasslands and disturbed habitats associated with the golf course development, which

are not considered sensitive plant communities. The riparian vegetation types in the study area are considered sensitive; they are discussed above.

Oaks and other native trees have a mosaic of protection in different jurisdictions. Within Contra Costa County, trees meeting the following criteria are considered “protected trees”:

Must occur in one of the following:

1. Unincorporated areas of the County;
2. Developed property within any commercial,sec professional office or industrial district;
3. Any undeveloped property within any district;
4. Any area designated on the general plan for recreational purposes or open space;
5. Any area designated in the county general plan open space element as visually significant riparian or ridge line vegetation and where the tree is adjacent to or part of a riparian, foothill woodland or oak savanna area.

And also must be described by one of:

1. Any tree measuring twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level;
2. Any multistemmed tree with the sum of the circumferences measuring forty inches or larger, measured four and one-half feet from ground level; or
3. Occurring within any significant grouping of trees, including groves of four or more trees.

Felling, trimming and earthwork within the dripline of these trees is subject to county permitting requirements. A tree survey of the project area has been prepared separately to analyze the applicability of the above to the proposed project.

9.0 WILDLIFE MOVEMENT CORRIDORS AND NURSERY SITES

CEQA requires an analysis of whether projects would 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 corridors are pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural or manmade obstacles such as urbanization.

The California Essential Habitat Connectivity project identifies major habitat corridors connecting large areas of open space. None are identified within the study area. The nearest such are on the north side of Suisun Bay, and approximately 10 miles southwest of the study area in the east bay hills.

The HCP/NCCP also emphasizes smaller, local corridors, particularly riparian corridors. The project area is located at the edge of the City of Pittsburg. North of it lies suburban development, and to the west and south lie other portions of the former golf course, separated from the project area by the Contra Costa Canal. In addition, the study area is enclosed in fencing on its western border and the south and southwestern borders along the canal. There is also golf barrier netting

along a portion of the eastern part of the study area. To the east lies a generally open power transmission corridor, containing a stream. This corridor provides direct connectivity from the Diablo Range hills directly to the bayland edge. As such, it represents a potentially significant wildlife movement corridor. Other than this corridor, the project area itself provides little opportunity for wildlife to move due to the barriers along the north, west, and south edges. **Figure 11** is a map of the wildlife corridors and barriers on and around the study area.

North-south habitat connectivity in the project vicinity (including along the corridor described above) is partially fragmented by the Contra Costa Canal, which has relatively few crossings accessible to wildlife. One of the largest such crossings is present at the southeast corner of the study area. This location may represent an important location along the corridor. Construction of barriers to wildlife movement in this location could significantly impact the habitat value of the entire corridor. The project as designed avoids new structures or barriers to movement near this crossing.

Nursery sites may include sites where animals breed, lay eggs, or rear young. These can include features as diverse as nesting trees, estuaries, ponds, caves, and structures. Trees in the study area provide potential nesting habitat for birds and bats; these values and mitigation are discussed in **Section 6.1**, above. Similarly, the ability of ponds and wetlands on the site to support amphibian breeding is discussed above. No other special nursery sites are present within the study area.

~~**Figure 11. Nurseries and Corridors Map**~~

10.0 REGIONAL EFFECTS

The Project's effects are generally expected to be restricted to the study area as defined above. The CEC SPPE application requires an analysis of the effects of atmospheric nitrogen deposition caused by the project on sensitive habitats within six miles of the source.

10.1 Effects of Atmospheric Nitrogen Deposition

The proposed project would have 37, 2.75-MW diesel fired backup generators. Operation of these generators would result in the emission of several air pollutants, including nitrogen oxides (NOx) and ammonia (NH_3). California ecosystems are typically nitrogen limited (Weiss 2006), leading to increased productivity and competition by invasive species when high nitrogen deposition increases available supply (Fenn et al. 2003).

VNLC staff analyzed sensitive habitats (defined for the purpose of this analysis as all special habitats mapped in the CNDDB, and all Designated Critical Habitat identified by USFWS) within a six-mile buffer of the project area. However, due to the small generation capacity and low stacks of proposed on site generators, nearly all nitrogen deposition is expected to occur in the immediate vicinity of the project area. Other reports on similar projects have similarly found that any nitrogen plume produced would quickly dilute and become indistinguishable from background levels by the time it reached 6 miles from site (CEC 2022).

Figure 11. Nurseries and Corridors Map

Conservative modeling using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), performed by CEC staff for similar facilities, estimated very low contributions of those projects. The CA3 project's 47, 2.75 MW diesel fired backup generators' estimated contributions to existing nitrogen deposition were between 0.02 and 0.20 kg N/ha/yr at 2 miles from the project site (CEC 2022). The McLaren Data Center (47, 2.75 MW diesel fired backup generators) and Laurelwood Data Center (56, 3.0-MW diesel fired backup generators) had estimated contributions to existing nitrogen deposition of between 0.01 and 0.03 kg N/ha/yr at approximately 4 to 5 miles distance (CEC 2021). Each of these were found to have less-than-significant impacts on sensitive habitats at those distances.

Coastal brackish marsh and Antioch dunes are CDFW designated sensitive habitats, located 1.8 miles and 5.9 miles from the site respectively (**Figure 11**). USFWS designated critical habitat exists within the 6-mile buffer of the project area for Delta smelt, Alameda whipsnake (*Masticophis lateralis euryxanthus*), Antioch dunes evening primrose (*Oenothera deltoides* ssp. *howelii*), and Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) (USFWS 2023). Both Antioch dunes evening primrose and Contra Costa wallflower critical habitat is coincident with the Antioch dunes sensitive habitat. Alameda whipsnake does not inhabit any CDFW sensitive habitat within 6 miles, preferring chaparral, scrub, grassland, and woodlands. The nearest critical habitat for this species is 5.6 miles southwest of the project site. Delta smelt may potentially inhabit all suitable aquatic habitat within the buffer zone, including coastal brackish marsh.

Critical load is one tool for quantifying nitrogen deposition, defined as "the input of a pollutants below which no detrimental ecological effects occur over the long term" (Fenn et al. 2010). Estuarine intertidal wetlands critical loads are higher than terrestrial ecosystems due to having an open nutrient cycle (Pardo et al. 2011). Additionally, nitrogen loads from other sources are typically much higher than atmospheric deposition in aquatic ecosystems (ibid). Early successional coastal brackish marsh has an estimated critical load of 30-40 kg N/ha/yr (Bobbink et al. 2002), 50-100 kg N/ha/yr for intertidal marsh and 63-400 kg N/ha/yr for intertidal salt marsh (Pardo et al. 2011). Antioch dunes were historically a shifting coastal dune habitat, but are classified as "stabilized" by CDFW (USFWS n.d., CNDDB 2023). Critical load for stabilized dunes is estimated at 10-20 kg N/ha/yr (Bobbink et al. 2002). Woodlands and chaparrals have critical loads ranging from 10-14 kg N/ha/yr (Pardo et al. 2010). Scrub habitat critical load is estimated to be 7.8-10 kg N/ha/y (ibid). Sensitive nutrient-limited grasslands such as serpentine grasslands, desert grasslands, and alpine grasslands have low critical loads (6 kg N/ha/yr, 3-8.4 kg N/ha/yr, and 4-10 kg N/ha/yr, respectively, Fenn et al. 2010). None of these specialized grasslands occur in the project vicinity. Non-specialized grasslands such as those that do occur in the project vicinity are less well studied. No critical loads are available for these habitats. However, these habitats are significantly more productive than serpentine, desert, or alpine grasslands, and likely have a much higher critical threshold.

Potentially significant impacts could occur if nitrogen deposition resulting from the proposed project exceeded the critical load when in conjunction with baseline deposition. Baseline atmospheric nitrogen deposition within the project area and 6-mile buffer is estimated to range from 5.16 kg N/ha/yr to 7.41 kg N/ha/yr (Bay Area Open Space Council 2019). The addition of project-related deposition of up to 0.2 kg N/ha/yr would result in a combined nitrogen deposition

rate of 5.36-7.61 kg N/ha/yr. This is far below the conservative critical load estimates (with minimum values of 30-63 kg N/ha/yr) of any of the sensitive aquatic habitats in the region.

The sensitive habitats with the lowest critical thresholds are scrublands, woodlands, or grasslands within Alameda whipsnake critical habitat. Alameda whipsnake critical habitat occurs approximately 5.6 miles southwest of the project site. In this area, background nitrogen deposition rates are less than 6 kg N/ha/yr. At this distance from the project site, project-related, nitrogen deposition is expected to be below 0.03 kg N/ha/yr, approximately 0.5% of the background rate.

The resultant rate will remain below 6 kg N/ha/yr, below documented critical load thresholds for woodland, scrub, and even some of the specialized and nutrient-limited grasslands.

The stabilized dune habitats at Antioch Dunes also have a relatively low critical load threshold. However, these habitats occur at the edge of the analysis radius, 5.9 miles away. At this distance, nitrogen deposition is expected to be below 0.03 kg N/ha/yr, approximately 0.4% of the background rate. This addition will not exceed critical load thresholds for the habitat.

Overall, the project is only expected to have immediate impacts to the project specific area and not nearby critical habitats or listed species. The nitrogen deposition levels are minimal in areas near the boundary of the analysis radius and even areas closer to the project specific area are still low. There is expected to be minimal impact to the surrounding environment.

11.0 SUMMARY OF POTENTIAL IMPACTS

Figure 3 depicts the location of project activities that will result in direct destruction or modification of existing habitats. These activities are planned in approximately 24.73 acres, composed of 19.25 acres of annual grassland, 3.06 acres of paved/developed, 2.12 acres of landscaping trees, 0.03 acres of Himalayan blackberry thicket, 0.15 acres of perennial wetland within drainage, 0.01 acres of seasonal wetland drainage, and 0.11 acres of seasonal wetland within drainage. Not all these habitats will necessarily be destroyed or directly modified.

Construction

Habitat destruction or modification within this area will result in the loss of potential habitat for special-status species. Compensatory mitigation is recommended to ensure the continued availability of habitat for those species. The project may also result in direct impacts to individuals of special-status species, if they occur in the project area. Project design measures are recommended which, if implemented, would minimize that risk.

The project may also result in direct impacts on sensitive aquatic and riparian habitats. Appropriate permits should be obtained for any direct impacts, and the required mitigation implemented.

Operation and Maintenance

Operation and maintenance of the proposed project are expected to result in extremely low levels of atmospheric nitrogen deposition to sensitive habitats, below the critical load threshold for those habitats. Operation and maintenance may result in indirect impacts on sensitive aquatic and

riparian habitats through improperly controlled runoff. Mitigation measures to minimize indirect impacts are recommended above.

Potentially significant impacts could occur if nitrogen deposition resulting from the proposed project exceeded the critical load when in conjunction with baseline deposition. Atmospheric nitrogen deposition within the project area and 6-mile buffer was estimated to range from 5.16 kg N/ha/yr and 7.41 kg N/ha/yr by the Conservation Lands Network's 2019 San Francisco Bay Area conservation plan. Nitrogen deposition contribution for the similarly sized Sequoia Data Center in Santa Clara County was estimated to be between 0.02 kg N/ha/yr and 0.20 kg N/ha/yr.

Decommissioning

No additional impacts to sensitive biological resources are likely to occur as a result of closure and decommissioning.

Project Design Measures

We recommend the following measures be incorporated into the project design to minimize the project's impacts to biological resources. These measures are primarily based on the HCP/NCCP, for those resources which the HCP/NCCP directly addresses. For resources not directly addressed by the HCP/NCCP, we have recommended measures based on the best available science, and on measures shown to be successful on other projects.

PDM BIO-1: Project Coverage under ECC HCP/NCCP

The Project Owner shall obtain coverage for the project under the ECC HCP/NCCP. This shall include submittal of all required application materials per HCP/NCCP Section 6.2.1 and payment of a Development Fee consistent with current HCP/NCCP requirements. Alternatively, the project Project Owner may, in accordance with the terms of PMC Chapter 15.108, offer to dedicate land in lieu of some or all of the HCP/NCCP Development Fee.

All applicable fees shall be paid, and/or an "in-lieu-of-fee" agreement fully executed, prior to the issuance of a grading permit for the project. If a grading permit is not required, fee payment and/or an "in-lieu-of-fee" agreement shall be fully executed prior to issuance of the project's building permit. Proof of applicable fees and/or "in-lieu-of-fee" agreement shall be provided to the City of Pittsburg Community Development Director.

PDM BIO-2: Worker Awareness Training for Biological Resources

Because of the potential for nesting birds and other protected wildlife to be present on the project site, the Project Owner shall prepare and ensure delivery of a Worker Environmental Awareness Program (WEAP). The WEAP shall include the following information.

- The sensitive habitats on the project site.
- Special-status species known or potentially present on the site, including their
    - listing status and causes of decline,
    - habitat preferences, and
    - distinguishing physical characteristics.

- The measures (PDMs and ECC HCP/NCCP measures) required to protect sensitive habitats and special-status species, including next steps and notifications in the event of a special-status species sighting.

The WEAP shall include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction personnel.

The Project Owner shall ensure that all construction personnel undergo WEAP training before they begin work. Training shall be delivered by a qualified biologist approved by the City of Pittsburg Community Development Director and shall be provided bilingually in English and Spanish if appropriate.

PDM BIO-3: Adherence to ECC HCP/NCCP Requirements

The Project Owner shall ensure that the project adheres to all applicable ECC HCP/NCCP requirements.

Planning surveys per HCP/NCCP Section 6.3.1 were completed in 2018 – 2023 (see Section 4.~~4.~~2~~.1~~ of this ~~application~~report). Based on the outcomes of the planning surveys, preconstruction surveys by USFWS- and DFW-approved biologists shall be conducted for the following species per HCP/NCCP Sections 6.3.2 and 6.3.4~~.~~(see HCP/NCCP pages 6-12 – 6-13 and Table 6-1 following HCP/NCCP page 6-50).

- Golden Eagle
- Burrowing Owl
- Swainson's Hawk
- San Joaquin kit fox

If preconstruction surveys determine that any of the above species is present on the site (or, for the bird species, within a distance where they could be disturbed by construction activity), the ~~biologist may recommend~~Best Management Practices and Constructing Monitoring requirements in HCP/NCCP Table 6-1 will apply. If construction monitoring~~; if so~~ is required, the Project Owner shall ensure that monitoring is conducted per HCP/NCCP Section 6.3.3~~.~~ (HCP/NCCP pages 6-12 – 6-13). This will include submittal of a Construction Monitoring Plan (CMP) to the East Contra Costa County Habitat Conservancy for approval; the CMP must be submitted and approved prior to issuance of the grading permit (or, if no grading permit is required, the building permit) for the project.

Based on results of the planning surveys, which indicate that no suitable habitat is available on the project site, preconstruction surveys, Best Management Practices, and construction monitoring are not required for the following species.

- Covered shrimp species
- Giant garter snake
- Townsend's big-eared bat

The Project Owner shall also comply with all applicable provisions of ECC HCP/NCCP Section 6.4, Specific Conditions on Covered Activities~~,~~ (beginning on HCP/NCCP page 6-14), as follows.

- **Section 6.4.1: Landscape-Level Measures**
  - Conservation Measure 1.10 – Maintain Hydrologic Conditions and Minimize Erosion (HCP/NCCP pages 6-21 – 6-22)
  - Conservation Measure 1.11 – Avoid Direct Impacts on Extremely Rare Plants, Fully Protected Wildlife Species [and] Covered Migratory Birds (HCP/NCCP pages 6-23 – 6-25)
  - Conservation Measure 1.7 – Establish Stream Setbacks (HCP/NCCP pages 6-15 – 6-18)
- **Section 6.4.2: Natural Community–Level Measures**
  - Conservation Measure 2.12 – Wetland, Pond, and Stream Avoidance and Minimization (HCP/NCCP pages 6-33 – 6-35)
- **Section 6.4.3: Species-Level Measures for the following species**
  - ~~California tiger salamander~~
  - ~~Burrowing Owl~~
  - ~~Golden Eagle~~
  - ~~Swainson's Hawk~~
  - ~~San Joaquin kit fox~~
  - California tiger salamander (begins on HCP/NCCP page 6-45; see also Table 6-1) (requires planning surveys for potential breeding habitat and notification to CDFW, USFWS, and HCP/NCCP Implementing Entity prior to disturbance of suitable breeding habitat in order to enable relocation of individuals if agencies consider it warranted)
  - California red-legged frog (begins on HCP/NCCP page 6-46; see also Table 6-1) (requires planning surveys for potential breeding habitat and notification to CDFW, USFWS, and HCP/NCCP Implementing Entity prior to disturbance of suitable breeding habitat in order to enable relocation of individuals if agencies consider it warranted)
  - Burrowing Owl (begins on HCP/NCCP page 6-39; see also Table 6-1) (requires planning surveys; preconstruction surveys required if planning surveys identify potential habitat for the species; prescribes avoidance and minimization measures and construction monitoring to protect occupied nests)
  - Golden Eagle (begins on HCP/NCCP page 6-38; see also Table 6-1) (requires planning surveys and design-phase avoidance measures to protect known nests, and preconstruction surveys to establish whether known nests are occupied at the time of construction; stipulates avoidance and minimization to protect active nests, verified by construction monitoring)
  - Swainson's Hawk (begins on HCP/NCCP page 6-41; see also Table 6-1) (requires planning surveys, preconstruction surveys of known nests, and avoidance and minimization measures plus construction monitoring for occupied nests; also requires mitigation for loss of nest trees)
  - San Joaquin kit fox (begins on HCP/NCCP page 6-37; see also Table 6-1) (requires planning surveys and preconstruction surveys; avoidance and minimization requirements and construction monitoring apply if kit fox dens are observed)

PDM BIO-4: Rare Plant Survey & Protection

Protocol-level rare plant surveys were conducted in 2023; rainfall and temperature conditions were good that year, surveys were conducted during the peak blooming period for the species potentially present, and survey results were negative. Thus, if project construction occurs before 2025, no further action is required.

If project construction begins in 2025 or later, an updated protocol-level rare plant survey shall be conducted by a qualified biologist/botanist who is familiar with the rare plants of the project region and has been approved by the City of Pittsburg Community Development Director. Surveys shall be conducted prior to construction, with enough lead time to allow for the follow-up actions described below, if they are warranted. Surveys shall be conducted during the peak blooming periods of the target species and shall cover all potentially suitable habitats within the project site and surrounding 250-foot-wide buffer. Target species and blooming periods are listed in the matrix below; the matrix is highlighted to group species with similar blooming periods.

Table 5. Rare Plant Survey Periods

Species	Blooming Period
Lobb's aquatic buttercup (*Ranunculus lobbii*)	February – May
Johnny-nip (*Castilleja ambigua* var. *ambigua*)	March – August
Showy golden madia (*Madia radiata*)	March – May
California alkali grass (*Puccinellia simplex*)	March – May
California androsace (*Androsace elongata* ssp. *acuta*)	March – June
Stinkbells (*Fritillaria agrestis*)	March – June
Diablo helianthella (*Helianthella castanea*)	March – June
Hogwallow starfish (*Hesperevax caulescens*)	March – June
Stinkbells (*Fritillaria agrestis*)	March – June
Mt. Diablo jewelflower (*Streptanthus hispidus*)	March – June
Sylvan microseris (*Microseris sylvatica*)	March – June
Little mousetail (*Myosurus minimus* ssp. *apus*)	March – June
Small-flowered morning-glory (*Convolvulus simulans*)	March – July
Keck's checkerbloom (*Sidalcea keckii*)	April – May, sometimes into June
Mt. Diablo fairy-lantern (*Calochortus pulchellus*)	April – June
Tehama navarretia (*Navarretia heterandra*)	April – June
Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*)	April – June
Saline clover (*Trifolium hydrophilum*)	April – June
Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)	April – July
Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)	April – July
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	May – November
Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*)	May – October
Woolly-headed lessingia (*Lessingia hololeuca*)	June – October
Big tarplant (*Blepharizonia plumosa*)	July – October
Mt. Diablo buckwheat (*Eriogonum truncatum*)	September, sometimes into November/December

If no special-status plants are documented within the area to be disturbed for project construction (including staging and access), no further action is required.

If special-status plants covered by the ECC HCP/NCCP, or plants designated as "no take" by the ECC HCP/NCCP, are present on the site, the relevant survey report(s) shall be submitted to the East Contra Costa Habitat Conservancy per HCP/NCCP Section 6.3.1 (see page 6-9).

If any of the following species covered by the ECC HCP/NCCP is found to be present, the Project Owner shall promptly notify the East Contra Costa County Habitat Conservancy of the species' presence and the planned construction schedule, to enable the East Contra Costa County Habitat Conservancy to salvage the occurrence(s) in accordance with HCP/NCCP Conservation Measure 3.10 (Plant Salvage when Impacts Are Unavoidable). The Project Owner shall confirm with the East Contra Costa County Habitat Conservancy that the take limits established by the HCP/NCCP for the species in question have not been breached.

- Big tarplant
- Mount Diablo fairy lantern
- Diablo helianthella
- Showy golden madia
- Adobe navarretia

Under no circumstance shall any of the following HCP/NCCP "no-take" plants be harmed.

- Large-flowered fiddleneck
- Alkali milkvetch
- Mt. Diablo buckwheat
- Diamond-petaled poppy
- Contra Costa goldfields
- Caper-fruited tropidocarpum

Due to their extreme rarity, none of these species is expected to be present on the project site, but if any of them are found, the applicant shall notify the East Contra Costa County Habitat Conservancy immediately and shall work with the Conservancy to determine and execute the appropriate course of action.

If any special-status plant not covered by the ECC HCP/NCCP is found to be present, the occurrence(s) shall be avoided and protected in place to the extent feasible. If the occurrence(s) cannot be entirely avoided, then a Plant Salvage and Mitigation Plan shall be prepared and implemented. The Plan shall be prepared by a qualified biologist/botanist who is familiar with the rare plants of the project region and has experience conducting rare plant salvage operations. Plant salvage techniques shall be consistent with those outlined in HCP/NCCP Conservation Measure 3.10. The plan shall, at a minimum, include the following.

- Quantity and species of plants to be planted or transplanted
- Location of the mitigation/transplant site(s)
- Salvage methods, such as relocation/transplantation, seed collection, etc., including storage locations and methods to preserve the plants
- Procedures for propagating collected seed, including storage methods
- Planting procedures, including the use of soil preparation and irrigation

- Schedule and action plan to maintain and monitor the mitigation/transplant site for a minimum 3-year period
- Interim and final success criteria and corrective action thresholds (e.g., growth, plant cover, survivorship)
- Potential corrective actions/contingency measures in the event interim success criteria are not being met (e.g.., weed removal, supplemental irrigation, supplemental plantings, etc.).
- Reporting requirements and procedures, including the contents of annual progress reports, report submittals, review/approval responsibilities, etc.

The Project Owner shall implement the Plant Salvage and Mitigation Plan. The Plan shall be implemented under the oversight of the biologist/botanist who prepared it or another individual with equivalent qualifications. The biologist shall be approved by the City of Pittsburg Community Development Director.

PDM BIO-5: Special-Status Bumble Bee Surveys & Protection

No more than 1 year prior to the initiation of vegetation removal and grading at the project site, the Project Owner shall retain an appropriately qualified biologist (see next paragraph) who has been approved by the City of Pittsburg Community Development Director to conduct surveys for Crotch bumble bee, obscure bumble bee, and American bumble bee. As of this writing, no survey protocol has been published, although DFW has issued preliminary survey guidance for candidate bumble bee species (California Department of Fish and Wildlife 2023). Consequently, there are no official requirements for bumble bee surveyor qualifications. Biologist qualifications for bumble bee surveys will conform to current guidance prevailing at the time surveys are performed.

Surveys shall be performed by a qualified entomologist familiar with the species' behavior and life history and shall include both habitat evaluations and foraging bee surveys consistent with the recommendations in Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (California Department of Fish and Wildlife 2023). Surveys shall be conducted during each species' peak worker activity period, detailed in the matrix below. Surveys shall cover all areas of onsite habitat determined by the biologist to be suitable for any of the three target bumble bee species, based on habitat mapping conducted for the project to date. A minimum of 3 – 4 surveys shall be conducted, spaced 2 weeks apart; the total number, timing, and duration of surveys performed shall depend on the biologist's judgment, in consideration of weather, site conditions, and protocol requirements. Surveys shall be designed to identify all foraging bumble bee species; a single survey may be used to detect all species with peak activity periods including the survey date.

Table 6. Bumblebee Survey Periods

Species	Peak Activity
Crotch bumble bee	April 1 – July 31
Obscure bumble bee	April 20 – August 20
American bumble bee	June 1 – October 1

Source: Williams et al. (2014)

If Crotch bumble bee, obscure bumble bee, or American bumble bee is observed onsite during the surveys, an additional survey or surveys shall be conducted to determine whether a nest or colony is present, unless the biologist is satisfied that the initial survey(s) were sufficient to rule out the presence of nests/colonies.

If a nest or colony is present onsite, the biologist shall ~~establish an appropriate~~consult with CDFW to determine appropriate next steps, and shall ensure that the City of Pittsburg is informed of consultation outcomes. At a minimum, the biologist shall establish an avoidance buffer determined in consideration of site conditions, the species involved, and the construction activities planned prior to the close of the nesting season. No entry into the buffer shall be permitted. The buffer shall be delineated in the field using orange construction fencing or another appropriate medium, under the biologist's oversight, and shall remain in place until the end of the nesting species' gyne flying season, or until the qualified biologist determines that the nest has been abandoned

If no nest/colony is present onsite, no further action will be taken. However, all workers shall be required to avoid injury and mortality to bumble bees they may encounter; this requirement shall be discussed during the WEAP training (PDM BIO-2) and shall be reiterated to all workers if special-status bumble bees are confirmed onsite.

To support improved understanding and conservation of all three bumble bee species, survey results, including negative findings, shall be submitted to CDFW prior to implementing project-related ground-disturbing activities. At a minimum, the survey report shall include the following information.

(1) A description and map of the survey area, focusing on areas that could provide suitable habitat for Crotch bumble bee, obscure bumble bee, or American bumblebee
(2) Field survey conditions, including name(s) of qualified entomologist(s) and brief qualifications; date(s) and time(s) of survey; survey duration; general weather conditions; survey goals; and species searched
(3) Map(s) showing the location of nests/colonies, if any
(4) A description of physical (e.g., soil, moisture, slope) and biological (e.g., plant composition) conditions where each nest/colony is found, including native plant composition (e.g., density, cover, and abundance) within impacted habitat (e.g., species list separated by vegetation class; density, cover, and abundance of each species)
(5) The measures that will be implemented to avoid adverse effects on the bumble bee species present
(6) An assessment of potential project effects on special-status bumble bees during project construction and project operation/maintenance, with avoidance and minimization measures in place

PDM BIO-6: Monarch Butterfly Protection

No more than 2 days prior to the initiation of vegetation trimming or removal for construction, the Project Owner shall ensure that a qualified biologist approved by the City of Pittsburg Community Development Director surveys all areas of potentially suitable habitat for monarch butterfly larval host plants. If host plants are found, the biologist shall survey all host plants for monarch eggs, larvae, and pupae. If no eggs, larvae, or pupae are found, plants may be removed within 2 days. If eggs, larvae, or pupae are present, host plants shall be protected in place until the biologist has determined that no more eggs, larvae, or pupae are present.

PDM BIO-7. Western Pond Turtle Protection

Prior to the start of construction or O&M activities, The Project Owner shall ensure that a qualified biologist approved by the City of Pittsburg Community Development Director conducts a pedestrian preconstruction survey of the project site and adjacent suitable habitat for western pond turtle. The survey shall be conducted no more than 24 hours prior to start of work, and shall include walking the work area limits and interior and investigating all areas that could be used by the species. If western pond turtle individuals are found, the biologist shall relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return. If the biologist determines that it is warranted, exclusion measures shall be implemented to prevent individuals returning to the active work site.

PDM BIO-8: Nesting Bird Protection (General)

If project-related disturbance (e.g., vegetation removal or trimming, clearing/grubbing, grading) commences any time during the nesting/breeding season of native bird species potentially nesting in or near the study area (February 1 – August 31 for most species; January 1 through August 31 for Golden Eagle; March 15 – September 15 for Swainson's Hawk), a preconstruction survey for nesting birds shall be conducted by a qualified biologist approved by the City of Pittsburg Community Development Director, using binoculars. The survey shall take place no more than 2 weeks prior to the initiation of work.

If active nests are found in areas that could be directly affected or are within 300 feet of disturbance activities and would be subject to prolonged construction-related noise, a no-disturbance buffer zone shall be created around active nests for the remainder of the breeding season or until the biologist determines that all young have fledged or that the nest has been abandoned. No entry into the no-activity buffer shall be permitted. The no-activity buffer shall be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The size of the buffer zone(s) shall be determined by the biologist based on the species involved, the amount of vegetative and other screening between the nest and areas where construction activity shall take place, and, if appropriate, other site-specific factors. The minimum buffer width shall be 50 feet for species other than raptors, and a minimum of 500 feet for raptor species, and may be enlarged by taking into account factors such as the following.

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity.
- Sensitivity of nesting species and behaviors of the individual nesting birds.

If nesting Swainson's Hawk or Golden Eagle are observed, buffers and other avoidance measures shall conform to Species-Level Measures for these species as laid out in ECC HCP/NCCP Section 6.4.3. Buffers stipulated in the ECC HCP/NCCP for these species are as follows.

- Swainson's Hawk: nest survey – 1,000 feet; no-project-activity nest protection buffer – 1,000 feet
- Golden Eagle: nest survey – not specified; no-project-activity nest protection buffer – 0.5 mile

If site-specific conditions (e.g., steep topography, dense vegetation) or the nature of the covered activity (e.g., limited activities or limited potential for disturbance due to low noise levels) indicate

that a smaller nest protection buffer could be used, the applicant will coordinate with the East Contra Costa Habitat Conservancy as the ECC HCP/NCCP Implementing Entity (for both species), California Department of Fish and Wildlife (CDFW) (for both species), and/or U.S. Fish and Wildlife Service (USFWS) (for Golden Eagle only). The City of Pittsburg will be notified of any resulting adjustments to nest protection buffers

PDM BIO-9: Nesting Bird Protection (Bald Eagle)

Bald Eagle nests may be built throughout the year. Consequently, the Project Owner shall retain a qualified biologist approved by the City of Pittsburg Community Development Director to conduct a preconstruction survey for nesting Bald Eagles prior to the initiation of work at the site (including vegetation removal or trimming, clearing/grubbing, grading, etc.). The survey shall be conducted using binoculars and shall take place no more than 2 weeks prior to the initiation of work.

If an occupied or active nest is present, construction-related activity shall be prohibited within 0.5 mile of the nest unless site-specific conditions or the nature of the construction activity (e.g., dense vegetation, limited noise generation, limited activities) indicate that a smaller buffer could be appropriate or that a larger buffer should be implemented. The biologist shall coordinate with the East Contra Costa County Habitat Conservancy, DFW, and USFWS to determine the appropriate buffer size.

The nest buffer shall be delineated in the field using temporary construction fencing or another suitable low-impact medium. Buffer fencing shall be placed only on the project site; the buffer shall not be put in place on neighboring properties not involved in project construction and staging Construction shall be monitored by a qualified biologist to ensure that the buffer remains in place and that no construction activities occur within the buffer zone until the biologist has determined that the young have fledged or that the nest has been abandoned.

PDM BIO-10: Special-Status Bat Survey & Protection

Prior to the initiation of any activity that could disturb roosting bats (including vegetation trimming/removal, surveys involving the use of lasers that produce high-frequency sounds, drilling, or other activity producing high-frequency sounds, a qualified biologist (as stipulated in Section 5 of H.T. Harvey & Associates 2019, and subject to approval by the City of Pittsburg Community Development Director) shall conduct a habitat evaluation for special-status bats, focusing on the needs of pallid bat, western red bat, and hoary bat, the species identified by planning surveys as having potential to be present on the site. For purposes of this PDM, high-frequency sound is defined as sound in the 20 kHz – 50 kHz frequency range, based on bat disturbance information in California Department of Transportation (Caltrans) bat mitigation guidelines (H.T. Harvey & Associates 2019). If Caltrans guidance is updated, or if frequency sensitivity information relevant to the bat species with potential to occur becomes available prior to project construction, this definition shall be updated accordingly.

Surveys shall include the entirety of the project site plus a 400-foot-wide buffer. If no roosting habitat suitable for these species is present on the project site, no further action is required. If roosting habitat is present, the following additional requirements shall apply. Any potential roost trees/other potential roosting habitat shall also be considered potential bat maternity roosts.

- Before any activities with the potential to disturb roosting bats begin, the approved biologist(s) shall conduct focused surveys for roost occupancy. These shall be conducted at least 2 weeks prior to the start of work and shall include:
    - Daytime visual surveys for bats and evidence of bat presence such as guano or urine staining
    - Evening emergence and acoustic surveys

  If bat presence is confirmed, the species, number of individuals, and roost type (maternity/non-maternity) shall be documented and reported to the CNDDB. Bats shall not be disturbed or relocated during the surveys.

- Confirmed non-maternity roosts shall be protected by buffers as laid out in the matrix that follows. Buffers shall be delineated in the field with temporary construction fencing or another suitable measure, installed under biologist oversight. Note that buffer distances vary depending on the species and the type of noise/disturbance involved. (If bat species other than those addressed here are encountered, buffer distances shall be consistent with H.T. Harvey & Associates 2019; see Table 7-1). The biologist shall coordinate with construction staff to determine the appropriate buffer width; if there is uncertainty, the more conservative buffer width shall prevail.

Table 7. Bat Disturbance Buffers

Disturbance Source	Pallid Bat	Other Bat Species
Construction trucks and heavy equipment	120 feet	100 feet
Smaller vehicles	90 feet	65 feet
Drilling, trenching, and small equipment	150 feet	150 feet
Unshielded light source	400 feet	300 feet
Pedestrian traffic	65 feet	65 feet
Stationary source of diesel/gasoline exhaust operating for more than 2 minutes	250 feet	250 feet
Any equipment generating high-frequency (20 kHz – 50 kHz) sound (laser survey transits, drilling, etc.), as identified by the biologist	Buffer shall be determined on a case-by-case basis by identifying the distance at which high-frequency sound generated by the equipment becomes indistinguishable from background levels, using one of the acoustic methods described on pp. 7-16 – 7-18 of the California Department of Transportation bat mitigation guidelines (H.T. Harvey & Associates 2019), or updated equivalent	

Source: H.T. Harvey and Associates 2019

If a confirmed roost must be removed or trimmed for construction, or if work must occur within the buffers laid out above, work shall be restricted to daylight hours when the DFW-approved biologist has confirmed that it the roost is not occupied, and shall be overseen by the biologist to prevent injury or mortality. The biologist shall have authority to divert or stop work in the event of excessive risk to bats

- Confirmed maternity roosts shall be protected by the same buffers identified above. Maternity roosts shall not be removed unless removal cannot be avoided, and in no case

shall a confirmed maternity roost be removed during the breeding/non-volant season (April – August). If removal of a maternity roost is necessary, the Project Owner shall consult with DFW to determine appropriate compensatory mitigation such as the provision of bat boxes and shall submit a Bat Habitat Mitigation Plan for DFW approval. Consultation and submittal of the Mitigation Plan shall occur prior to the removal, and the removal shall not take place until DFW has approved the Plan. The Project Owner shall then be responsible for implementing DFW-approved mitigation for removal of bat maternity roost habitat

PDM BIO-11: San Joaquin Pocket Mouse Protection

Vegetation removal, clearing/grubbing, and grading activities for each work phase shall be conducted in a uniform direction to allow mobile animals such as San Joaquin pocket mouse the ability to escape the disturbance area into adjacent undisturbed habitat. Project construction shall also avoid the creation of fragmented islands of habitat where individuals may become trapped, isolated from resources, and at risk from eventual clearing/grading operations.

PDM BIO-12: American Badger Survey & Protection

No more than 4 weeks before the commencement of ground disturbance at the site, a qualified biologist approved by the City of Pittsburg Community Development Director shall conduct a survey for American badger den sites.

If an occupied den is found, and young are not present, then any badgers present shall be removed from the den either by the use of appropriate exclusionary devices or by trapping and relocation. The removal method shall be approved by DFW prior to implementation; if trapping and relocation are used, it shall be carried out by biologist(s) with all required permits for badger handling. Any trapped badgers shall be relocated to other suitable habitat at least 500 feet outside the project site boundary. Once any badgers are excluded or trapped and relocated, den(s) shall be excavated by hand and backfilled to prevent reoccupation. Exclusion shall continue until the badgers are successfully removed from the site, as determined by the biologist.

Badgers shall not be excluded or relocated if it is determined by the biologist that young are or may be present. Any occupied dens shall be protected with a 50-foot-wide no-activity buffer. The buffer shall be delineated in the field by a qualified biologist, using temporary construction fencing or another appropriate low-impact medium, and shall remain in place until the biologist has determined that the young are no longer dependent on their mother and the den site. No entry into the buffer area shall be permitted.

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APPENDIX A

REPRESENTATIVE PHOTOGRAPHS OF THE STUDY AREA

(Recorded ~~11/2018 to 06~~04/2019 to 05/2023)

Representative Photographs of the Study Area

Photo 1. Representative photo of Study Area, annual grassland dominated by non-native annual grasses and large patches of black mustard (*Brassica nigra*). (4/12/2023)

Photo 2. Remnant golf cart path covered by overgrown black mustard. (4/12/2023)

Representative Photographs of the Study Area

Photo 3. Representative view of landscaping trees, dominated by Peruvian pepper tree (*Schinus molle*) and Bishop pine (*Pinus muricata*). (5/31/2023)

Photo 4. Representative view of the paved areas with weedy species growing in asphalt cracks. (5/19/2023)

Representative Photographs of the Study Area

Photo 5. Valley foothill riparian habitat in corridor on east edge of study area.

Photo 6. Perennial wetland dominated by broad-leaved cattail (*Typha latifolia*), with Himalayan blackberry (*Rubus armeniacus*) thickets behind. (4/12/2023)

Representative Photographs of the Study Area

Photo 7. Remnant golf pond with margins dominated by upland species including wall barley (*Hordeum murinum*) and short pod mustard (*Hirschfeldia incana*). (7/12/2023)

Photo 8. Seasonal wetland near eastern edge of project area, 2019.

Representative Photographs of the Study Area

Photo 9. Perennial wetland near eastern edge of project area, 2019.

Photo 10. Perennial wetland in seasonal drainage near southern edge of project area, 2019.

Representative Photographs of the Study Area

Photo 11. Native wildflowers within grazed annual grassland outside of former golf course, southwestern edge of study area. 2019.

Photo 12. Ruderal habitat in formerly irrigated/mowed golf course green, 2019.

Representative Photographs of the Study Area

Photo 13. Ground Squirrel Burrow Complex, 2019.

Photo 14. Cracking within clay soils, 2019.

APPENDIX B

WETLAND DELINEATION REPORT

APPENDIX C

RARE PLANT SURVEY REPORT

APPENDIX D

ANIMALS SPECIES IDENTIFIED WITHIN THE STUDY AREA

Appendix D. Wildlife Species Documented within the Delta View Golf Course Project Specific Area. Raptor and other Surveys Conducted by VNLC, April 2022 to July 2023

Scientific Name	Common Name	Notes
Birds		
Accipiter cooperii	Cooper's Hawk	
Agelaius phoeniecus	Red-winged Blackbird	Territorial display
Anas platyrynchos	Mallard	
Aphelocoma californica	California Scrub-Jay	
Bubo virgianus	Great Horned Owl	2 fledglings and adults
Buteo jamaicensis	Red-tailed Hawk	Possible nest
Calypte anna	Anna's Hummingbird	
Cathartes aura	Turkey Vulture	
Charadrius vociferus	Killdeer	
Columba livia	Rock Pigeon	
Corvus brachyrhynchos	American Crow	Nesting
Corvus corax	Common Raven	
Elanus leucurus	White-tailed Kite	
Falco sparverius	American Kestrel	Possible nest
Haemorhos mexicanus	House Finch	
haemorhous purpureus	Purple Finch	
Icterus bullockii	Bullock's Oriole	
Meleagris gallopavo	Wild Turkey	
Melozone crissalis	California Towhee	
Mimus polyglottos	Northern Mockingbird	
Molothrus ater	Brown-headed Cowbird	
myiarchus cinerascens	Ash-throated Flycatcher	
Patagionas fasciata	Band-tailed Pigeon	
Pipilo maculatus	Spotted Towhee	
Psaltriparus minimus	Bushtit	
Sayornis nigricans	Black Phoebe	
Sayornis saya	Say's Phoebe	
Setophaga coronata	Yellow-rumped Warbler	
Sialia mexicana	Western bluebird	Possible nest
Streptopelia decaocto	Eurasian-collared Dove	
Sturnella neglecta	Western Meadowlark	
Sturnus vulgaris	European Starling	
Tachycineta bicolor	Tree Swallow	
Turdus migratorius	American Robin	
Tyrannus verticalis	Western Kingbird	
Zenaida macroura	Mourning Dove	
Zonotrichia atricapilla	Golden-crowned Sparrow	
Zonotrichia leucophrys	White-crowned Sparrow	

*Listed animal species may have been seen or heard outside of the Project Specific Area, but within 1 mile.

APPENDIX E

USFWS INFORMATION FOR PLANNING AND CONSULTATION LIST

APPENDIX F

STAFF RESUMES

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BIOLOGICAL EVALUATION REPORT

PITTSBURG DATA HUB PROJECT

City of Pittsburg
Contra Costa County, California

Prepared for:

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Prepared February 2024, Revised September 2024

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1.0 INTRODUCTION

This report presents the methods and results of a biological habitat evaluation conducted within the Pittsburg Data Hub (PDH) project study area (study area), located on the outskirts of the City of Pittsburg, California (**Figure 1**). The report has been prepared by Vollmar Natural Lands Consulting (VNLC) on behalf of WSP USA. The evaluation was conducted to identify and characterize existing conditions within the study area, and to assess the potential for special-status species and sensitive habitats to occur within the study area. Pittsburg Data Hub LLC, a wholly owned subsidiary of Avaio Digital Partners I, LLC (Avaio) is proposing to redevelop a portion of the closed Delta View Golf Course as a data center. The proposed data center may contain facilities used to house information technology equipment including computers, telecommunications, auxiliary power, and storage systems, among other infrastructure.

The study area is approximately 75.9 acres. It comprises three separate parcels totaling 35.7 acres (project area), and a 250-foot buffer of the three parcels totaling 40.2 acres. The project area parcels are owned and managed by the project proponent. Surrounding parcels within the 250-foot buffer are owned and managed by a variety of public and private entities.

Information presented in this report is based on a combination of sources, including a rare plant survey and floristic inventory conducted by VNLC, a wetland delineation conducted by VNLC, additional VNLC reconnaissance-level surveys and database reviews, and on the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). Relevant sources are cited and/or attached as appendices. Sensitive information (i.e. exact locations of sensitive species occurrences) is provided separately under a confidential cover. This report was prepared to provide the information required by the California Energy Commission (CEC) for processing of a Small Power Plant Exemption (SPPE) application.

1.1 Potentially Occurring Special-status Species

Two special-status animals have been observed within the study area: White-tailed Kite (*Elanus leucurus*), a California Fully Protected bird species, and Cooper's Hawk (*Accipiter cooperii*), a California Department of Fish and Wildlife (CDFW) Watch List species, were each observed foraging in the vicinity of the study area. Based on habitat requirements and distribution, there are 27 other special-status wildlife species and 24 special-status plants with at least low potential to occur within the study area. Among these are three animal species listed as Threatened or Endangered under the Endangered Species Act (ESA) and four animal species listed as Threatened or Endangered under the California Endangered Species Act (CESA). Two of these latter species are also included among the ESA-listed species. In addition, one ESA Proposed Threatened animal species, one ESA Candidate animal species and one CESA Candidate Endangered animal species have potential to occur. No ESA- or CESA-listed plant species are expected to occur in the study area. Special-status animals and plants are discussed in detail in **Section 6.2** and **Section 6.3**, respectively. Comprehensive lists of all special-status animals and plants known from the vicinity of the study area are provided as **Tables 2** and **3**, respectively.

Legend

- Highway
- Selected Local Road
- Stream
- Public or Preserved Land
- Urban Area
- County Boundary

Data Sources: TIGER, 2010 | City of Pittsburg, 2018
USGS, Various | | CPAD, 2014 | Landsat Imagery Gap, 1998 | SFEI, 2015| USFWS, 2014 | VNLC, 2023
GIS/Cartography by R. Miller, Oct. 2023
Map File: 567_PSA_RP_Vicinity_A-P_2024-0212.mxd

FIGURE 1
Regional Vicinity Map

Pittsburg Data Hub Project
City of Pittsburg, California

N
W E
S

1:95,040
(1 in. = 1.5 miles, at letter-size layout)

0 0.5 1 2 Km

0 0.5 1 2 Mi

1.2 Designated Critical Habitat

The study area is located within designated critical habitat for Delta smelt (*Hypomesus transpacificus*). However, there is no habitat for this species within the study area, as the drainages are all seasonal to ephemeral. The nearest designated critical habitat for which suitable habitat is present on the study area is for California red-legged frog (*Rana draytonii*), which is approximately eight miles south of the site.

1.3 Sensitive Habitats

A wetland delineation conducted by VNLC identified a total of 1.916 acres of potential jurisdictional Waters within the study area, consisting of 1.909 acres of wetlands and 0.007 acre of other Waters, with habitats including forms of perennial and seasonal wetlands and drainage channels. The delineation also identified 1.597 acres of canal and 1.673 acres of artificial basins that were constructed in upland habitats. In addition to these aquatic resources, the plant survey identified 1.86 acres of riparian habitat which may be subject to jurisdiction of the CDFW. No other sensitive habitats were identified within the study area. Mature trees and other habitats may also provide potential habitat for a variety of bird and bat species, including special-status species.

2.0 PROJECT BACKGROUND INFORMATION

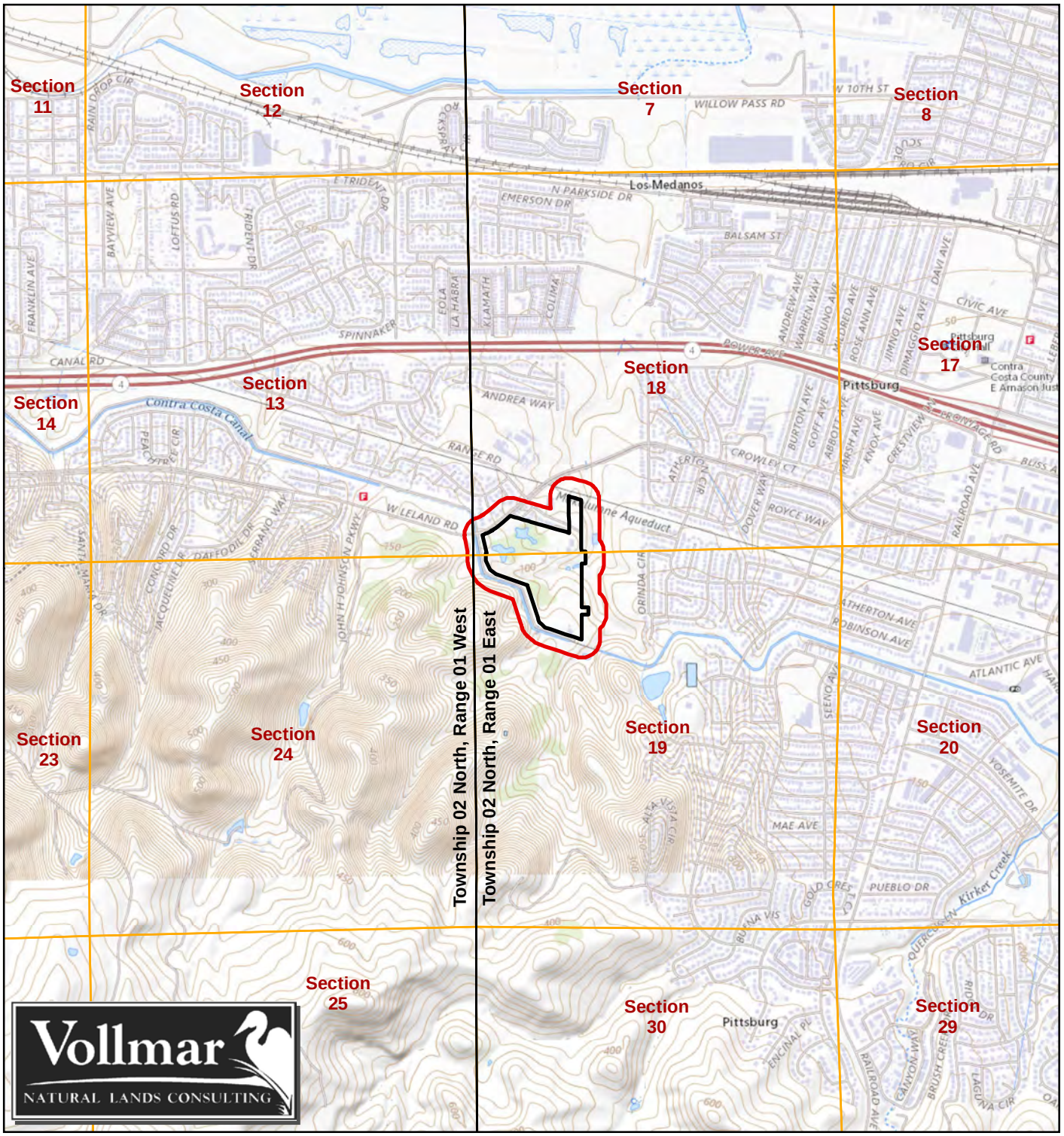
2.1 Study Area Location

The study area is located along the southern edge of the City of Pittsburg, California, and is mapped on the Honker Bay 7.5' United States Geological Survey (USGS) topographic quadrangle (**Figure 2**). The study area is within Sections 18 and 19 of Township 2 North, Range 1 East, and Sections 13 and 24 of Township 2 North, Range 1 West, of the Mount Diablo Base & Meridian; this area is within the Los Medanos land grant. The study area may be accessed from State Highway 4 heading east by exiting at Bailey Road, then turning right (south) on to Bailey Road, then turning left (east) on West Leland Road. Golf Club Road, which heads south from West Leland Road 1.7 miles east of Bailey Road, dead-ends at the former Delta View Golf Course. Much of the study area is accessible via golf cart trails, though some areas have become inaccessible to vehicles because of trees falling onto the trails.

2.2 Physical Description of Study Area

The study area consists of rolling hills along the lower slopes of the eastern Los Medanos Hills, overlooking the City of Pittsburg. Elevation within the study area ranges from approximately 57 feet to 161 feet above sea level (USGS 1997), trending upward in elevation from the northeast to the southwest.

The study area is dominated by silt and clay soils that support annual grassland in undeveloped areas, though extensive areas have been partially leveled and native soils have been replaced by soils suited for golf course landscaping. The fine-textured soils within natural and excavated concave areas support seasonal wetlands.



Legend

- Project Site
- 250-foot Buffer of Project Site
- Public Land Survey Boundary

FIGURE 2
USGS Topographic Map

Pittsburg Data Hub Project
City of Pittsburg, California

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1:24,000
1 inch = 2,000 feet

0 250 500 1,000 M

0 750 1,500 3,000 Ft

Data Sources: VNLC, 2023 | USGS, 2022 | WSP, 2023
City of Pittsburg, 2019 | ESRI/Maxar Aerial Imagery, 2023
GIS/Cartography by: R. Miller, Oct. 2023
Map File: 567_PSA_RP_Topo_A-P_2024-0212.mxd

The study area was formerly owned by the City of Pittsburg and managed as a public golf course for decades. Lands to the south and west of the study area are additional portions of the former golf course (undeveloped as of the writing of this report). Lands to the east consist of open space containing a transmission owned by Pacific Gas and Electric (see **Figure 5**, **Section 5.3**). To the north of the study area is medium-density residential development.

Following the closure of the golf course in 2018, previously managed areas have been colonized by dense and tall stands of invasive weeds. Portions of the study area that were never maintained as golf course grounds are also disturbed, either due to the planting of stands of exotic trees and shrubs, or due to a complete lack of grazing or other forms of management. Grazed areas outside of the fencing that surrounds the golf course, to the southwest, are dominated by non-native grasses and forbs, though localized areas of native wildflowers were observed during 2023 botanical surveys. The remnant intact drainages that flow through the study area support a few riparian tree species, but these are widely scattered and include many exotic trees, and do not form contiguous riparian forest or scrub.

2.3 Regional Setting

The open space to the south consists of grasslands typical of the dry slopes of the Diablo Range, and more generally of Mediterranean California as a whole. This habitat matches the description of "annual grassland" presented in the HCP/NCCP (in contrast to "native grassland", "alkali grassland", or "ruderal") (East Contra Costa County Habitat Conservation Plan Association, 2007). That is, it is dominated by introduced annual grasses, typically wild oats, (*Avena* spp.), brome grasses (*Bromus* spp.), and annual fescues (*Festuca* spp.). Trees are almost entirely absent, and shrubs are rare. The exceptions to this are low-density stands of native oaks (*Quercus* spp.) sheltered along ephemeral drainages, and growing on exposed hilltops. (These are mapped and described as oak savannah or oak woodland in the HCP/NCCP, but are very limited in area) Small unvegetated areas are present, including both rock outcrops, as well as areas denuded by grazing and/or erosion. These grasslands are primarily managed as dryland cattle pasture, though they may historically have been disked for increased productivity (ibid).

Immediately east of the project site is a transmission corridor containing open space. This is made up of a mix of annual grassland, ruderal habitat, and an intermittent stream with associated riparian habitat. The ruderal habitat, as described in the HCP/NCCP, includes a mix of non-native annual grasses and other weedy species (ibid). The riparian corridor supports small patches of riparian woodland/scrub as described in the HCP/NCCP. This is characterized by an open canopy of native riparian trees such as willows (*Salix* spp.) and cottonwoods (*Populus* spp.), with an understory of annual grassland, non-specialized seasonal wetland plants such as knotweed (*Polygonum* spp.) and dock (*Rumex* spp.), and occasional thickets of shrubs such as willows or Himalayan blackberry (*Rubus armeniacus*) (Vollmar Natural Lands Consulting 2024).

Immediately west of the project site is the remainder of the former golf course. Past that golf course lies another narrow riparian corridor, similar to the one east of the project site. Suburban development of medium-density housing lies beyond the riparian corridors to the east and west, and also immediately north of the project site.

3.0 PROJECT DESCRIPTION

The primary goal of the PDH is to be a state-of-the-art data center that provides greater than 99.999 percent reliability (five nines of reliability). The PDH has been designed to reliably meet the increased demand of digital economy, its customers, and the continued growth. The PDH's purpose is to provide its customers with mission critical space to support their servers, including space conditioning and a steady stream of high-quality power supply.

The components of the PDH will include:

- A three-story approximately 347,740 square foot data center building;
- A project substation;
- A PG&E switching station and transmission lines;
- A backup electrical generating facility;
- Site access and surface parking;
- Landscaping;
- Stormwater controls and features; and
- Water and sewer pipeline interconnections.

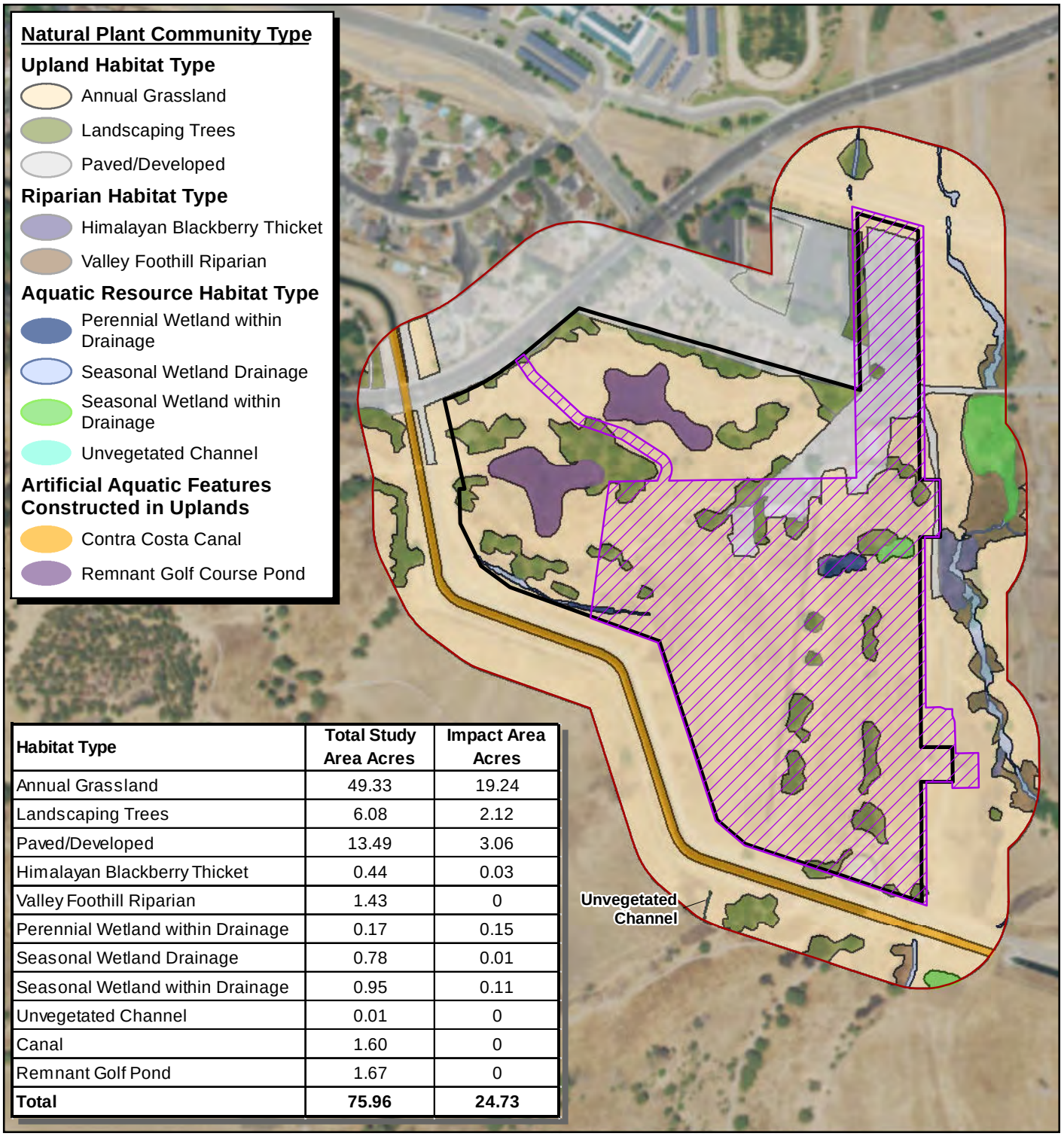
The PDH project's main component will be a three-story 347,740 square foot data center building which will house computer servers for private clients in a secure and environmentally controlled structure and would be designed to provide 60 megawatts (MW) of power to information technology (Critical IT) equipment.

The data center building will consist of two main components; the data center suites that will house client servers, and the administrative facilities including support facilities such as the building lobby, restrooms, conference rooms, landlord office space, customer office space, loading dock and storage.

The data center suite components will consist of three levels of data center space. Each level will contain two data center suites and corresponding electrical/UPS rooms.

The data center is expected to have between 20 and 30 employees and 12-15 visitors (including deliveries) visit the site per day.

Figure 3 depicts the location of planned project activities overlaid on study area habitats, including the acreage of each habitat type to be converted by the proposed project.



Habitat Type	Total Study Area Acres	Impact Area Acres
Annual Grassland	49.33	19.24
Landscaping Trees	6.08	2.12
Paved/Developed	13.49	3.06
Himalayan Blackberry Thicket	0.44	0.03
Valley Foothill Riparian	1.43	0
Perennial Wetland within Drainage	0.17	0.15
Seasonal Wetland Drainage	0.78	0.01
Seasonal Wetland within Drainage	0.95	0.11
Unvegetated Channel	0.01	0
Canal	1.60	0
Remnant Golf Pond	1.67	0
Total	**75.96**	**24.73**

Legend

- Impact Area
- Project Site
- 250-foot Buffer of Project Site

Data Sources: VNLC, 2023 | City of Pittsburg, 2019
WSP 2023 | USDA, 2022
GIS/Cartography by R. Miller and T. Hurd, October 2023
Map File: 567_PSA_Impacted_Area_A-P_2024-0222.mxd

Vollmar NATURAL LANDS CONSULTING

FIGURE 3
Impacted Communities Map

Pittsburg Data Hub Project
City of Pittsburg, California

N W E S

1:5,000
1 inch = 417 feet

0 50 100 200 M
0 250 500 1,000 Ft

4.0 METHODS

4.1 Preliminary Review

The California Natural Diversity Database (CNDDB version dated September 2023) was reviewed to identify special-status species and habitat observations in the vicinity of the project area. We conducted a nine-quad search of the CNDDB centered on the Honker Bay quadrangle and including all surrounding quadrangles (Walnut Creek, Clayton, Antioch South, Vine Hill, Fairfield South, Denverton, Birds Landing, Antioch North). Per the CEC SPPE application requirements, we also selected all CNDDB element occurrence polygons within 10 miles of the project area. We requested and reviewed a US Fish and Wildlife Service (USFWS) Information Planning and Consultation list (IPaC) list for the study area. We conducted a nine-quad search for rare and listed plant species through the California Native Plant Society (CNPS) online "Inventory of Rare and Endangered Plants." In addition, we reviewed relevant sections of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). We reviewed the California Essential Habitat Connectivity project to identify major habitat corridors (Spencer 2010). Finally, we reviewed site aerial imagery, topographic maps, and soil maps. This information guided the development of field survey strategies for those special-status species with potential to occur in the study area.

4.2 Field Surveys

A reconnaissance-level habitat assessment survey and additional surveys were conducted throughout the study area by VNLC Senior Ecologists Jake Schweitzer and Eric Smith. The initial reconnaissance survey was conducted on November 28, 2018, and involved traversing the entire site and looking for sensitive habitats and habitats with potential to support special-status plants and animals. Specifically, the site was investigated for bird nests, mammal burrows, and aquatic features. Mr. Schweitzer and Mr. Smith conducted a reconnaissance-level nighttime spotlight survey for special-status adult amphibians and other wildlife within the deeper ponds. Mr. Smith is approved by the HCP/NCCP agency to conduct planning surveys for California tiger salamander (CTS, *Ambystoma californiense*), California red-legged frog, covered shrimp, and giant garter snake (*Thamnophis gigas*); resumes of all surveyors are presented in **Appendix F**. All animal species and dominant plant species observed were recorded and the locations of sensitive habitats (e.g., wetlands and other waters) were recorded as points with professional global positioning systems unit (Trimble GeoXH 6000). Many additional biological surveys have been conducted since; these are summarized below, and presented in greater detail in **Appendix B** and **Appendix C**. Representative photographs of habitat conditions were recorded throughout the study area over the timeframe spanning from April 2019 to July 2023 (**Appendix A**).

A formal wetland delineation survey was initially conducted in the project area in Spring 2019. Fieldwork supporting this delineation and the overall habitat assessment included additional surveys by Mr. Schweitzer in February 2019 and April, 2019. An updated delineation was conducted December 2022, with an additional survey of the 250-foot buffer zone in July 2023. The original surveys were conducted by VNLC Senior Ecologist Jake Schweitzer and Staff Ecologist Kristen Chinn. The delineation update surveys were conducted by VNLC Senior Ecologist Eric Smith with assistance by VNLC Staff Ecologist Anton Bokisch. Potentially jurisdictional Waters that were initially documented during the reconnaissance survey were investigated more carefully, and their boundaries were mapped based on the dominance of

hydrophytic vegetation as well as the presence of hydrologic indicators and hydric soils. Methods and results of this study are described in detail in **Appendix B**.

VNLC conducted a protocol rare plant survey and floristic inventory in the study area in 2023. VNLC Botanist Rachel Miller conducted three surveys were scheduled during the peak blooming period (April 12, May 19, and July 12) of all special-status plants with potential to occur within the study area, in order to maximize the potential to detect such species. Methods and results of this study are described in detail in **Appendix C**.

VNLC conducted a study to document hydrologic conditions within basins that hold ponded water in 2019. The purpose of the hydrology surveys was to document ponding depth and duration as well as other parameters (e.g., water temperature and turbidity), in order to determine whether any of the features provide suitable breeding habitat for special-status amphibians. These surveys also included an effort to detect the presence of animal species that could prey upon or compete with special-status amphibians. However, the surveys did not involve the use of aquatic dipnets or seines to capture and confirm the presence of breeding amphibians or other animals. A total of ten rounds of hydrologic surveys were conducted between February 6 and June 25, 2019, with surveys scheduled in a manner that enabled the survey team to document maximum ponding depth (i.e., some surveys conducted following the intense and/or extended rain events) as well as contiguous hydroperiod (i.e., some surveys conducted following extended dry periods) for each basin. These studies were conducted by VNLC Staff Biologist Kristen Chinn.

The study area experienced higher than normal rainfall during the 2018-2019 wet season. This allowed for conservative estimation of pond hydrology parameters and wetland extent. Conditions were considered wetter than average during the December 2022 delineation fieldwork, and also during the spring 2023 rare plant surveys. Precipitation conditions were considered average during the July 2023 delineation fieldwork (**Appendix B**).

VNLC conducted additional wildlife surveys and habitat evaluations of the study area focusing on protected raptors and nesting birds in 2023. These were conducted by VNLC Staff Biologist Misaki Yonashiro on April 12 and May 21, 2023. Further site biological surveys are ongoing, and to date have included various survey visits on March 15, 2024 (Mr. Smith, assisted by VNLC Staff Biologist Trevor Hurd), April 15, 2024 (Mr. Smith, assisted by VNLC Staff Biologist August Maners, May 9, 2024 (Mr. Smith and VNLC Senior Biologist Roxanne Foss), June 6, 2024 (Mr. Smith), and August 6, 2024 (Mr. Smith). These studies are not reported in depth here, but have not produced any additional documentations of special-status species occurrences, nor any new special habitats or jurisdictional features.

5.0 EXISTING CONDITIONS

5.1 Climate

The climate of the study area and surrounding vicinity is characterized as “Mediterranean,” with cool, wet winters and warm, dry summers as well as high inter- and intra-annual variability in precipitation. On average, nearly 98% of precipitation occurs during the “wet season,” from October through May. According to the Parameter-elevation Regression on Independent Slopes Model (PRISM) climate data model (2023), mean annual temperature and precipitation at the study

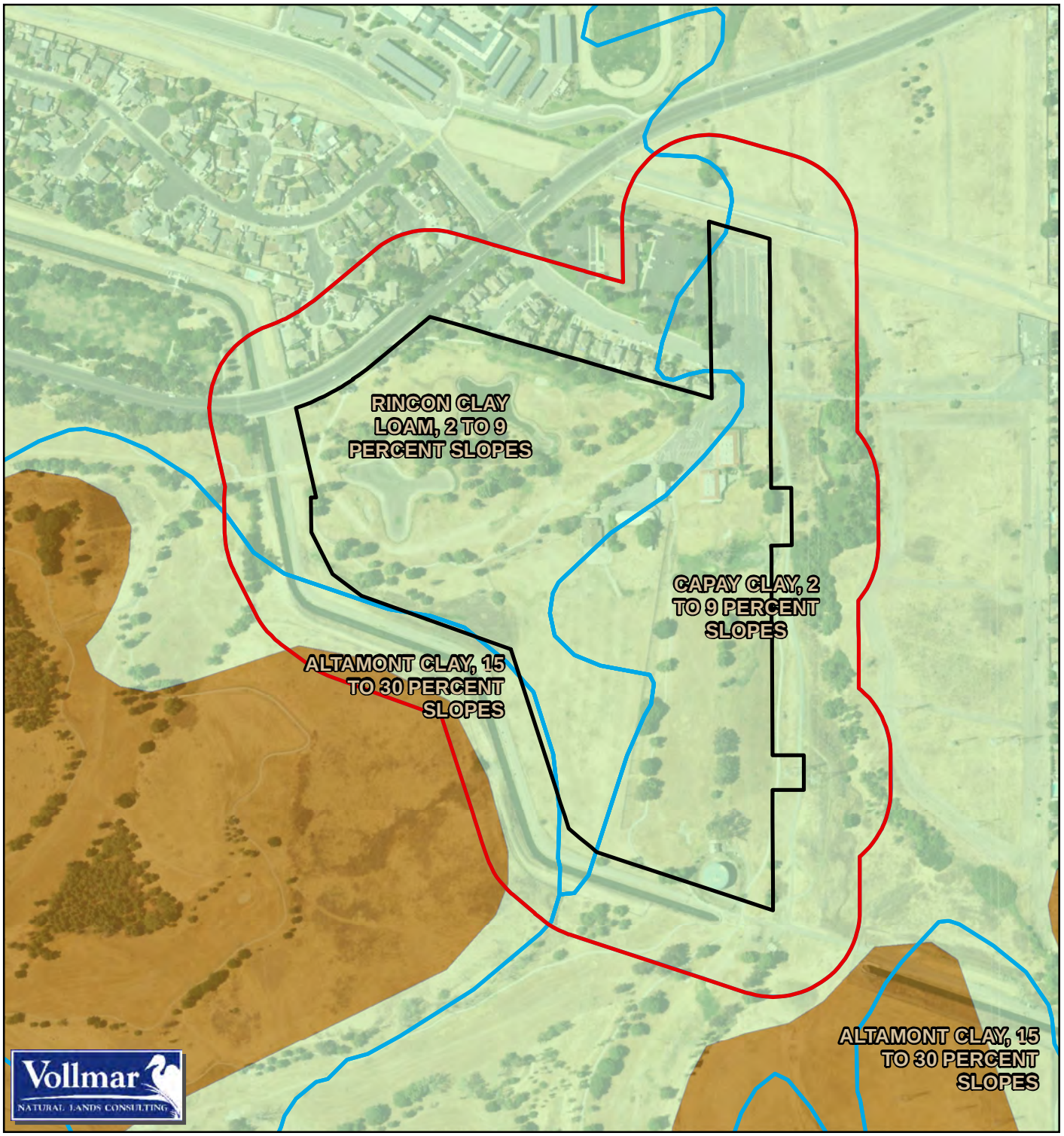
area from 1991 to 2020 are 60.9° Fahrenheit (F) and 17.5 inches, respectively. In contrast, mean precipitation along the coast, at approximately the same latitude and elevation, amounts to over 32 inches, and features a mean temperature of 54° F. Areas of equal distance to the east experience less than half the annual precipitation than at the study area and are hotter on average, due to a complete lack of coastal influence.

The field surveys were conducted during and following a growing season which was wetter than normal, due to the influence of an El Niño-Southern Oscillation (ENSO) weather pattern during the 2022-23 wet season (October-April). According to the PRISM climate data model, the total precipitation for the wet season (October-April) preceding the 2023 field surveys was 30.16 inches, 180% of the normal precipitation for that period. However, most of that precipitation fell during December, January, and March. Despite the erratic precipitation patterns, average temperatures during the same timeframe were quite similar to the mean: 52.3° compared to 54.6° (F). It is expected that the 2022-2023 wet season provided above average conditions for plant growth and persistence, including for most special-status plants with potential to occur in the area.

5.2 Substrates

Three soil units are mapped within the study area: Altamont clay, Capay clay, and Rincon clay loam (**Figure 4**). As **Table 1** below shows, all of these are residuum or alluvium derived from sedimentary rocks, primarily sandstone and shale. The parent geologic formations are Pliocene (~2.5 to 3.6 million years old) Tulare Formation along the hill slopes, and Quaternary (< 2 million years old) surficial deposits along the lowlands. The Tulare Formation consists of poorly consolidated, non-marine sandstone as well as conglomerate and tuff. The surficial deposits are undivided recent materials, including landslide materials (USGS 1994). The pH of the soils is generally neutral to slightly alkaline, with pH values ranging from 6.8 to 7.5 in the top 24 inches (USDA 2023). Though none of these are rated as hydric soils, all of them consist of high amounts of clay materials, ranging from 35% to 51% clay (ibid), and thus are fairly poorly drained. There are extensive areas where heavy clay soils feature large and deep cracks in the surface. There are very few rock outcroppings and areas of thin, rocky, or sandy soils are limited or absent altogether.

Because the soils are derived from common, unspecialized parent material and are generally fertile, they support primarily generalist, relatively competitive plant species. The areas of heavy clay have moderate potential to support special-status plants, and often do support wetland habitats within concave areas. However, these areas were dominated by introduced plant species. From a wildlife standpoint, the large soil cracks also provide potential aestivation habitat for special-status animals, such as CTS.



Legend

- Project Site
- 250-foot Buffer of Project Site
- Soil Unit Boundary

Geologic Formation

- Surficial Deposits (Quaternary)
- Tulare Formation (Pliocene)

Data Sources: VNLC, 2023 | City of Pittsburg, 2019
WSP, 2023 | USDA, 2018 | USDA-NRCS, 2005
USGS Open File Report 94-622
GIS/Cartography by: R. Miller, September 2023
Map File: 567_PSA_RP_Soils_A-P_2024-0212.mxd

FIGURE 4
Soil Unit and Geologic Formations Map

Pittsburg Data Hub Project
City of Pittsburg, California

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1:5,000
1 inch = 417 feet

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TABLE 1. Soil Units Mapped within the Study Area

Soil Unit	Parent Material	Surface Texture[1]	pH Rating[2]	Pct of Study Area
Altamont clay, 15-30% slopes	Residuum weathered from sandstone and shale	Clay	7.0	11.3%
Capay clay, 1-15% slopes	Alluvium derived from sedimentary rock	Clay	6.8	45.6%
Rincon clay loam, 2-9% slopes	Clayey alluvium derived from sedimentary rock	Clay loam	7.0	43.1%

1. At least 50% clay in top 24 inches. Dominant Condition.
2. Top 24 inches. Dominant Condition.

Source: USDA Web Soil Survey, 2023

5.3 Study Area Habitats

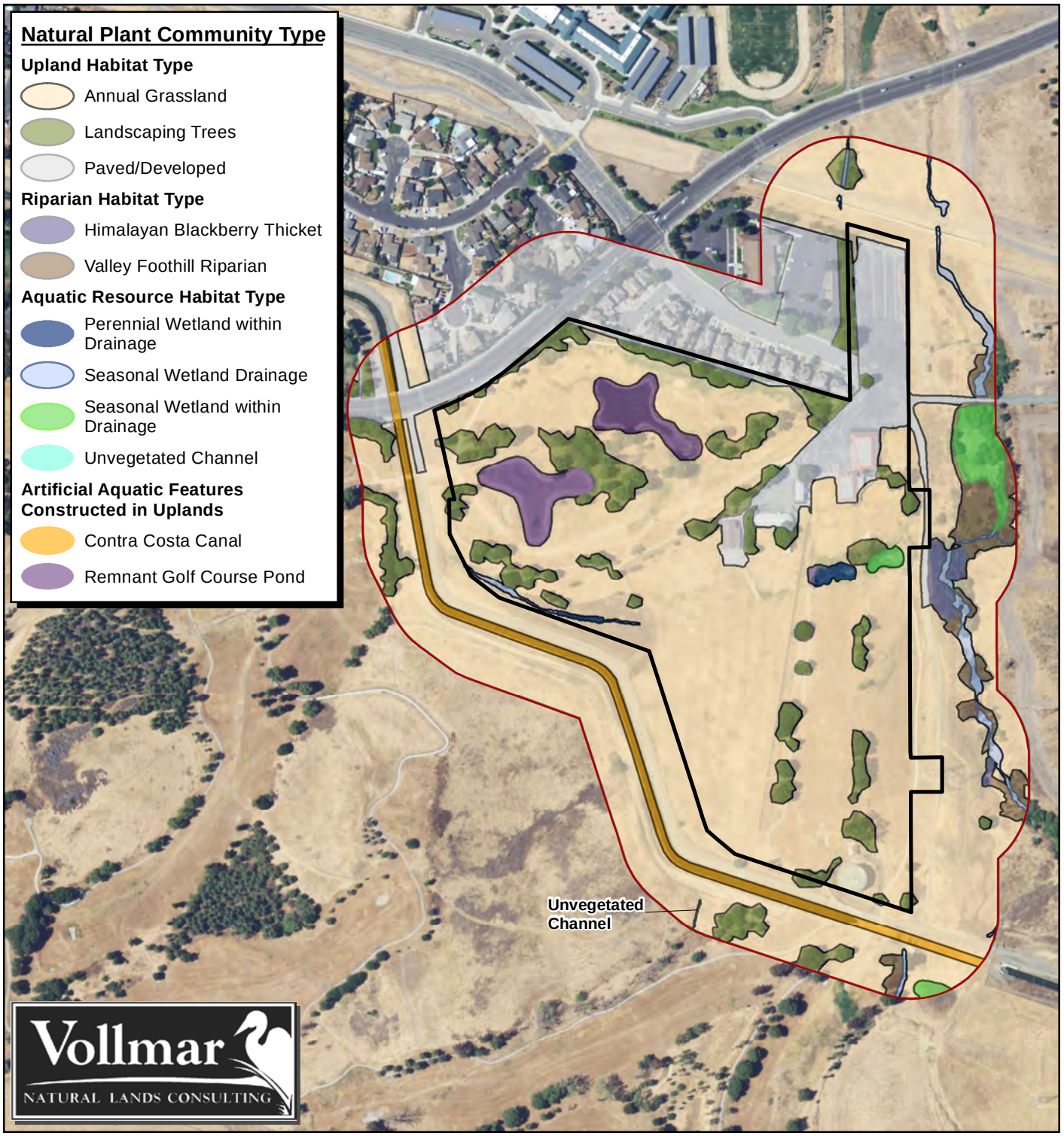
The study area encompasses a variety of upland and wetland habitat types, including areas formerly managed as the Delta View Golf Course, un-managed (not irrigated or mowed) grasslands and remnant patches of landscaping trees within the golf course, seasonal and perennial wetlands as well as other aquatic habitats, and annual grassland outside of the golf course (**Figure 5**). There are also areas of constructed buildings that are surrounded by paved roads and parking areas. All habitats are described in detail below. Microhabitats are limited within the study area—there are areas of heavy clay soils (including large and deep cracks), but no significant areas of rock outcrops, sandy soils, alkaline soils, or the like. There are moderate numbers of ground squirrel burrow complexes along areas of gentle slopes within the former golf course and surrounding grassland habitats.

Portions of the golf course area are bounded by chain link fencing. The fencing, which spans western and southern portions of the site, prevents larger wildlife from accessing the golf course area.

Upland Habitat

Upland habitat accounts for 68.9 acres of the total 75.9 acres in the study area. Much of the upland area consists of annual grasslands, covering 49.3 acres. Grassland area can be split into 2 categories, areas previously managed as a golf course and those not previously managed as such.

Areas previously part of the Delta View Golf Course were intensively managed as such since the late 1940s. Soils have been replaced or amended, and a wide range of trees, shrubs, and grasses have been imported and maintained via irrigation, mowing, and pruning. Grasslands within the managed golf course areas have undergone dramatic changes following the closure of the golf course. Once intensively managed to maintain turf grass, the herb layer has been colonized by a variety of invasive weeds, which at the time of the delineation and rare plant surveys formed extensive, dense, and tall stands within the study area. Two distinct plant communities have formed within this area, wild oat and brome grasslands, and upland mustards or star-thistle fields. Oat and brome grasslands within the study area was dominated by non-native annuals including Italian rye grass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*), as well as wild oat (*Avena fatua*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*),



Legend

- Project Site
- 250-foot Buffer of Project Site

FIGURE 5
Natural Communities Map

Pittsburg Data Hub Project
City of Pittsburg, California

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1:5,000
1 inch = 417 feet

0 50 100 200 M

0 250 500 1,000 Ft

Data Sources: VNLC, 2023 | City of Pittsburg, 2019
WSP 2023 | USDA, 2018
GIS/Cartography by R. Miller, October 2023
Map File: 567_PSA_RP_Habitats_A-P_2024-0212.mxd

wall barley (*Hordeum murinum*), horseweed (*Erigeron canadensis*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), and bristly ox-tongue (*Helminthotheca echioides*). Upland mustard or star-thistle fields were dominated by black mustard (*Brassica nigra*) and some cheeseweed (*Malva parviflora*), or yellow star-thistle (*Centaurea solstitialis*).

Grassland areas not previously managed as a golf course, mostly within the 250-foot buffer zone on the eastern and southwestern edges of the study area, contained a higher diversity of plants. This includes native wildflowers such as several species of lupine (*Lupinus affinis, L. bicolor, L. formosus* var. *formosus, L. nanus*), California poppy (*Eschscholzia californica*), purple owl's clover (*Castilleja exserta* ssp. *exserta*), and common fiddleneck (*Amsinckia menziesii*). The previously-described plant communities consisting of primarily non-native species are also present in these areas.

Landscaping trees comprise 6.08 acres of mostly exotic trees. These trees were originally planted as part of the golf course landscaping and have persisted after its closure. This community is dominated by Peruvian pepper tree (*Schinus mole*), with Bishop pine (*Pinus muricata*) and some lodgepole pine (*Pinus contorta* ssp. *murrayana*) and ponderosa pine (*Pinus ponderosa*). Other species of tree likely planted as landscape plants include shamel ash (*Fraxinus uhdei*), Italian stone pine (*Pinus pinea*), deodar cedar (*Cedrus deodara*), and several gum trees (*Eucalyptus camaldulensis* and *E. globulus*). Scattered throughout these exotic species are a few coast live oaks (*Quercus agrifolia* var. *agrifolia*), valley oaks (*Quercus lobata*), and other upland tree species which are native to the region. However, historical aerial photography of the area suggests these species may not have existed in the area prior to the golf course. Many of the planted trees throughout the study area are mature and quite large, particularly the gum trees.

The 13.5 acres of paved area, mostly in the northern part of the study area, includes the now abandoned parking lot, sidewalks, and developed areas included in the study area due to the 250-foot buffer zone surrounding the project area. This area has minimal vegetation, consisting of weedy species that have managed to grow through cracks such as black mustard, rough cat's-ear (*Hypochaeris radicata*), slender wild oat (*Avena barbata*), cheeseweed, yellow star-thistle, Mediterranean barley, and ripgut brome.

Riparian Habitat

Riparian habitat in the study area accounts for 1.87 acres of the total. Of this 0.44 acre is considered Himalayan blackberry thickets. These thickets are dominated (>75% absolute cover) by Himalayan blackberry. This community is present in the northeast portion of the study area adjacent to a seasonal and perennial wetland drainage.

The remaining 1.43 acres of riparian habitat are considered Valley Foothill Riparian. This area is comprised of riparian trees along the seasonal wetlands and seasonal wetland drainages identified in the 2023 wetland delineation (**Appendix B**)**.** This habitat is located primarily in the eastern portion of the study area and is dominated by Fremont cottonwood (*Populus fremontii*), Siberian elm (*Ulmus pumila*), Mexican fan palm (*Washingtonia robusta*), northern California black walnut (*Juglans hindsii*), olive (*Olea europa*), and occasional Bishop pine. These trees formed only intermittent cover (approximately 30% absolute cover). Riparian areas in the southern portion of the site were primarily composed of Peruvian pepper trees, a remnant landscape plant.

Both the Himalayan blackberry thickets and Valley Foothill Riparian areas are classified as a sensitive habitat due to their status as riparian areas; they may be subject to CDFW jurisdiction under the California Fish and Game Code §1600 *et seq*.

Aquatic Habitats

The study area encompasses a variety of natural, created, and enhanced wetlands and other Waters. Though there are natural drainages, the hydrology in the study area has been significantly altered to support and protect the golf course landscaping. This has resulted in the concentration of water in some areas at the expense of other areas.

Many of the basin and drainage features within the study area were variably vegetated as a function of hydroperiod, amount of scouring from water flow, and/or degree of water turbidity. Some features were sparsely vegetated as result of long ponding duration and/or high water turbidity, while stretches of narrow channel appeared to have limited plant growth as a result of scouring from water flow. Most of the basin features in the study area hold water for only short periods, or have sufficiently clear and/or shallow water that photosynthesis has enabled relatively dense plant growth.

There are a total of 1.91 acres of potentially jurisdictional waters identified by VNLC during the 2023 wetland delineation (**Figure 6-8**). Identified natural aquatic habitats are all considered to be sensitive communities by CDFW. These habitats may be subject to CDFW jurisdiction under the California Fish and Game Code §1600 *et seq* (FGC 1600); they may also be Jurisdictional Waters of the State of California under the Porter-Cologne Water Quality Act (Porter-Cologne) and/or Jurisdictional Waters of the United States under the Clean Water Act (CWA).

Seasonal wetland drainage accounted for 0.79 acre and was concentrated in the eastern portion of the study area. This habitat was dominated by species including Italian rye grass, prickly lettuce (*Lactuca serriola*), tall annual willowherb (*Epilobium brachycarpum*), annual beard grass (*Polypogon monspeliensis*), knotweed (*Polygonum aviculare*), curly dock (*Rumex crispus*), and spiny cocklebur (*Xanthium spinosum*).

Perennial wetland within drainages accounted for 0.17 acre and was split between two wetlands both in the northern portion of the study area. These wetlands were dominated by species such as broad-leaved cattail (*Typha latifolia*), curly dock, dallis grass (*Paspalum dilatatum*), alkali mallow (*Malvella leprosa*), and rescue grass (*Bromus catharticus* var. *catharticus*).

Seasonal wetland within drainages accounted for 0.95 acre spread throughout the study area. These wetlands were dominated by species such as lamb's quarters (*Chenopodium album*), curly dock, cocklebur (*Xanthium strumarium*), tall annual willowherb, horseweed, dallis grass, tall flatsedge (*Cyperus eragrostis*), and barnyard grass (*Echinochloa crus-galli*).

Unvegetated channel covered 0.01 acre of the study area and did not contain any vegetation.

Figure 6
Potential Jurisdictional Aquatic Resources Overview

Pittsburg Data Hub Project
City of Pittsburg, California

Delineation Data Points

- 2023 Wetland Delineation Point (Upland)
- 2023 Wetland Delineation Point (Wetland)
- 2022 Wetland Delineation Point (Upland)
- 2022 Wetland Delineation Point (Wetland)
- 2019 Wetland Delineation Point (Upland)
- 2019 Wetland Delineation Point (Wetland)

38.01385, -121.914236

38.014056, -121.907793

Unvegetated Channel

38.008193, -121.915091

38.007949, -121.907824

Legend

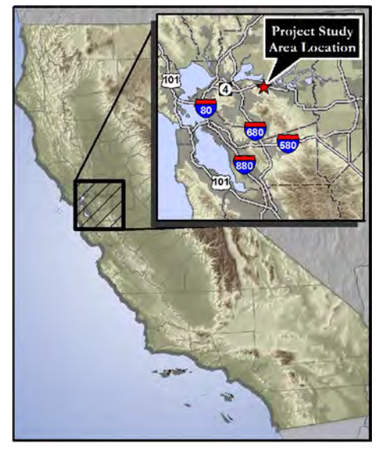
Wetlands, Drainages, and Other Waters

Artificial Features Constructed in Uplands

- Contra Costa Canal
- Golf Course Landscape Pond

Aquatic Resource Habitat Type

- Seasonal Wetland Drainage
- Perennial Wetland within Drainage
- Seasonal Wetland within Drainage
- Unvegetated Channel
- Culvert
- Map Reference Point
- Underground Drainage
- Match Line
- Project Site
- 250-foot Buffer of Project Site



N
W E
S

1:3,600

1 in = 300 ft. at tabloid layout

0 150 300 600 Ft

0 50 100 200 M

Data Sources: Vollmar Natural Lands Consulting, 2022
City of Pittsburg, 2019 | TIGER, 2010 | DWR 2020
Gap, 1998 | USDA, 2018
GIS/Cartography by T. Hurd, January 2024
Map File: 567_PSA_WD_B-L_2024-0212.mxd

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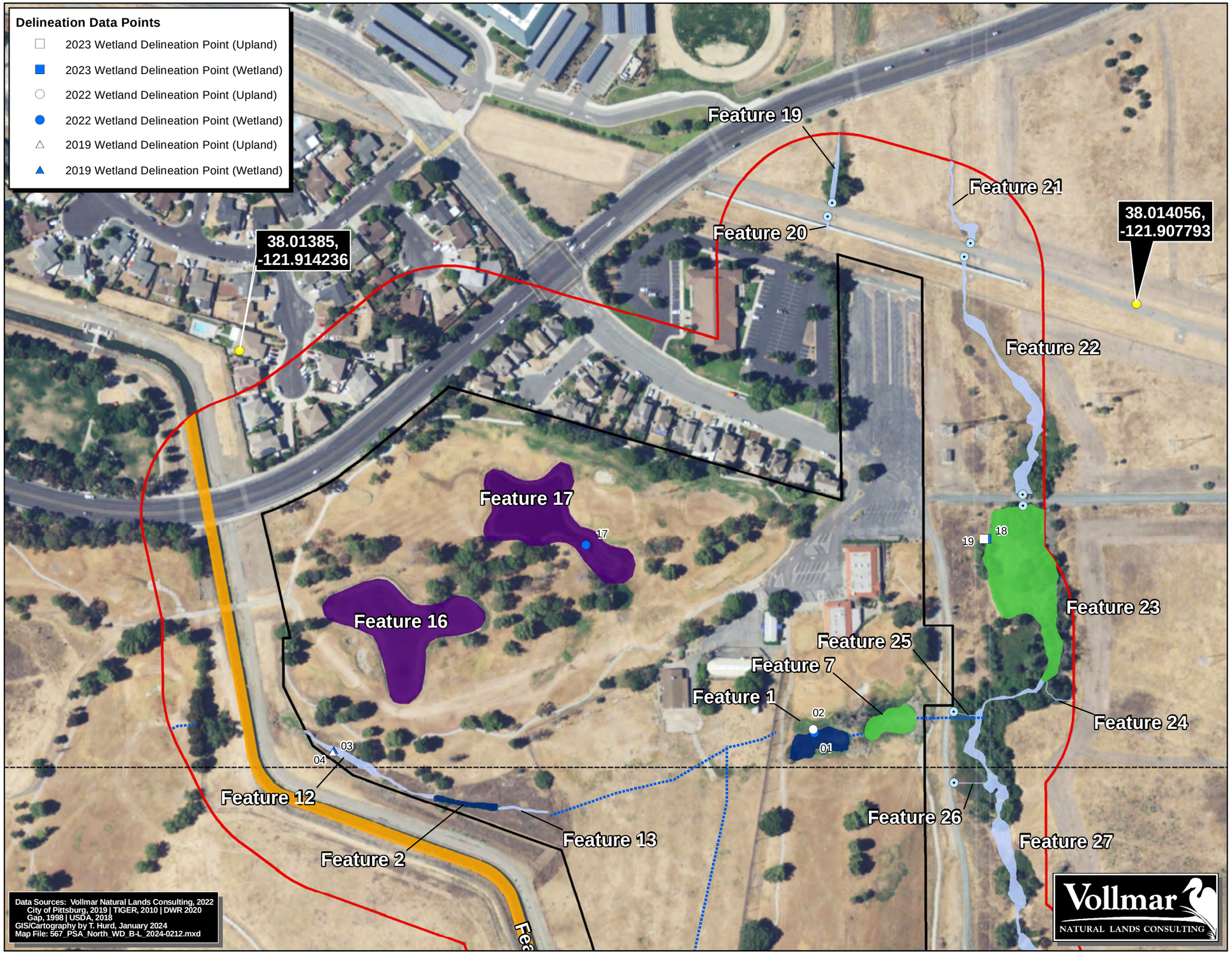
Figure 7
Potential Jurisdictional Aquatic Resources North

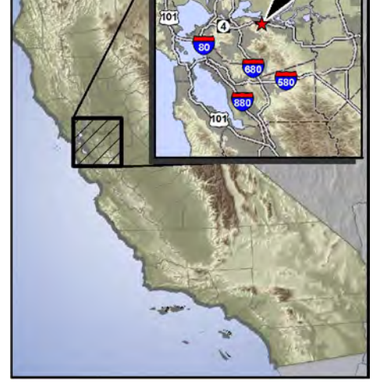
Pittsburg Data Hub Project
City of Pittsburg, California



Legend

Wetlands, Drainages, and Other Waters
Artificial Features Constructed in Uplands
- Contra Costa Canal (1.597 ac.)
- Golf Course Landscape Pond (1.673 ac.)

Aquatic Resource Habitat Type
- Seasonal Wetland Drainage (0.787 acs.)
- Perennial Wetland within Drainage (0.169 ac.)
- Seasonal Wetland within Drainage (0.953 ac.)
- Unvegetated Channel (0.007 ac.)
- Culvert
- Map Reference Point
- Underground Drainage
- Match Line with Figure 8
- Project Site
- 250-foot Buffer of Project Site



N
W E
S

1:2,400
1 in = 200 ft. at tabloid layout

0 100 200 400 Ft
0 37.5 75 150 M

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Figure 8
Potential Jurisdictional Aquatic Resources South

Pittsburg Data Hub Project
City of Pittsburg, California

Delineation Data Points

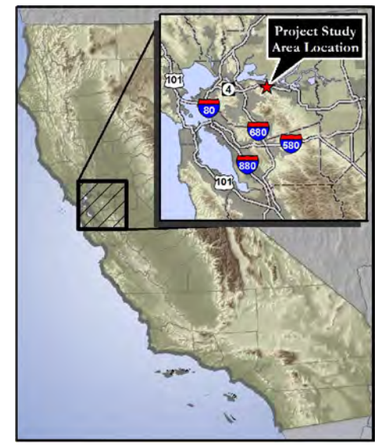
- 2023 Wetland Delineation Point (Upland)
- 2023 Wetland Delineation Point (Wetland)
- 2022 Wetland Delineation Point (Upland)
- 2022 Wetland Delineation Point (Wetland)
- 2019 Wetland Delineation Point (Upland)
- 2019 Wetland Delineation Point (Wetland)

Feature 16
Feature 23
Feature 25
Feature 7
Feature 1
02
01
Feature 24
03
04
Feature 12
Feature 26
Feature 13
Feature 27
Feature 2
Feature 34
Feature 11
Feature 28
38.008193,
-121.915091
Feature 3
Feature 29
38.007949,
-121.907824

Legend

Wetlands, Drainages, and Other Waters
Artificial Features Constructed in Uplands
- Contra Costa Canal (1.597 ac.)
- Golf Course Landscape Pond (1.673 ac.)

Aquatic Resource Habitat Type
- Seasonal Wetland Drainage (0.787 acs.)
- Perennial Wetland within Drainage (0.169 ac.)
- Seasonal Wetland within Drainage (0.953 ac.)
- Unvegetated Channel (0.007 ac.)
- Culvert
- Map Reference Point
- Underground Drainage
- Match Line with Figure 7
- 250-foot Buffer of Project Site
- Project Site



N
W E
S

1:2,400
1 in = 200 ft. at tabloid layout

0 100 200 400 Ft
0 37.5 75 150 M

Data Sources: Vollmar Natural Lands Consulting, 2022
City of Pittsburg, 2019 | TIGER, 2010 | DWR 2020
Gap, 1998 | USDA, 2018
GIS/Cartography by T. Hurd, January 2024
Map File: 567_PSA_South_WD_B-L_2024-0212.mxd

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In addition to the natural aquatic habitats identified, there are 3.27 acres of artificially constructed aquatic features. These features are not likely to be considered Jurisdictional Waters of the United States as they do not obstruct natural flow of wetlands or waters of the US, or replace the original channel of wetlands or waters. They may be Jurisdictional Waters of the State of California and/or subject to FGC 1600. These aquatic features include the Contra Costa Canal and two golf course landscaping ponds.

The Contra Costal Canal covered 1.60 acres within the study area and was unvegetated.

Two golf course landscape ponds totaling 1.67 acres were constructed in the upland part of the study area. Since closure of the golf course, these have transitioned into seasonal, rain-fed features. Dominant species within the basins include dotted smartweed (*Persicaria punctata*), Mediterranean barley, knotweed, and Italian rye grass. Other common species within the ponds included rattail sixweeks grass (*Festuca myuros*), stinkwort (*Dittrichia graveolens*), and lamb's quarters. The margins of the golf course ponds had been invaded with species common in the annual grassland.

6.0 SPECIAL-STATUS SPECIES

Table 2 and **Table 3,** below, list all species identified in the 9-quad searches, IPaC list, and 10-mile-buffer CNDDB search. In total, occurrences are presented from all of the USGS 1:24,000 Honker Bay, Walnut Creek, Clayton, Antioch South, Vine Hill, Fairfield South, Denverton, Birds Landing, and Antioch North quadrangles, as well as portions of the Brentwood, Diablo, Jersey Island, and Tassajara quadrangles. The potential of these special-status species to occur within the study area is discussed below.

6.1 Regulatory Background

For the purposes of this analysis, special-status animal species include those listed (including proposed or candidate species) under ESA or CESA; species receiving consideration during environmental review under California Environmental Quality Act (CEQA) Guidelines Section 15380; species identified as state Fully Protected; species covered by the Migratory Bird Treaty Act; species and habitats identified by local, state, and federal agencies as needing protection, including but not limited to those identified by the CNDDB, California Fish and Game Code, Title 14 of the California Code of Regulations, or where applicable, in Local Coastal Programs or in relevant decisions of the California Coastal Commission or other responsible agency; locally significant species that are rare or uncommon in a local context such as county or region or is so designated in local or regional plans, policies, or ordinances; and plant species listed as rare under the California Native Plant Protection Act.

Animals listed as Threatened or Endangered under the ESA or CESA are protected from "take", which broadly includes activities which harm individuals of the species or disrupt their life history. Plants listed under the CESA are similarly protected (plants listed under the ESA are protected from take only on public lands, or from actions taken by public entities). Public agencies are required to consider the effects of discretionary actions on listed species. Species which are Candidates or Proposed for listing under the ESA do not receive take protections, though USFWS

encourages that they be considered in project analyses. Species which are Candidates for CESA listing receive full CESA take protections while under review.

The listing of "Endangered, Rare, or Threatened" is defined in Section 15380 of the *California Environmental Quality Act* (*CEQA*) *Guidelines*. Section 15380(b) states that a species of animal or plant is "Endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is "Rare" when either "(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become Endangered if its environment worsens; or (B) the species is likely to become Endangered within the foreseeable future throughout all or a portion of its range and may be considered "Threatened" as that term is used in the ESA.

Animal species may be designated as "Species of Special Concern" (SSC) by CDFW. This designation does not provide coverage under CESA, but the CDFW recommends their protection as their populations are generally declining and they could be listed as Threatened or Endangered (under CESA) in the future. "Watch List" species are taxa that were previously SSCs but do not currently meet SSC criteria, and for which there is concern and a need for additional information to clarify status.

Species designated as "Fully Protected" by CDFW generally may not be taken or possessed at any time. CDFW may only authorize take for necessary scientific research and may authorize live capture and relocation of "fully protected" birds to protect livestock.

USFWS designates some birds as "Birds of Conservation Concern" (BCC). Although these species have no legal status under ESA, the USFWS recommends their protection as their populations are generally declining, and they could be listed as Threatened or Endangered (under ESA) in the future.

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 704) and the California Fish and Game Code (Section 3503) prohibit the take of migratory birds as well as disturbance to the active nests of most native birds.

Special-status plants include species that are designated Rare, Threatened, or Endangered as well as candidate species for listing by the USFWS. Special-status plants also include species considered Rare or Endangered under the conditions of Section 15380 of the California Environmental Quality Act (CEQA) Guidelines, such as those plant species identified by the CNPS as California Rare Plant Rank (CRPR) 1A, 1B, and 2 in the Inventory of Rare and Endangered Vascular Plants of California by the CNPS. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included as CRPR List 3 or 4 in the CNPS Inventory.

CDFW tracks some species in the CNDDB which do not have any of the special statuses discussed above. This is generally because CDFW is studying them to determine if they merit some special status. These species are also included in our results.

6.2 Special-status Animals

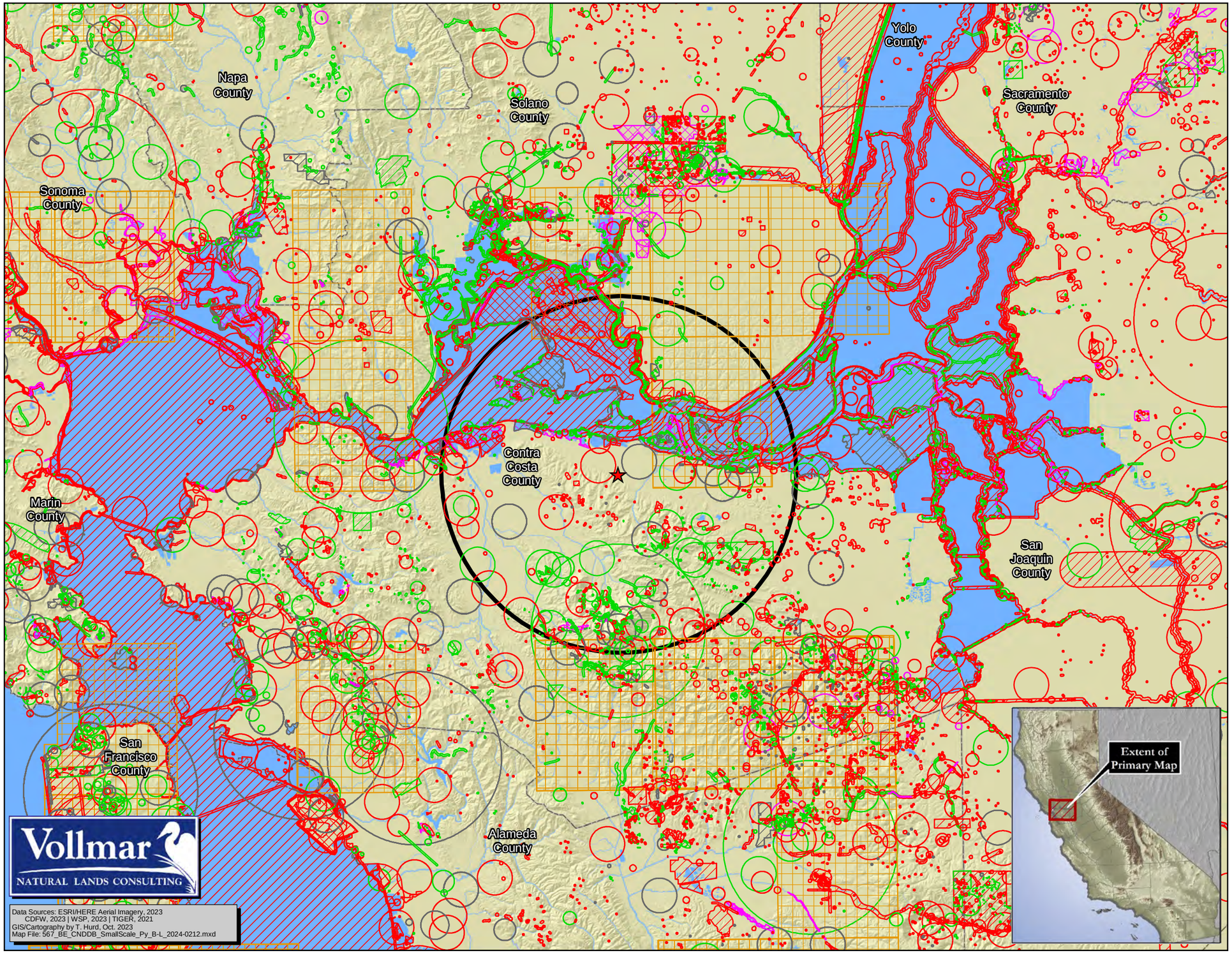
Two special-status animals have been observed within the study area: White-tailed Kite, a California Fully Protected bird species, and Cooper's Hawk, a CDFW Watch List species, were each observed foraging in the vicinity of the study area during VNLC surveys. **Figure 9** shows the location of all occurrences of special-status species and sensitive habitats as documented in the CNDDB at a scale of 1:350,000. **Figure 10** (provided under confidential cover) presents vicinity CNDDB occurrences at a scale of 1:6,000**.** Locations of the White-tailed Kite and Cooper's Hawk occurrences are not depicted, as these were overflights by foraging individuals.

These and other special-status wildlife species documented in the database searches are identified in **Table 2**, which provides a summary of the legal status and habitat requirements of these species, as well as an assessment of the likelihood of occurrence of each species within the study area. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations. There is no designated critical habitat within the study area, aside from Delta smelt, a fish species with no potential to occur in the study area.

As noted in **Table 2**, the following special-status animal species have some potential to occur within the study area: Cooper's Hawk, Tricolored Blackbird *(Agelaius tricolor*), Grasshopper Sparrow (*Ammodramus savannarum*), Golden Eagle *(Aquila chrysaetos*), Short-eared Owl *(Asio flammeus*), Burrowing Owl *(Athene cunicularia*), Ferruginous Hawk *(Buteo regalis*), Northern Harrier *(Circus hudsonius*), White-tailed Kite, California Horned Lark *(Eremophila alpestris actia*), Merlin *(Falco columbarius*), Prairie Falcon (*Falco mexicanus*), American Peregrine Falcon (*Falco peregrinus anatum*), Bald Eagle *(Haliaeetus leucocephalus*), Loggerhead Shrike *(Lanius ludovicianus*), California Gull *(Larus californicus*), pallid bat *(Antrozous pallidas*), western red bat *(Lasiurus frantzii*), hoary bat *(Lasiurus cinereus*), San Joaquin pocket mouse *(Perognathus inornatis*), American badger *(Taxidea taxus*), San Joaquin kit fox *(Vulpes macrotis mutica*), California tiger salamander, western pond turtle *(Emys marmorata*), California red-legged frog, obscure bumble bee (*Bombus caliginosus*), crotch bumblebee *(Bombus crotchii*), American bumble bee (*Bombus pensylvanicus*), and monarch butterfly *(Danaus plexippus*). The study area also has potential to support the nesting of protected migratory birds not included in the above list. The potential for these species to occur within the study area, as well as potential impacts to these species from significant disturbances within the study area, are discussed below. Recommended avoidance, minimization, and mitigation measures for project impacts are presented in **Section 11**.

FIGURE 9
Regional Special-status Animals Map

Pittsburg Data Hub Project
City of Pittsburg, California



Legend*

- Project Location
- 10-mile Buffer

CNDDB Occurrences

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (non-specific, circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (non-specific, circular)
- Terrestrial Comm. (80m)
- Terrestrial Comm. (specific)
- Terrestrial Comm. (non-specific)
- Terrestrial Comm. (non-specific, circular)
- Aquatic Comm. (80m)
- Aquatic Comm. (specific)
- Aquatic Comm. (non-specific)
- Aquatic Comm. (non-specific, circular)
- Multiple (80m)
- Multiple (specific)
- Multiple (non-specific)
- Multiple (non-specific, circular)
- Sensitive EO's (commercial only)

*CNDDB polygons have different levels of accuracy based on source data. In order of most to least specific: 80m, specific, non-specific, (non-specific) circular

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Data Sources: ESRI/HERE Aerial Imagery, 2023
CDFW, 2023 | WSP, 2023 | TIGER, 2021
GIS/Cartography by T. Hurd, Oct. 2023
Map File: 567_BE_CNDDB_SmallScale_Py_B-L_2024-0212.mxd

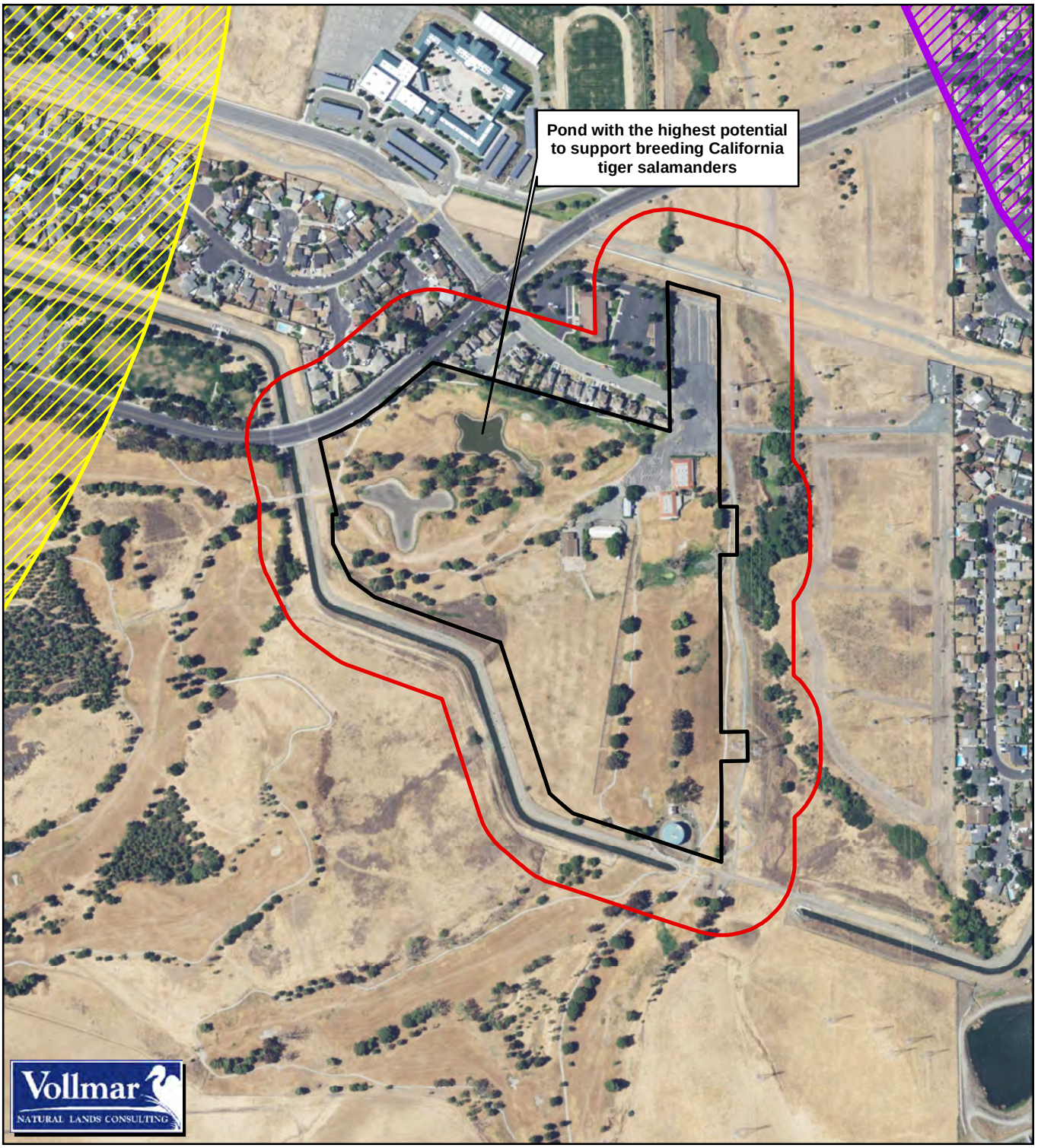
N
W E
S

1:350,000

1 in. = 6 mi. at tabloid layout

0 2.5 5 10 Kilometers

0 2.5 5 10 Miles



Legend

- Project Site
- 250-foot Buffer of Project Site

Special-Status Species Occurrence (non-specific)

- Western Bumble Bee
- Suisun Song Sparrow and Big Tarplant

FIGURE 10
Local Special-status Species Map

Pittsburg Data Hub Project
City of Pittsburg, California

N
W E
S

1:6,000

(1 in. = 500 ft. at letter-size layout)

0 75 150 300 M

0 300 600 1,200 Ft

Data Sources: USDA, 2018 | CDFW, 2023
WSP, 2023 | TIGER, 2021
GIS/Cartography by T. Hurd, Oct. 2023
Map File: 567_BE_CNDDB_LargeScale_A-P_2024-0212.mxd

TABLE 2. Special-status Animals Documented in the Vicinity of the Study Area.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Birds			
Cooper's Hawk* *Accipiter cooperii*	WL	Forest, woodlands, and often suburbs with trees. Nest in dense woods of pines, oaks, Douglas firs, beeches, spruces and other trees, often on flat ground.	**Present (foraging).** Species was observed foraging in the vicinity of the study area. Scattered landscaping trees provide limited nesting opportunities. This species is tolerant of suburban development and may nest in the project vicinity, though the nearest CNDDB documentation is more than 10 miles away.
Tricolored Blackbird *Agelaius tricolor*	ST, BCC, SSC	Forages in a variety of open habitats including pastures, agricultural fields, rice fields, feedlots, and grasslands with scattered seasonal wetlands. Nests in large freshwater marshes with tules or cattails, or in other dense thickets of willow, thistle, blackberry, or wild rose in close proximity to open water.	**Low Potential.** Stands of marsh vegetation large enough to support breeding colonies are absent from the site vicinity, but the site is mapped as suitable habitat for the species as modeled in the HCP/NCCP. The nearest CNDDB occurrence considered potentially extant is over 8 miles away.
Grasshopper Sparrow *Ammodramus savannarum*	SSC	Frequents dense, dry or well-drained grassland, especially native grassland with a mix of grasses and forbs for foraging and nesting. Uses scattered shrubs for singing perches.	**Low Potential.** Suitable nesting and foraging habitat present. The nearest CNDDB occurrence is more than 10 miles away.
Golden Eagle *Aquila chrysaetos*	FP, WL	Rolling foothills, mountain areas, sage-juniper flats, desert. Nests are constructed on cliffs or in large trees in open areas.	**Potential.** The site provides suitable foraging habitat. The species has also been observed foraging at the Concord Naval Weapons Station, approximately 4 miles away. The CNDDB does not contain any nesting occurrences in the project area. Potentially suitable nesting habitat is absent. The site is mapped as suitable habitat for the species as modeled in the HCP/NCCP.
Short-eared Owl *Asio flammeus*	BCC, SSC	Breeds in extensive marshes and moist grasslands; forages over wetlands, grasslands, and ruderal habitats.	**Low Potential.** Suitable nesting habitat not present given the absence of moist areas and/or large wetlands. Onsite grasslands provide foraging habitat (though limited). The nearest CNDDB documentations are from 5 miles away, though these date to the 1980s. No recent documentations are present in the region.
Burrowing Owl *Athene cunicularia*	BCC, SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**Potential.** The on-site grasslands provide potential nesting and wintering habitat. The nearest occurrence of nesting burrowing owls is 2.2 miles west of the site (CNDDB). The site is mapped as suitable habitat for the species as modeled in the HCP/NCCP.
Ferruginous Hawk *Buteo regalis*	WL	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. Roosts in open areas, usually in a lone tree or utility pole. Does not nest in California.	**Potential (wintering only).** This species occurs in the vicinity of the study area as an infrequent winter migrant but does not nest in California. Could forage on the site during the winter. There is one occurrence of this species in the CNDDB, 3.3 miles southwest.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Swainson's Hawk *Buteo swainsoni*	ST	Breeds in stands of tall trees in open areas. Requires adjacent suitable foraging habitats such as grasslands or alfalfa fields supporting rodents.	**Not Expected.** There are some potentially suitable nesting trees within the study area, and suitable foraging habitat is present. However, based on the CNDDB, the closest documented occurrence of the species is over 6 miles north and east of the site and the site appears to be along or outside of the extreme western edge of the species' nesting range. Consistent with this finding, the site is not mapped as suitable nesting or foraging habitat for the species as modeled in the HCP/NCCP.
Mountain Plover *Charadrius montanus*	BCC, SSC	Winters in central and southern California.	**Not Expected.** No longer winters in eastern Bay Area, historical occurrences (>100 years ago) exist in Concord. No recent occurrences documented within 10 miles.
Western Snowy Plover *Charadrius nivosus nivosus*	FT, SSC	Coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. along the Pacific Coast.	**Not Expected.** Rare species with no suitable habitat nearby. No documented occurrences within 10 miles.
Northern Harrier *Circus hudsonius*	BCC, SSC	Found throughout California breed and forage in open habitats with sufficient vegetation	**Low Potential.** No native grasslands present in the study area; limited open habitat provides some potential for foraging. Nearest CNDDB occurrence is 4 miles away.
Yellow Rail *Coturnicops noveboracensis*	BCC, SSC	Nests and winters in marshes and wet meadows. Most common along the coast.	**Not Expected.** Rare species with suitable habitat on site. No documented occurrences within 10 miles.
White-tailed Kite *Elanus leucurus*	FP	Undisturbed open grasslands, meadows, farmlands, and emergent wetlands for foraging. Nests near top of dense oak, willow, or other tree stands.	**Present (foraging).** Suitable nesting and foraging habitat present within the study area, and the species was observed foraging on the site during surveys.
California Horned Lark *Eremophila alpestris actia*	WL	Nests in open areas that contain relatively barren ground with short grass and scattered bushes.	**Low Potential.** Limited open habitat provides some potential for nesting and foraging. Not documented in the CNDDB within 10 miles of the study area.
Merlin* *Falco columbarius*	WL	Winter migrant found uncommonly in coastlines, open grasslands, savannahs, wetlands etc.	**Low Potential.** Limited winter habitat on site in the form of grasslands. Not documented in the CNDDB within 10 miles of the study area.
Prairie Falcon* *Falco mexicanus*	WL	Uncommonly found in Central Valley, along inner Coast Ranges and Sierra Nevadas, southeast to desert. Associated with perennial grasslands, savannah, rangeland, agricultural fields, and desert scrub.	**Low Potential.** Open grassland habitat in the study area may provide marginal foraging habitat for the species. Nearest CNDDB occurrences are approximately 9 miles away.
American Peregrine Falcon *Falco peregrinus anatum*	SA (delisted)	Adaptable, and can be seen in a wide range of habitats; often encountered in areas with steep cliffs, as well as around coastal mudflats and open areas with shorebirds.	**Low Potential.** Open grassland habitat in the study area may provide marginal foraging habitat for the species. Nesting habitat is absent. Nearest CNDDB occurrences are approximately 9 miles away.
Saltmarsh Common Yellowthroat *Geothlypis trichas sinuosa*	BCC, SSC	San Francisco Bay fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging.	**Not Expected**: The study area does not provide suitable habitat given the absence of salt/brackish marsh habitat.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Bald Eagle *Haliaeetus leucocephalus*	SE, FP	Requires large water bodies or rivers, primarily a resident of northern California, scattered nests elsewhere.	**Low Potential.** No large freshwater bodies are present nearby, and there are no CNDDB occurrences within 10 miles.
Yellow-breasted Chat *Icteria virens*	SSC	Frequents dense, brushy thickets and tangles near water, and thick understory in riparian woodland.	**Not Expected.** No appropriate riparian habitat present on site, and there are no CNDDB occurrences within 10 miles.
Loggerhead Shrike *Lanius ludovicianus*	SSC	Habitat consists of open spaces such as grasslands with scattered trees, shrubs, utility lines, and/or fences for perching. Typically nest in densely vegetated trees and shrubs.	**Potential.** Suitable nesting and foraging habitat present. No CNDDB occurrences documented within 10 miles.
California Gull* *Larus californicus*	BCC, WL	Nests on isolated islands. Common along coasts, landfills, and pastures.	**Potential.** No suitable nesting habitat in study area, but species may visit nearby landfills. No CNDDB occurrences documented within 10 miles.
California Black Rail *Laterallus jamaicensis coturniculus*	ST, FP	Occurs in freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. Requires permanent water and dense vegetation for nesting. Dependent upon upper zones of saline emergent wetlands, especially with pickleweed, and brackish fresh emergent wetlands.	**Not Expected.** The study area does not provide suitable habitat for this species given the absence of tidal and brackish marshes.
Suisun Song Sparrow *Melospiza melodia maxillaris*	SSC	Resident of brackish water marshes surrounding Suisun Bay. Inhabits cattails, tules, and tangles bordering sloughs.	**Not Expected.** The study area does not provide suitable habitat for this species given the absence of brackish marsh.
Song Sparrow ("Modesto" population) *Melospiza melodia* pop. 1	SSC	Found primarily in wetlands, but can be found along riparian corridors and sufficiently vegetated artificial waterways.	**Not Expected.** No suitable wetland or riparian habitat is present within the study area**.** Nearby occurrences are restricted to bayland edge.
Double-crested Cormorant *Nannopterum auritum*	WL	Found along entire coast of California and inland waters.	**Not Expected.** No suitable habitat in study area. Nearby occurrences are restricted to bayland edge.
Long-billed Curlew *Numenius americanus*	WL	Winters in coastal estuaries, open grasslands, and croplands. Nests in upland shortgrass prairies and wet meadows.	**Not Expected.** Grasslands present on site provide limited habitat. Species is strongly associated with bay margin in the Bay Area. No CNDDB occurrences within 10 miles.
Osprey *Pandion haliaetus*	WL	Large trees in forested habitats, prefers coniferous, with large, fish-bearing waters.	**Not Expected.** No forest ecosystem present within the study area. No CNDDB occurrences within 10 miles. Occurrence in the eastern Bay Area is strongly associated with bayland and forested East Bay hills.
Bryant's Savannah Sparrow *Passerculus sandwichensis alaudinus*	SSC	Occupies low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands.	**Not Expected.** Study area is not within the fog belt; nearest occurrence is located in Hayward.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
American White Pelican *Pelecanus erythrorhynchos*	BCC, SSC	Winters in the Pacific coast and lowlands. Breeds primarily in the intermountain west.	**Not Expected.** No suitable habitat in study area. No CNDDB occurrences within 10 miles. Occurrence in the eastern Bay Area is strongly associated with bay margin and forested East Bay hills.
White-faced Ibis *Plegadis chihi*	WL	Shallow, emergent wetlands. Forages in wet meadows, irrigated pasture, pond edges, wet cropland.	**Not Expected.** No suitable habitat is present within the study area. No CNDDB occurrences within 10 miles.
California Ridgway's Rail (formerly California clapper rail) *Rallus obsoletus obsoletus*	FE, SE, FP	Saltwater and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed and cordgrass, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Not Expected.** The study area does not provide suitable habitat for this species given the absence of tidal or brackish marshes.
California Least Tern *Sternula antillarum browni*	FE, SE, FP	Nests along the coast and around bays/estuaries from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**Not Expected.** The study area does not provide suitable habitat for this species given its distance from tidal areas.
Mammals			
Pallid bat* *Antrozous pallidus*	SSC	Occurs in mountainous areas, intermontane basins, lowland desert scrub, arid deserts, and grasslands, often near rocky outcrops and water; in some areas, this species also inhabits open coniferous forest and woodland. Prefers open dry lands with rocky areas for roosting.	**Potential.** No cavities within large trees were observed within the study area, though more targeted surveys might reveal such trees. Other roosting habitat is limited given a lack of caves/crevices and accessible buildings. Foraging habitat is present on the site. Nearest documented occurrences are 4.6 miles away, dating to the 1940s. No recent CNDDB occurrences within 10 miles.
Northern California ringtail *Bassariscus astutus raptor*	FP	Chapparal, rocky hillsides and riparian areas. Strongly associated with steep, rocky slopes.	**Not Expected.** No suitable habitat is present within the study area. No CNDDB occurrences within 10 miles.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC	Occurs in a wide variety of habitats including grasslands, shrublands, oak woodlands, and forests. Prefers mesic habitats. Roosts in caves, cliffs, rock ledges, tunnels, mines, and man-made structures.	**Not Expected (roosting).** The site does not contain expected roosting habitat given the absence caves, mines, and abandoned buildings. Nearest CNDDB occurrence is approximately 8 miles away.
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	SA	Bare ridge tops, rocky outcrops, thin soils, scattered chaparral, and small annual grasses.	**Not Expected.** Species is considered extirpated from most of its range; only known populations are in the Ohlone wilderness.
Western red bat* *Lasiurus frantzii* [*L. blossevillii*]	SSC	Roosts in trees in a wide variety of habitats between the coast and western Sierra Nevada mountains. Strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore.	**Low Potential.** This species is strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore; suitable habitat is absent from the study area. Nearest CNDDB documentations are approximately 5 miles away, dating to the 1990s. No recent documentations exist in the vicinity.

Species	Status[1]	Description of Habitat Requirements	Potential to Occur within the Study Area
Hoary bat* *Lasiurus cinereus*	SA	Primarily occurs in deciduous and coniferous forests and woodlands, including areas altered by humans, roosting at the edge of clearings. Foraging habitat includes various open areas, including spaces over water and along riparian corridors.	**Low Potential.** This foliage roosting species may fly over, forage, or roost within the study area on occasion. Nearest CNDDB occurrences are 5-8 miles away, dating to more than 20 years ago.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Occurs in dense woodlands and chaparral throughout the Santa Cruz Mountains and foothills. Build nests which are often the result of work by several generations of woodrats by piling up sticks, rocks, and other available material.	**Not Expected.** Suitable habitat is absent from the project vicinity. East Bay occurrences are generally restricted to steep, wooded hills, which are not present within the study area.
Big free-tailed bat *Nyctinomops macrotis*	SSC	Rugged, rocky habitats in arid landscapes. Habitats include desert shrub, woodlands, and evergreen forests. Typically associated with lowlands. Primary roosts include cliff crevices, and secondary roosts may include tree cavities, caves, and buildings.	**Not Expected.** Species' range within California limited to the south. Lone occurrence in Alameda County thought to be a vagrant
San Joaquin pocket mouse *Perognathus inornatus*	SA	This species inhabits grasslands and blue oak woodlands with friable soils in the foothills and valley bottoms of the Central Valley	**Low Potential.** The study area lacks characteristic friable soils, but there is some potential the species could occur on the site. CNDDB occurrences are present 3-5 miles southeast of the study area, but date to the 1990s or earlier.
Salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, FP	Restricted to saline emergent wetlands of the San Francisco Bay and its tributaries. Primary habitat is pickleweed, but may occur in other salt and brackish marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires high ground to escape high tides and floods.	**Not Expected.** The study area does not provide suitable tidal marsh habitat.
Suisun shrew *Sorex ornatus sinuosus*	SSC	Occurs in tidal and brackish marshes along northern San Pablo and Suisun bays.	**Not Expected.** No suitable habitat in the study area; only documented occurrences are on the north side of the San Francisco Bay.
American badger* *Taxidea taxus*	SSC	Most abundant in drier, open stages of shrub, forest, and herbaceous habitats with friable soils where they can dig burrows.	**Low Potential.** No badger dens have been observed in the study area vicinity and soils are not particularly friable. The nearest documented occurrence in the CNDDB is nearly 9 miles southeast of the site. However, as the species is known from the region, and general habitat requirements are present, there is potential that a badger could dig a den on the site.
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Inhabits open, dry grasslands and scrublands with loose textured soils. Live in dens in friable soils or enlarge smaller holes created by other animals.	**Low Potential**. The on-site grasslands are mostly steep, but may provide marginal suitable habitat for San Joaquin kit fox. The site is mapped as suitable core habitat for the species as modeled in the HCP/NCCP. The site is either along the extreme northern edge, or just outside of the range of this species. CNDDB occurrences 2.6 miles to the south date to the 1990s.

Reptiles and Amphibians			
California tiger salamander – central California DPS *Ambystoma californiense pop. 1*	FT, ST, WL	Primarily found in annual grasslands. Adults spend most of the year in upland subterranean refugia, especially burrows of California ground squirrels and occasionally man-made structures, migrating during rainy nights to vernal pools, seasonal ponds, or stock ponds for breeding. Aquatic larvae seek cover in turbid water, clumps of vegetation, and other submerged debris.	**Potential**. There are numerous documented occurrences of the species in the project vicinity, including multiple breeding ponds. Potential breeding habitat is present within the study area. Portions of the project site are within the known maximum dispersal distance of the species (1.3 miles) from documented breeding ponds, though the Contra Costa Canal is a barrier between the site and those ponds. The study area is not within designated critical habitat for California tiger salamander. The site is mapped as suitable migration and aestivation habitat for the species as modeled in the HCP/NCCP.
Northern California legless lizard *Anniella pulchra*	SSC	Sandy or loose loamy soils under sparse vegetation.	**Not Expected.** The study area does not provide suitable habitat for the species given the absence of natural sandy and loose soils (sand is present only within golf course sand traps). There are no documented occurrences of this species within 10 miles of the site in the CNDDB. The site is not mapped as suitable habitat for the species as modeled in the HCP/NCCP.
California glossy snake *Arizona elegans occidentalis*	SSC	Most common in desert regions of southern California, but can be found north to Mt. Diablo in a variety of habitats including annual grassland.	**Not Expected.** The study area is just outside of the species' northernmost range. Potential habitat exists on site, but the nearest occurrence is from 1958, 7 miles east of the site in the Antioch Dunes. The nearest populations known to be extant are more than 20 miles to the southeast, in the vicinity of Tracy.
Western pond turtle *Emys marmorata*	FPT, SSC	Perennial ponds, deep slow-moving streams, marshes, irrigation ditches, small lakes, and permanent pools along intermittent streams are habitat for this species at 6,000 ft. and below in elevation. Logs, rocks, cattail mats, and exposed banks are required for basking.	**Potential.** Low-quality habitat is present within the study area, in the form of man-made ponds and seasonal stream/swale corridors. Two potential movement corridors are modeled in the HCP/NCCP. Nearest CNDDB occurrences are 3.1 miles away.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Found in chaparral, northern coastal sage scrub, and coastal sage habitats, but also forages in grassland and open woodlands. Grassland habitats are used before and after mating season in the spring. Rock outcrops with deep crevices and abundant rodent burrows are crucial for whipsnakes as overnight dens, as refuges from predators and excessive heat, and for foraging.	**Not Expected.** The study area does not provide optimal habitat for Alameda whipsnake given the absence of chaparral and scrub habitats on or near the study area. In addition, the study area is not located between or near areas of suitable core habitat. The site is not mapped as suitable core or movement habitat for the species as modeled in the HCP/NCCP. The nearest CNDDB documentation is approximately 3.3 miles away.
Coast horned lizard *Phrynosoma blainvillii*	SSC	Inhabits open areas of loose, sandy soil and low vegetation in valleys, foothills, and semiarid mountains. Often found in lowlands along sandy washes with scattered shrubs, along dirt roads, and near ant hills. Occurs in coniferous forest, woodland, riparian, chaparral, and annual grassland habitats in the Sierra Nevada foothills throughout the central and southern California coast.	**Not Expected.** The study area does not provide suitable habitat for the species given the absence of natural sandy and loose soils or significant rock outcrops. The nearest documented CNDDB occurrence of this species is over 6 miles southwest of the study area.

Foothill yellow-legged frog – central coast DPS *Rana boylii pop. 4*	FT, SE	Generally occurs in partially shaded and shallow streams with a rocky substrate in a variety of habitats, including valley-foothill riparian, mixed chaparral, and coastal scrub. Requires aestivation habitat and enough permanent water for larval development.	**Not Expected.** Study Area lacks suitable habitat for the species. The nearest documented CNDDB occurrence of this species is over 6 miles away.
California red-legged frog *Rana draytonii*	FT, SSC	Breeds in perennial and seasonal ponds and quiet pools in slow-moving freshwater streams; shelters in adjacent uplands and shrubby or emergent riparian vegetation. Prefers shorelines with extensive vegetation. Requires permanent or nearly permanent pools for larval development.	**Potential.** There are multiple occurrences of this species documented in the vicinity of the study area, including an occurrence less than one mile southwest of the site (mapped as specific in year 2000). Given the presence of known and potential breeding habitat, and the known maximum dispersal distance of the species (up to 2 miles), much of the study area provides potential upland/aestivation habitat. The study area is not within designated critical habitat for California red-legged frog. The site is mapped as suitable migration and aestivation habitat for the species as modeled in the HCP/NCCP. The nearest documented occurrence is less than one mile away.
Western spadefoot *Spea hammondii*	FPT, SSC	Primarily found in grasslands with shallow temporary pools, but sometimes in valley-foothill hardwood woodlands throughout the Central Valley and foothills.	**Not Expected.** The nearest documented occurrences are >10 miles away, and the site is outside of the species' current range.
Giant garter snake *Thamnophis gigas*	FT, ST	Freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches, primarily for dispersal or migration.	**Not Expected.** The study area does not provide suitable aquatic habitat for giant garter snake. The study area is not modeled as habitat for the species in the HCP/NCCP, and the nearest CNDDB occurrences is nearly six miles to the north, across Suisun Bay.
Crustaceans			
Conservancy fairy shrimp *Branchinecta conservatio*	FE	Large, cool-water vernal pools with moderately turbid water located in the Central Valley.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The only occurrences within 10 miles are on the opposite side of Suisun Bay, at Montezuma Wetlands.
Longhorn fairy shrimp *Branchinecta longiantenna*	FE	Inhabits clear to rather turbid vernal pools. These include clear-water depressions in sandstone outcroppings near Tracy, grass-bottomed pools in Merced County and claypan pools around Soda Lake in San Luis Obispo County.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. There are no documented occurrences within 10 miles of the study area.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Vernal pools, seasonal wetlands, and stagnant ditches that fill with water during fall and winter rains and dry up in spring and summer.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrence is approximately 3.3 miles to the northeast, in an area that has since been developed.
Midvalley fairy shrimp *Branchinecta mesovallensis*	SA	Vernal pools and other seasonally ponded areas.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrence is 9.9 miles away, on the opposite side of Suisun Bay.
Vernal pool tadpole shrimp *Lepidurus packardi*	FE	Known habitats range from small, clear, well-vegetated vernal pools to highly turbid, alkali scald pools to large winter lakes.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrences are on the other side of Suisun Bay; other documented occurrences are approximately 6.9 miles east of the study area.

California fairy shrimp *Linderiella occidentalis*	SA	Found in a variety of natural and artificial seasonally ponded habitat types.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. The nearest documented occurrences are approximately 3 miles away on Concord Naval Weapons Station.
Insects			
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	SA	Dried vernal pools and associated flowers.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. Only nearby documentations are from non-specific polygon described only as "Somersville".
Antioch Dunes anthicid beetle *Anthicus antiochensis*	SA	Sand dunes.	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.
Lange's metalmark butterfly *Apodemia mormo langei*	FE	Antioch dunes along the San Joaquin River.	**Not Expected.** Associated with Antioch Dunes. Only remaining habitat is located in Antioch Dunes National Wildlife Refuge 6 miles to the east.
Obscure bumble bee* *Bombus caliginosus*	SA	Relatively humid and often foggy areas, pollinates plants of the pea, heath, and sunflower families.	**Low Potential.** Nearest documented occurrences are from approximately 9 miles away at Mount Diablo State Park. Some potential pollinator resources are present in study area.
Crotch bumble bee* *Bombus crotchii*	SCE	Open grasslands, shrublands, chaparral, desert margins, and semi-urban habitat.	**Low Potential.** Multiple historical occurrences in present Antioch and Mount Diablo State Park. Closest recent occurrence is at Brentwood Lake in iNaturalist. Some potential pollinator resources are present in study area.
Western bumble bee *Bombus occidentalis*	SCE	High elevation meadows, forests, riparian areas in the Sierra Nevada's and cascades, as well as coastal grasslands of northern California.	**Not Expected.** No suitable habitat present in the study area. All nearby occurrences are historical, with the most recent being from 1979.
American bumble bee* *Bombus pensylvanicus*	SA	Nests in long grass, hay, or underground.	**Low Potential.** Multiple historical occurrences are present around Suisun Bay. Some potential pollinator resources are present in study area.
San Joaquin dune beetle *Coelus gracilis*	SA	Sand dunes (Antioch Dunes).	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.
Antioch cophuran robberfly *Cophura hurdi*	SA	Sand dunes (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Monarch butterfly – California overwintering population* *Danaus plexippus plexippus pop. 1*	FC	Found in a variety of habitat types wherever flowering plants can be seen. Require milkweed for reproduction.	**Potential.** Many nearby occurrences, one less than a half mile from study area from iNaturalist. Milkweed, the species' larval host plant, is present within the study area and vicinity.

Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	Mature blue elderberry shrubs, particularly in riparian zones.	**Not Expected.** There are no blue elderberry shrubs and no significant riparian habitat present in the study area. No CNDDB documentations exist within 10 miles of project site.
Delta green ground beetle *Elaphrus viridis*	FT	Margins of vernal pools and other seasonal wetlands, especially large 'playa' pools.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. The onsite ponds likely do not provide suitable habitat. No CNDDB documentations exist within 10 miles of project site.
Antioch efferian robberfly *Efferia antiochi*	SA	Sand dunes (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Redheaded sphecid wasp *Eucerceris ruficeps*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Curved-foot hygrotus diving beetle *Hygrotus curvipes*	SA	Vernal pools.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. Only nearby documentations are from non-specific polygon described only as "Oakley".
Middlekauff's shieldback katydid *Idiostatus middlekauffi*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Molestan blister beetle *Lytta molesta*	SA	Dried vernal pools and associated flowers.	**Not Expected.** There are no vernal pools or other potentially suitable habitat within the study area. No CNDDB documentations exist within 10 miles of project site.
Hurd's metapogon robberfly *Metapogon hurdi*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Antioch multilid wasp *Myrmosula pacifica*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Yellow-banded andrenid bee *Perdita hirticeps luteocinctabal*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Antioch andrenid bee *Perdita scitula antiochensis*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is population at Antioch Dunes.
Antioch specid wasp *Philanthus nasalis*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.
San Joaquin Valley giant flower-loving fly *Rhaphiomidas trochilus*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Only nearby occurrence is extirpated population at Antioch Dunes.

Callippe silverspot butterfly *Speyeria callippe callippe*	FE	Occurs only in grasslands containing California golden violet (*Viola pedunculata*).	**Not Expected.** No suitable habitat is present nearby; distinct non-listed silverspot butterfly is the only species to currently inhabit Contra Costa County. No CNDDB documentations exist within 10 miles of project site.
Antioch Dunes halcitid bee *Sphecodogastra antiochensis*	SA	Associations poorly known (Antioch Dunes).	**Not Expected.** Species distribution is limited to Antioch Dunes.
Fishes			
Green sturgeon – southern DPS *Acipenser medirostris pop. 1*	FT	Marine waters along the coasts of CA, OR, and WA. Feed in bays or brackish estuaries in summer. Need freshwater rivers to spawn.	**Not Expected.** There is no suitable aquatic habitat within the study area.
White sturgeon *Acipenser transmontanus*	SSC	Coastal waters of western North America. Found in ocean, estuaries, and large rivers.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Sacramento perch *Archoplites interruptus*	SSC	Extirpated from historic range. Currently lives as introduced species in isolated waterbodies throughout the western US.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Pacific lamprey *Entosphenus tridentatus*	SSC	Oceanic and riverine. Nests in gravel or soft sediment dependent on life stage. Requires cold, clear water for spawning.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Delta smelt *Hypomesus transpacificus*	FT, SE	Endemic to the Sacramento–San Joaquin River Delta.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Western river lamprey *Lampetra ayresii*	SSC	Primarily inhabit rivers and their tributaries. Nests in gravel or soft sediment dependent on life stage. Requires cold, clear water for spawning.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Sacramento hitch *Lavinia exilicauda exilicauda*	SSC	Scattered populations in warm, lowland, waters including clear streams, turbid troughs, lakes, and reservoirs.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Hardhead *Mylopharodon conocephalus*	SSC	Low to mid-elevations in mostly undisturbed and high-quality habitats of larger streams. Primarily in the central valley.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Coho salmon – central California coast ESU *Oncorhynchus kisutch pop. 4*	FE, SE	Coastal watersheds of central California north to Alaska.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Steelhead – central California coast DPS *Oncorhynchus mykiss irideus pop. 8*	FT	Found along much of the coast of western North America an associated streams to spawn.	**Not Expected.** There is no suitable aquatic habitat within the study area.

Chinook salmon – Central Valley fall/late fall-run ESU *Oncorhynchus tshawytscha pop. 13*	SSC	Spawn in the Sacramento-San Joaquin River system. Migrate upstream as adults from July through December and spawn from early October through late December.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Chinook salmon – Central Valley spring-run ESU *Oncorhynchus tshawytscha pop. 11*	FT, ST	Spawn in the Sacramento-San Joaquin River system. Enter the Sacramento River from late March through September and spawn in the fall.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Chinook salmon – Sacramento River winter-run ESU *Oncorhynchus tshawytscha pop. 7*	FE, SE	Spawn in the Sacramento-San Joaquin River system. Pass under the Golden Gate Bridge from November through May and pass into the Sacramento River from December through early August.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC	San Francisco Estuary, river-edge and floodplain.	**Not Expected.** There is no suitable aquatic habitat within the study area.
Longfin smelt *Spirinchus thaleichthys*	FC, ST	Coastal lagoons, bays, estuaries, sloughs, tidal areas.	**Not Expected.** There is no suitable aquatic habitat within the study area.

Species marked with "*" have potential to occur but are not covered by the HCP/NCCP.
Species with potential to occur are highlighted

[1] Status definitions:

FT – Federal Threatened;
FE – Federal Endangered;
FPT – Federal Proposed Threatened;
FC – Federal Candidate;
ST – State Threatened;
SE – State Endangered;
SCE – State Candidate Endangered;
BCC – USFWS Bird of Conservation Concern;
SSC – CDFW Species Special Concern;
FP – CDFW Fully Protected;
WL – CDFW Watch List;
SA – CDFW Special Animals List (2023).

Federally and/or State Listed Species

California Red-legged Frog

California red-legged frog (CRF) is a federally listed Threatened species and a CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

Breeding takes place in streams, deep pools, backwaters within streams and creeks, ponds, marshes, and stock ponds. CRF can occur in ephemeral ponds or permanent streams and ponds; however, populations probably cannot persist in ephemeral streams (Jennings and Hayes 1985). Breeding ponds are typically deep (greater than 2 feet) with still or slow-moving water and dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988), although CRF have also been observed in shallow sections of streams and ponds that are devoid of vegetative cover. Habitats with the highest densities of CRF are deep-water ponds with dense stands of overhanging willows and a fringe of cattails (Jennings 1988; Rathbun et al. 1993). CRF breeds during the winter and early spring, from as early as late November through April and May. From late November to late April, adult CRF are typically found in or near the breeding ponds (Hayes and Jennings 1989, 1994; Jennings 1988). On rainy nights during this time, however, they may leave the ponds and move up to 300 feet away (Zeiner et al. 1988). Starting in late spring, CRF often move out of the breeding ponds, at first staying nearby but often moving farther away into nearby moist locations, grasslands with squirrel burrows, or similar habitats (under logs, debris, etc.). Generally, these dispersal areas or corridors have mesic (moist) cover, such as would be found in a riparian zone, but CRF have also been documented dispersing through areas with sparse vegetative cover. Dispersal patterns are dependent on habitat availability and environmental conditions (Scott and Rathbun 1998). CRF are likely to remain near the breeding ponds if sufficient moist habitat and cover are available, but may also move significant distances if this habitat is not available or if they are dispersing to other ponds. If water is not available, summer habitat could include spaces under boulders or rocks and organic debris, such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, abandoned sheds, or hay-ricks. California red-legged frogs also use small mammal burrows and moist leaf litter for refuge habitat (Jennings and Hayes 1994). When the rains begin in late fall, CRF move back into the breeding ponds.

Occurrence in the Vicinity of the Study Area

CRF have been documented at multiple locations in the vicinity of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. There are three documented occurrences within two miles of the study area, including one occurrence that is less than one mile to the southwest—a CNDDB occurrence from the year 2000 with precision coded as ‘Specific.’ The study area is not within designated critical habitat for California red-legged frog—the nearest critical habitat is approximately eight miles south of the site.

Potential Occurrence within the Study Area

The study area lacks any ponds or pools that hold water long enough to support breeding CRF. During a reconnaissance-level nighttime spotlight survey, no CRF were detected in any features in the study area. Reconnaissance surveys of the nearest ponds to the study area (also on the former golf course, but outside of the 250-foot buffer) detected bullfrogs (*Lithobates catesbeiana*) and mosquito fish (*Gambusia* sp.), which are known to prey upon and compete with CRF.

Given the close proximity of a documented occurrence of CRF, the species could utilize upland habitats within study area for dispersal and/or refugia (i.e., large soil cracks and/or mammal burrows).

Potential Project Impacts

The entire project site is within dispersal distance of a documented breeding pond. The proposed project would eliminate or degrade upland habitat. Should construction activities occur when frogs are present within the study area, individual CRF could be harmed by construction activities. Recommended project design measures (PDMs) to reduce impacts to CRF are provided in **Section 11**. The PDMs are based on the recommendations in the HCP/NCCP.

California Tiger Salamander

California tiger salamander – Central California Distinct Population Segment (DPS) is a federally and state listed Threatened species. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

CTS is a relatively large, mostly terrestrial salamander. CTS is restricted to relatively deep vernal pools, stock ponds, or similar habitats. Compared to other amphibians, its larvae take a long amount of time to transform into juvenile adults and thus require relatively lengthy hydroperiods (typically around three months). CTS is relatively secretive and difficult to find outside of the breeding ponds or during its nocturnal breeding migrations, which begin with the first heavy rains of the season in November or December. From late November to early March, sexually mature adults move at night from underground refugia (such as squirrel burrows) to breeding ponds, and individuals may move significant distances—as much as 1.3 miles—from a breeding pool (USFWS 2015). Breeding occurs from late winter into early spring.

After breeding, the adults return to their underground burrows or other refugia. The eggs then hatch and the resulting gilled aquatic larvae metamorphose into juveniles that also move at night into terrestrial habitats (Zeiner et al. 1988). Beginning in late spring and early summer, juveniles migrate from the ponds into refugia where they aestivate (similar to hibernation). Juveniles can travel up to 1 mile from their breeding site to upland refugia (Austin and Shaffer 1992). Juvenile CTS typically spend up to four to five years in their upland burrows before they reach sexual maturity and migrate to breeding ponds for the first time (Trenham et al. 2000).

While the maximum documented dispersal distance of CTS is 1.3 miles (USFWS 2015), this distance is normally less when there are large numbers of refugia sites in close proximity to breeding sites. Trenham and Shaffer (2005) found that 50-95% of adult CTS were trapped between 150 (0.1 mile) to 620 meters (0.4 mile) from a breeding pond, respectively. A more recent study (Orloff 2011), which was conducted in the project vicinity, found that the majority of salamanders were captured at least 800 meters (0.5 mile) from the nearest breeding pond while a smaller number of salamanders were captured as far as 2.2 kilometers (1.4 miles) from the nearest breeding pond.

Occurrence in the Vicinity of the Study Area

CTS have been documented at numerous locations in the vicinity of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. The documented occurrences

are primarily south of the study area, within the undeveloped open grasslands. There is one occurrence within 1.3 miles of the study area, which is listed as a 'Specific' location and includes either larvae or juvenile individuals, suggesting it is a breeding site. These occurrences are separated from the study area by the Contra Costa Canal, which represents a significant barrier to movement.

Potential Occurrence in the Study Area

At least one pond within the study area provides potential breeding habitat for CTS. During hydrologic surveys conducted during the 2019 wet season, a golf course landscape pond located in the northern portion of the study area (**Figure 10**) remained ponded from February to June. This long hydroperiod, combined with other parameters noted within the pond (e.g., potential prey species for CTS and no predators), suggests that the pond could support breeding CTS. The hydrologic surveys did not include targeted surveys for the species, so it is unknown whether the pond is occupied. Other ponded basins within the study area provide sub-optimal breeding conditions for CTS, either because they do not hold water long enough (i.e., well under three months) or because biotic conditions are not typically associated with CTS breeding (e.g., due to dense perennial marsh vegetation and/or the presence of predators such as mosquito fish and bullfrogs—see CRF section above).

Regardless of whether CTS are breeding within ponds in the study area, given the proximity of nearby breeding ponds, and the known maximum dispersal distance of the species (1.3 miles), nearly the entire study area provides potential upland/aestivation habitat. CTS could utilize the study area as dispersal habitat, and could use the mammal burrows and soils cracks throughout much of the study area as aestivation habitat. The study area is not within designated critical habitat for California tiger salamander. The site is mapped as suitable migration and aestivation habitat for the species as modeled in the HCP/NCCP.

Potential Project Impacts

Potential CTS breeding habitat within the study area is fairly limited, though most of the entire study area provides potential upland refuge/aestivation and dispersal habitat. The pond which provides potentially-suitable CTS breeding habitat is not within the proposed project work area; however, development of the study area would reduce upland habitat available to CTS breeding in this other nearby ponds. Individual CTS may be present in subterranean refuge habitat on portions of the study area and could be harmed by construction activities. Following any development of the site, CTS could still move on or off the site during breeding migrations and could be subject to harm or mortality while crossing roads. As with CRF, PDMs based on the HCP/NCCP are provided below.

San Joaquin Kit Fox

San Joaquin kit fox (SJKF) is a federally listed Endangered species and state listed Threatened species. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

SJKF is known for its use of and dependence upon dens, which are typically found in enlarged ground squirrel or other species' dens (O'Farrell 1980). However, SJKF may also be found in manmade structures, including abandoned pipelines, banks in roadbeds or sumps, and culverts

(USFWS 1998). Dens are critical for protection from predators, but also provide shelter from inclement weather and thermal regulation. SJKF typically occupies a number of dens at any one time and may change dens often throughout the year. This species forages primarily for small mammals and insects in annual grasslands, pasturelands, cultivated fields, and along the edges of orchards.

Occurrence in the Vicinity of the Study Area

The study area is located just north of the known range of the SJKF. However, the HCP/NCCP identifies the area and vicinity as being suitable core habitat for the species. The closest documented occurrence of this species is approximately 2.6 miles southeast of the study area; though this occurrence was documented in 1992 and its location is listed as 'Non-specific.' As discussed in *Conservation of San Joaquin Kit Foxes in Western Merced County, California* prepared by the California State University Stanislaus Endangered Species Recovery Program (May 2009), the current status of SJKF in the northern range is unclear:

> *The status of kit foxes from Santa Nella northward is unclear. This region is commonly referred to as the "northern range", and even the historical distribution and abundance of kit foxes in this region is uncertain. Grinnell et al. (1937) found little evidence of kit foxes north of Merced County. They speculated that the historic range may have extended further to the north along the west side of the San Joaquin Valley, but offered no information to support this other than the location for the type specimen near Tracy in San Joaquin County (Merriam 1902).*
>
> *An extensive survey was conducted throughout the northern range during May 2001-February 2003. This effort likely constitutes the most comprehensive survey conducted to date in the northern range. Trained scat-detection dogs were used to survey 213 km of transects on 24 different properties. Of 17 fox scats found and genetically identified to species, all were from red foxes (Smith et al. 2006). No kit fox scats were located.*
>
> *Available data offers little support for the presence of resident kit fox populations in the northern range. Currently, kit fox presence in the northern range may consist primarily of occasional dispersing animals from populations to the south of Santa Nella. It is conceivable that such animals might even persist for multiple years resulting in reports of sightings. However, there have been no recent and indeed only two historical records of documented reproduction by kit foxes in the northern range. If self-supporting kit fox populations are not present in the northern range, then this region could be functioning as a dispersal sink, as suggested by Smith et al. (2006).*

Potential Occurrence in the Study Area

The study area is located to the north of the commonly accepted range of the species and there have been no recent documented occurrences in the study area vicinity. Therefore, it is considered unlikely that the species would occur within the study area. However, the potential of a kit fox to occasionally wander outside of its expected range and to occur within the study area cannot be completely ruled out.

Potential Project Impacts

The available evidence indicates that a resident or breeding SJKF population does not occur on or near the study area, and that potential use of the study area and surrounding area by the species would be limited to very occasional dispersal. Should an individual SJKF move through the project area during the construction period, the animal could be harmed. In addition, while considered unlikely, an individual SJKF could also temporarily occupy a den within the study area. In addition to the potential loss of habitat, if the species is present construction activities could result in the loss of one or more kit foxes. PDMs for this species are provided in **Section 11**.

Tricolored Blackbird

Tricolored Blackbird is listed as Threatened under CESA, and is a USFWS BCC and CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.

Species Profile

This species typically nests in large colonies in dense stands of cattails or tules in freshwater emergent wetlands. Tricolored Blackbird has also been observed nesting in dense stands of willows, blackberry, wild rose, and tall herbs (Zeiner et al. 1990). It is found throughout the Central Valley and along the south coast of Sonoma, and forages in grasslands, cropland, and along edges of ponds for insects, seeds, and grains. Tricolored Blackbirds have three basic requirements for selecting their breeding colony sites: open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few miles of the nesting colony (Hamilton et al. 1995; Beedy and Hamilton 1997, 1999). There are no mapped occurrences of Tricolored Blackbird in the vicinity of the study area, though the study area is within mapped primary foraging habitat by the HCP/NCCP.

Occurrence in the Vicinity of the Study Area

The nearest occurrence of Tricolored Blackbird is 7.2 miles north of the study area. This occurrence is from 2014 and is north of the Suisun Bay. The area where the occurrence is located is predominately in a wetland/riparian zone. Though the study area is near the Suisun Bay, there's marginal wetland/riparian habitat for the species in the study area.

Potential Occurrence in the Study Area

The two perennial wetlands within the study area include small stands of cattails, and there are a few small stands of willows within the study area. However, these stands are too small to provide suitable nesting habitat for Tricolored Blackbird. Open areas within the study area provide potential foraging habitat.

Potential Project Impacts

The study area provides marginal foraging habitat for Tricolored Blackbird. The proposed project would eliminate or degrade this habitat. Should construction activities occur when birds are present within the study area, individual Tricolored Blackbirds could be disturbed by construction activities. PDMs for this species are provided in **Section 11**.

Western Pond Turtle

Western pond turtle is Proposed for listing as Threatened under ESA, and is a CDFW SSC. This species is covered by the East Contra Costa County HCP/NCCP.

This turtle primarily inhabits aquatic habitats, including ponds, slow moving streams, lakes, marshes, and canals. The species frequently basks on logs or other objects out of the water. Western pond turtles also require upland oviposition (i.e., egg-laying) sites in the vicinity (typically within 200 meters, but as far as 400 meters) of the aquatic site. Mating typically occurs in late April or early May and most oviposition occurs during May and June, although some individuals may deposit eggs as early as late April and as late as early August (Rathbun et al. 1992). Nest sites are most often situated on south or west-facing slopes, are sparsely vegetated with short grasses or forbs, and are scraped in sands or hard-packed, dry, silt or clay soils (Rathbun et al. 1992; Holland 1994; Reese and Welsh 1997).

"Movement Habitat" is documented adjacent to the study area by the HCP/NCCP. However, in reality, there is limited aquatic habitat within the study area, as there are no perennial ponds or streams present. The closest documented occurrence of the species is approximately three miles northeast of the study area. There are no documented occurrences in the hills surrounding the site, and the site is separated by dense urban and suburban development from the documented occurrences within the lowlands north of the study area. Project development could interrupt potential movement habitat for this species, and if present, the species could be harmed or disturbed by construction activities. PDMs consistent with East Contra Costa County HCP/NCCP conservation measures for this species are provided in **Section 11**. Note that because the East Contra Costa County HCP/NCCP includes a "no surprises" provision, no additional measures will be required even if Western pond turtle becomes state or federally listed.

Burrowing Owl

Burrowing Owl is a USFWS BCC and CDFW SSC. In March 2024, CDFW received a petition to list the species under CESA. CDFW's review of the petition, which concluded in August 2024 (see https://fgc.ca.gov/cesa#wbo), concluded that "there is sufficient scientific information to indicate that … petitioned action(s) to list the western burrowing owl as threatened or endangered may be warranted" and recommended that the state Fish and Game Commission accept the petition for further consideration. This species is covered by the East Contra Costa County HCP/NCCP.

Burrowing Owl is a small, ground-dwelling owl that lives in open, dry grasslands, agricultural and range lands, and desert habitats associated with burrowing mammals. Burrowing Owls nest and shelter in ground squirrel and other suitable small mammal burrows or artificial structures (Poulin 2020). The species prefers areas of short grass or bare ground and few trees to reduce the potential for predators to hide near the nest or foraging grounds (Poulin 2020).

The species is known from the vicinity of the study area—the nearest CNDDB occurrence is approximately 2.2 miles west of the study area, and the study area is within modeled habitat for the species by the HCP/NCCP. Furthermore, ground squirrel burrow complexes were observed within the site. However, no evidence of Burrowing Owls was observed during reconnaissance-level habitat and wildlife surveys or other surveys within the study area. Regardless, focused surveys may result in documentation of this species within the study area. Project development

would destroy or degrade potential habitat for this species, and if present, the species could be harmed or disturbed by construction activities. PDMs consistent with East Contra Costa County HCP/NCCP conservation measures for this species are provided in **Section 11**. Note that because the East Contra Costa County HCP/NCCP includes a "no surprises" provision, no additional measures will be required even if Burrowing Owl becomes state or federally listed.

Crotch's Bumble Bee

Species Profile

Crotch's bumble bee is a CESA candidate Endangered species. The bee has a hotter and dryer climactic range than other bee species. Crotch's bumble bee lives in grasslands and shrublands and found predominately in Southern to Central California (LPFW n.d.). There are, however, historical occurrences of the bee near the study area. The bee is a short-tongued bee, meaning the flowers the bee feeds from are specific. Examples include milkweeds, dusty maidens, lupines, medics, phacelias, sages, clarkias, poppies, and wild buckwheats (LPFW n.d.). These bees nest in underground colonies or above ground in tufts of grass, old bird nests, rock piles, and cavities in dead trees (LPFW n.d.). While the grasslands offer marginal habitat for Crotch's bumble bee, the species has potential to be found in the study area and project-related disturbance could impact the species.

Occurrence in the Vicinity of the Study Area

The nearest occurrence of the species according to the CNDDB is 4.8 miles to the east of the study area in Antioch. This occurrence is from 1926. Next closest occurrence is 7.7 miles south of the study area around Mt. Diablo from 1951. Both areas have similar habitat to the study area.

Potential Occurrence in the Study Area

The study area provides suitable grassland habitat for the species and plants accessible to short-tongued bees. Specifically, milkweed and multiple species of lupine provide food for the bee. Though the occurrences in the vicinity are historical, the plant species present could provide enough foraging habitat for the bee.

Potential Project Impacts

With there being loss of grassland habitat, this could impact negatively impact the bee. Crotch's bumble bee is also a ground nester so any ground disturbing activities could negatively impact the species. The bee could also be disturbed by construction activities if they are conducted when the bee is in flying season. PDMs for this species are provided in **Section 11**.

Bald Eagle

Species Profile

Bald Eagle is state listed as Endangered and is a CDFW Fully Protected species. This species is not covered by the East Contra Costa County HCP/NCCP.

Bald Eagles have a wingspan of 168-244 centimeters and have very distinct plumage, with its body a dark brown and head, tail and tail coverts being a stark white (Buehler 2022). The species is found throughout California, predominately near large bodies of water where the bird forages. The

species breeds in woodlands and is mainly found near water, though it can be found in more arid areas depending on prey availability. The Bald Eagle roosts in trees at least 50 meters away from their foraging habitat (Buehler 2022).

Occurrence in the Vicinity of the Study Area

Most Bald Eagle occurrences in the state are in northern California; there are no documented nesting occurrences of the species within 10 miles of the project site.

Potential Occurrence in the Study Area

The study area provides limited suitable foraging habitat for the species in the form of grassland. Scattered mature trees provide limited suitable nesting habitat. Nonetheless, a conservative evaluation is that Bald Eagles could forage or nest in the study area.

Potential Project Impacts

Project-related disturbance could potentially impact the onsite foraging and roosting habitat for Bald Eagle. PDMs for this species are provided in **Section 11**.

Other Special-status Species Covered by the HCP/NCCP

Golden Eagle

Golden Eagle is a CDFW Fully Protected species. This species is covered by the East Contra Costa County HCP/NCCP.

Golden Eagle is a resident and migrant throughout California, except for the Central Valley. Its habitat typically includes foothills, mountain areas, sage-juniper flats, and desert, and the species utilizes secluded cliffs with overhanging ledges and large trees for cover (Katzner 2020). Nests are constructed on cliffs and in large trees in open areas.

The study area is within modeled habitat for the species by the HCP/NCCP. The species has been observed foraging nearby at the Concord Naval Weapons Station, approximately 3.8 miles southwest of the study area. The study area provides suitable foraging habitat, and there are a limited number of large, mature trees that could provide nesting habitat. Project-related disturbance could potentially impact the onsite foraging and nesting habitat for Golden Eagle. PDMs for this species are provided in **Section 11**.

Special-status Species Not Protected by the HCP/NCCP

Other Special-status Birds

The following special-status bird species (which are not covered by the HCP/NCCP) could nest and/or forage within the study area:

- **Cooper's Hawk** is a CDFW Watch List species. Cooper's Hawks are crow-sized raptors that breed in forests throughout North America. Sexes have similar plumage with males being noticeably more colorful (Rosenfield 2020). The hawk is found in deciduous, mixed and conifer forests and suburban and urban areas. The hawk hunts small to medium-sized songbirds and doves, while having a higher proportion of mammals in their diet in western

states (Rosenfield 2020). The species is found year-round in California. The study area provides marginally suitable habitat for nesting and suitable habitat for foraging. This species was observed foraging within the vicinity of the Study Area during VNLC surveys.

- **Grasshopper Sparrow** is a CDFW SSC. The species inhabits grasslands and nests on the ground. The nest is a well-concealed open cup on the ground under vegetation. They forage on the ground in vegetation, mainly eating insects, especially grasshoppers, as well as seeds (Dobkin and Granholm 2008). This species could nest and forage within the study area.

- **Short-eared Owl** is a USFWS BCC and CDFW SSC. Short-eared Owls are a medium-sized owl with a wingspan of 95-110 centimeters with plumage that is dorsally mottled brown and buff (Wiggins 2020). The species is a ground nester that can be found in marshes, grasslands, and tundra throughout North America. Small mammals make up most of the species' diet and population dynamics fluctuate based on their prey (Wiggins 2020). The bird is active both day and night and tends to hunt low to the ground. In California, the species is an uncommon and irregular breeder around the San Francisco Bay Area. The species could nest and forage in the study area.

- **Ferruginous Hawk** is a CDFW Watch List species. The Ferruginous Hawk is a large, narrow-winged hawk. It winters in open habitats, including deserts and grasslands, between September and April in the Modoc Plateau, Central Valley, and Coast Ranges (Zeiner et al. 1990), but it does not nest in California. This hawk prefers low elevations and avoids canyons and forests (Bechard and Schmutz 1995) and forages over open areas for birds, reptiles, amphibians, mice, and ground squirrels. It is an uncommon winter resident and migrant in northern California, and a more common winter resident in southwestern California (Garrett and Dunn 1981). The species does not nest in the project region but could occasionally forage within the study area in the winter.

- **Northern Harrier** is a USFWS BCC and CDFW SSC. Northern Harriers are slender, white-rumped raptors found in tundra, grasslands, and weedy agricultural fields (Smith 2020). The bird can also be found in fresh and saltwater marshes. The species is a ground nesting bird, nesting in dense clumps of vegetation either alone or in loose colonies. It primarily feeds on small to medium sized mammals and birds (Smith 2020). Northern Harrier is most active during dawn and dusk and can also be found in dry upland habitat. The species could nest and forage in the study area.

- **White-tailed Kite** is a CDFW Fully Protected species. White-tailed Kite typically nests in trees, often in isolated stands, surrounded by open foraging habitat. Nests are built on top of oaks, willows, or other dense, broad-leaved deciduous trees within partially cleared or cultivated fields, grasslands, marsh, riparian, woodland, and savanna habitats (Polite 2008). This species was observed foraging within the study area, near the southern edge. The study area also provides suitable nesting habitat for the species.

- **California Horned Lark** is a CDFW Watch List species. The species typically nests in open country, tundra, grassland, and agricultural areas that contain relatively barren ground with short grass and scattered bushes (Green 2008). This subspecies lives year-round throughout most of California, except in the Sierra Nevada and some parts of northwestern California, where it is only a migrant (Green 2008). In the winter, it can be found in large

flocks that often include other species of birds. This species could nest and forage in the on-site grasslands.

- **Merlin** is a CDFW Watch List species. Merlins are small falcons with wingspans between 53-73 centimeters (Warkentin 2020). The species can be found in a variety of habitats but tends to avoid dense forests and steep, mountainous areas. The species is most associated with coniferous boreal forests, deciduous parkland, shrub steppe, moorland, and open prairies (Warkentin 2020). During the bird's wintering period, they may also be found in tidal flats and marshes, cultivated areas and urban settings. The species hunts small to medium sized birds, usually under 50 grams (Warkentin 2020). Since the bird winters in California, it is unlikely there will be breeding pairs in or around the study area. The study area, however, does provide suitable foraging habitat for the species.

- **Prairie Falcon** is a CDFW Watch List species. Prairie Falcons are large, pale brown falcons with wingspans of around 90-113 centimeters (Steenhof 2020). The species is found in open areas and nests in cliffs or bluffs. The falcon eats primarily ground squirrels and horned larks, while also eating lizards and other species of passerines, shorebirds, and small rodents (Steenhof 2020). In California, the bird breeds throughout the state and winters in the state. The study area does not provide suitable nesting habitat but does provide suitable foraging habitat for the species.

- **American Peregrine Falcon** is on the CDFW Special Animals list, and was formerly listed as Endangered under ESA and CESA (now delisted)**.** American Peregrine Falcons are medium to large sized falcons with a wingspan of 79-114 centimeters (White 2020). The species is found all over the globe but is a year-round resident in California. The falcon prefers open spaces over confined areas. The species nests on cliffs but may also nest on hillsides and artificial structures. The bird hunts other smaller birds, along with small mammals like bats and rarely amphibians and reptiles (White 2020). The species prefers to forage in open habitat. The study area provides marginal nesting and foraging habitat for the species.

- **Loggerhead Shrike** is a CDFW SSC. Loggerhead Shrike is a predatory passerine bird species. It is a resident in the lowlands and foothills throughout California, where its habitat consists of open spaces such as grasslands with scattered trees, shrubs, utility lines, and/or fences for perching. Loggerhead Shrikes typically nest in densely vegetated trees and shrubs (Granholm 2008). This species could nest and forage within the study area.

- **California Gull** is a USFWS BCC and CDFW Watch List species. California Gulls are medium-sized white-headed gulls with definitive plumage, a combination of dark gray mantle, yellow-green legs, and black and red spots on gonys (Winkler 2020). The species forages in open habitat and nests near natural lakes, rivers, or reservoirs. Foraging habitat can be as far away as 60 km from the nesting colony (Winkler 2020). The species is an opportunistic feeder. Large amounts of California Gulls can be found in the San Francisco Bay. While the study area does not provide suitable nesting habitat, it does provide suitable foraging habitat for the species.

The trees, grasslands, and shrubs within the study area provide nesting habitat for numerous bird species. Should an active nest of these species be present, construction activities could result in

the loss or abandonment of the nest. In addition, project-related disturbances would result in the loss of grassland foraging habitat potentially used by these species. Therefore, the loss of a nest of a special-status bird species and associated foraging habitat is considered a potentially significant impact. In addition, the active nests of most native bird species are protected by the Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503). PDMs for these species are provided in **Section 11**.

Other Migratory Birds

Other birds protected under the MBTA have potential to nest in the study area. Tree or vegetation removal could result in direct loss of birds protected by the MBTA. Additionally, construction-related noise could result in the abandonment of an active nest adjacent to the project area. PDMs for these species are provided in **Section 11**.

American Badger

American badger is a CDFW SSC. This species is not covered by the East Contra Costa County HCP/NCCP.

American badgers range throughout California but are most abundant in drier, open stages of shrub, forest, and herbaceous habitats, particularly with friable soils where the badgers can dig burrows. No badger occurrences are documented in the CNDDB in the vicinity of the study area, and no potential dens were observed within the study area. In addition, soils within the study area are not particularly friable—soils are predominantly of clay texture. However, the species is known from the broader vicinity, and based on overall habitats present, there is some potential that a badger could be present in the study area. If present in a den, the species could be harmed by construction activities. In addition, the proposed project would result in the loss of grassland habitat potentially used by the species. PDMs for this species are provided in **Section 11**.

San Joaquin Pocket Mouse

San Joaquin pocket mouse is included on the CDFW Special Animals List. This species is not covered by the East Contra Costa County HCP/NCCP.

This species inhabits grasslands and blue oak woodlands with friable soils in the foothills and valley bottoms of the Central Valley. The study area does not contain the characteristic friable soils required by the species, and therefore, onsite habitat is considered of lower quality. Based on the CNDDB, this species has been documented approximately 3.3 miles southeast of the study area. Given that the species is known from areas with habitat connectivity to the study area, it could occur on the site. PDMs for this species are provided in **Section 11**.

Obscure Bumble Bee

Obscure bumble bee is on the CDFW Special Animals list. The bee is found in grasslands and shrubland. The species is found from southern California to southern British Columbia with most occurrences being found along the coast range (Hatfield 2014). Specifically, the bee inhabits grassy coastal prairies and coast range meadows. The species nests underground and in abandoned bird nests. The species is considered a medium-long tongued species of bee (Hatfield 2014). The bee is seeing a decline in populations and is threatened by habitat loss and extensive development in California. The species is not adaptable to heavy agricultural areas and is also threatened by pesticides, disease, and competition with non-native bees (Hatfield 2014). The study area provides

marginal habitat for the species to nest and provides suitable foraging habitat. PDMs for this species are provided in **Section 11**.

American Bumble Bee

American bumble bee is on the CDFW Special Animals list. The bee is found throughout the US, Mexico, and very southern British Columbia. The species is found in open farmlands and fields throughout its range (Hatfield 2015). The species nests on the surface among tall grass but can be an underground nester. The species is also one of the more aggressive bumble bee species, most likely as an adaptation to protect their colonies (Hatfield 2015). Populations of the species are in decline and are threatened by pathogens, low genetic diversity, and pesticide use (Hatfield 2015). The study area provides marginal grassland and foraging habitat for the species. PDMs for this species are provided in **Section 11**.

Monarch Butterfly

Monarch butterfly is an ESA candidate species. The species is found throughout California feeding on various flowers but only lays eggs on milkweed (*Asclepias* sp.) stands. Monarch butterflies can be found roosting in eucalyptus, Monterey pines and Monterey cypress trees (USFWS 2023). In grasslands the species prefers to be in grasslands with predominately grass and forbs. With milkweed present in and around the study area, there is potential for monarch butterflies and their larvae to be present. PDMs for this species are provided in **Section 11**.

Special-status Bats

- **Pallid bat** is a CDFW SSC. Pallid bats are found in various habitats throughout California but are mainly found in dry, open habitats like grasslands. The species has three distinct types of roosts, the day roost, night roost and hibernation roost (Zeiner 1990). The species may also be found in shrublands, mixed conifer forests and woodlands. The species day roosts under bridges, in caves, crevices, mines, and occasionally hollow trees. Night roosts tend to be open sites such as porches or open buildings. The bat forages 1 to 3 miles from its day roost (Zeiner 1990). The bat hunts hard-shelled invertebrates found on the ground or while flying. The species is very susceptible to roost disturbance. The study area provides marginal roosting habitat for the species and provides suitable foraging habitat. While bridges are present in the study area (over the Contra Costa canal), these are low over the water, and thus unsuitable for bat roosting.

- **Western red bat** is a CDFW SSC. Western red bat roosts primarily in trees, but this species forms nursery colonies. The western red bat is strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore (Pierson et al. 2004). Limited potential roosting habitat for this species is present in the form of a few mature riparian trees.

- **Hoary bat** is included on the CDFW Special Animals List. The hoary bat is a solitary rooster and it roosts exclusively in trees. It could potentially roost within the study area in trees that have potential to be removed. If the species was to occur on the site, it is likely that it would abandon its tree roost at the onset of construction and/or tree removal and relocate to another tree in the area.

PDMs for these species are provided in **Section 11**.

6.3 Special-status Plants

Special-status plant taxa documented in the vicinity of the study area are listed in **Table 3**. The table provides a summary of the listing status and habitat requirements of special-status plant species that have been documented in the project vicinity and also notes whether there is suitable habitat with the potential to support each taxon in the study area. This table also includes an assessment of the likelihood of occurrence of each of these species in the study area. The evaluation of the potential for occurrence of each species is based on the proximity of occurrences (if any), habitat suitability, and, for HCP/NCCP no-take taxa, field observations (the study area was surveyed for these taxa).

As indicated in **Table 3**, the study area provides limited or no habitat for special-status plant species known from the region. The study area is dominated by the former golf course, which features artificial soils over extensive areas and was intensively managed for over seven decades. With the exception of a few planted oaks and remnant cottonwoods and willows, all of the dominant plant species throughout the golf course area are exotic. Once golf course management ceased, nearly all areas where artificial soils predominate have been colonized by invasive weeds, which at the time of habitat surveys, formed tall, dense stands. Steeper slopes within the fenced portion of the study area, which were never managed as part of the golf course, feature semi-natural habitats, with scattered planted trees and un-grazed annual grassland. The grasslands and understory areas are dominated by tall and dense exotic grasses as well as scattered invasive weeds. As with the majority of the study area where native soils remain, there are localized areas of heavy clay soils, but the soils are otherwise unspecialized—they are not derived from serpentine or limestone rock, and are not sandy, gravely, or alkaline. In general, where such areas are not actively managed for habitat values, there is very limited potential for special-status plants to occur. However, the southern portion of the study area that is outside of the fencing supports a moderate cover of native plant species, including a number of showy wildflowers (see **Section 5.3** and **Appendix A**).

Three botanical surveys were conducted on April 12, May 19, and July 12, 2023 throughout the study area, focusing on less disturbed habitats occurring on native soils. The botanical survey was scheduled to optimize the potential to detect HCP/NCCP no-take plants and other special-status plant species. None of the no-take taxa, nor any other special-status plants, were documented within the study area. The potential of each taxon listed in **Table 3** to occur in the study area, taking into consideration factors such as regional distribution, habitat quality, and other factors, is further discussed below.

In general, take of these species is not expected to occur based on the limited habitat availability, and the lack of detections during the surveys. PDMs for these species (including additional surveys, if appropriate) are provided in **Section 11**.

TABLE 3. Special-status Plants Documented in the Vicinity of the Study Area.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Amsinckia grandiflora large-flowered fiddleneck (Boraginaceae)	annual herb	FE/CE/ 1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: none; 885-1,805 feet; (March) April-May	**Not Expected.** All natural populations in Contra Costa County have been extirpated. Suitable hill slopes are absent. Not observed during 2023 surveys.
Androsace elongata ssp. *acuta* California androsace* (Primulaceae)	annual herb	--/--/4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland; Microhabitat: none; 490-4,280 feet; March-June	**Low Potential.** Suitable habitat on site in from of valley and foothill grassland. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Anomobryum julaceum slender silver moss (Bryaceae)	moss	--/--/4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest; Microhabitat: damp rock and soil on outcrops, usually on roadcuts, Roadsides (usually); 330-3,280 feet; no bloom period listed	**Not Expected**. No forest habitat occurs on project site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Arabis blepharophylla coast rockcress (Brassicaceae)	perennial herb	--/--/4.3	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub; Microhabitat: Rocky; 10-3,610 feet; February-May	**Not Expected.** No suitable forest, scrub, or prairie habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Arctostaphylos auriculata Mt. Diablo manzanita (Ericaceae)	perennial evergreen shrub	--/--/1B.3	Chaparral (sandstone), Cismontane woodland; Microhabitat: none; 445-2,135 feet; January-March	**Not Expected**. No chaparral or cismontane woodland habitats occur within the study area. Nearest CNDDB occurrences are approximately 4 miles away. Not observed during 2023 surveys.
Arctostaphylos manzanita ssp. *laevigata* Contra Costa manzanita (Ericaceae)	perennial evergreen shrub	--/--/1B.2	Chaparral (rocky); Microhabitat: none; 1,410-3,610 feet; January-March (April)	**Not Expected**. No chaparral habitat occurs within the study area. Nearest CNDDB occurrences are approximately 4 miles away. Not observed during 2023 surveys.
Astragalus tener var. *tener* alkali milk-vetch (Fabaceae)	annual herb	--/--/1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools; Microhabitat: Alkaline; 5-195 feet; March-June	**Not Expected.** Clays in study area are not adobe and not alkaline. Not observed during 2023 surveys. Only occurrence within 10 miles is on the north side of the bay.
Atriplex cordulata var. *cordulata* heartscale (Chenopodiaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy); Microhabitat: sometimes saline, Alkaline (sometimes); 0-1,835 feet; April-October	**Not Expected**. No suitable habitat occurs within the study area. No saline or alkaline soils. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Atriplex coronata var. *coronata* crownscale (Chenopodiaceae)	annual herb	--/--/4.2	Chenopod scrub, Valley and foothill grassland, Vernal pools; Microhabitat: Alkaline, Clay (often); 5-1,935 feet; March-October	**Not Expected.** Vernal pools, saline, and alkaline soils absent from site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Atriplex depressa brittlescale (Chenopodiaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools; Microhabitat: Alkaline, Clay; 5-1,050 feet; April-October	**Not Expected**. No suitable habitat occurs within the study area. No saline or alkaline soils. Nearest CNDDB occurrences on the same side of the bay are approximately 8.8 miles away. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Atriplex persistens vernal pool smallscale (Chenopodiaceae)	annual herb	--/--/1B.2	Vernal pools (alkaline); Microhabitat: none; 35-375 feet; June-October	**Not Expected.** No vernal pool habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Blepharizonia plumosa big tarplant (Asteraceae)	annual herb	--/--/1B.1	Valley and foothill grassland; Microhabitat: Clay (usually); 100-1,655 feet; July-October	**Potential**. Extensive but moderately disturbed valley and foothill grasslands and clay soils occur within the study area. The nearest documented CNDDB occurrence is approximately 1.1 mile from the study area. After a careful protocol-level search, this species was not observed within the study area.
Calandrinia breweri Brewer's calandrinia (Montiaceae)	annual herb	--/--/4.2	Chaparral, Coastal scrub; Microhabitat: Burned areas, Disturbed areas, Loam (sometimes), Sandy (sometimes); 35-4,005 feet; (January) March-June	**Not Expected.** No suitable chaparral or coastal scrub habitat present in the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Calochortus pulchellus Mt. Diablo fairy-lantern (Liliaceae)	perennial bulbiferous herb	--/--/1B.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland; Microhabitat: none; 100-2,755 feet; April-June	**Potential**. Valley and foothill grassland occurs within the study area. The nearest documented CNDDB occurrence is approximately 4 miles from the study area, from 2003. After a careful protocol-level search, this species was not observed within the study area.
Calochortus umbellatus Oakland star-tulip (Liliaceae)	perennial bulbiferous herb	--/--/4.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland; Microhabitat: Serpentinite (often); 330-2,295 feet; March-May	**Not Expected.** No serpentinite soils within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Carex lyngbyei Lyngbye's sedge (Cyperaceae)	perennial rhizomatous herb	--/--/2B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-35 feet; April-August	**Not Expected.** No marsh or swamp habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Castilleja ambigua var. *ambigua* johnny-nip* (Orobanchaceae)	annual herb (hemiparasitic)	--/--/4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools (margins); Microhabitat: none; 0-1,425 feet; March-August	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No occurrences in CNDDB within 10 miles of the study area. Not observed during 2023 surveys.
Centromadia parryi ssp. *congdonii* Congdon's tarplant (Asteraceae)	annual herb	--/--/1B.1	Valley and foothill grassland (alkaline); Microhabitat: none; 0-755 feet; May-October (November)	**Not Expected**: No suitable habitat due to absence of alkaline soils. Nearest CNDDB occurrence is 7 miles away. Not observed during 2023 surveys.
Centromadia parryi ssp. *parryi* pappose tarplant* (Asteraceae)	annual herb	--/--/1B.2	Chaparral, Coastal prairie, Marshes and swamps (coastal salt), Meadows and seeps, Valley and foothill grassland (vernally mesic); Microhabitat: Alkaline (often); 0-1,380 feet; May-November	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No occurrences in CNDDB within 10 miles of the study area. Not observed during 2023 surveys

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Centromadia parryi ssp. *rudis* Parry's rough tarplant* (Asteraceae)	annual herb	--/--/4.2	Valley and foothill grassland, Vernal pools; Microhabitat: Alkaline, Roadsides (sometimes), Seeps, Vernally Mesic; 0-330 feet; May-October	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Chloropyron molle ssp. hispidum hispid salty bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	--/--/1B.1	Meadows and seeps, Playas, Valley and foothill grassland; Microhabitat: Alkaline; 5-510 feet; June-September	**Not Expected.** No suitable alkaline soil present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Chloropyron molle ssp. *molle* soft salty bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	FE/CR/1B.2	Marshes and swamps (coastal salt); Microhabitat: none; 0-10 feet; June-November	**Not Expected**. No coastal marsh/swamp habitats occur within the study area. Nearest CNDDB occurrence is 3 miles away. Not observed during 2023 surveys.
Cicuta maculata var. *bolanderi* Bolander's water-hemlock (Apiaceae)	perennial herb	--/--/2B.1	Marshes and swamps (brackish, coastal, freshwater); Microhabitat: none; 0-655 feet; July-September	**Not Expected**. No coastal marsh/swamp habitats occur within the study area. Nearest CNDDB occurrence is 2.3 miles away. Not observed during 2023 surveys.
Cirsium hydrophilum var. *hydrophilum* Suisun thistle (Asteraceae)	perennial herb	FE/--/1B.1	Marshes and swamps (salt); Microhabitat: none; 0-5 feet; June-September	**Not Expected.** No marsh or swamp habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Collomia diversifolia serpentine collomia (Polemoniaceae)	annual herb	--/--/4.3	Chaparral, Cismontane woodland; Microhabitat: Gravelly (sometimes), Rocky (sometimes), Serpentinite (sometimes); 655-1,970 feet; May-June	**Not Expected.** No suitable chaparral or woodland habitat in the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Convolvulus simulans small-flowered morning-glory* (Convolvulaceae)	annual herb	--/--/4.2	Chaparral (openings), Coastal scrub, Valley and foothill grassland; Microhabitat: Clay, Seeps, Serpentinite; 100-2,430 feet; March-July	**Low Potential**. Weedy grassland on site offers marginal potential habitat. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Cordylanthus nidularius Mt. Diablo bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	--/CR/1B.1	Chaparral (serpentinite); Microhabitat: none; 1,970-2,625 feet; June-August	**Not Expected**. No chaparral habitat occurs within the study area. Nearest CNDDB occurrence is 7.1 miles away, on Mt. Diablo. Not observed during 2023 surveys.
Cryptantha hooveri Hoover's cryptantha (Boraginaceae)	annual herb	--/--/1A	Inland dunes, Valley and foothill grassland (sandy); Microhabitat: none; 30-490 feet; April-May	**Not Expected**. Marginal suitable habitat occurs within the study area (grassland is not sandy). All CNDDB occurrences within 10 miles are considered extirpated (Antioch dunes). Not observed during 2023 surveys.
Delphinium californicum ssp. *interius* Hospital Canyon larkspur (Ranunculaceae)	perennial herb	--/--/1B.2	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub; Microhabitat: none; 640-3,595 feet; April-June	**Not Expected**. No suitable chaparral, cismontane woodland, or coastal scrub occur within the study area. Nearest CNDDB occurrence is 5.5 miles away. Not observed during 2023 surveys.

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Dirca occidentalis western leatherwood (Thymelaeaceae)	perennial deciduous shrub	-/-/1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland; Microhabitat: mesic; 80-1,395 feet; January-March (April)	**Not Expected**. None of the preferred habitats occur within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Downingia pusilla dwarf downingia (Campanulaceae)	annual herb	--/--/2B.2	Valley and foothill grassland (mesic), Vernal pools; Microhabitat: none; 5-1,460 feet; March-May	**Not Expected**. No mesic grassland or vernal pool habitats occur within the study area. Only CNDDB occurrences within 10 miles are on the north side of the bay. Not observed during 2023 surveys.
Eleocharis parvula small spikerush (Cyperaceae)	perennial herb	--/--/4.3	Marshes and swamps; Microhabitat: none; 5-9,910 feet; (April) June-August (September)	**Not Expected.** No suitable marsh or swamp habitat present within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eriastrum ertterae Lime Ridge eriastrum (Polemoniaceae)	annual herb	--/CC/1B.1	Chaparral (edges, openings); Microhabitat: sometimes semi-alkaline, Alkaline (sometimes), Sandy; 655-950 feet; June-July	**Not Expected**. No chaparral habitat occurs within the study area. Nearest CNDDB occurrence is 6.7 miles away. Not observed during 2023 surveys.
Erigeron biolettii streamside daisy (Asteraceae)	perennial herb	--/--/3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest; Microhabitat: Mesic, Rocky; 100-3,610 feet; June-October	**Not Expected.** No suitable forest or woodland habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eriogonum nudum var. *psychicola* Antioch Dunes buckwheat (Polygonaceae)	perennial herb	--/--/1B.1	Inland dunes; Microhabitat: none; 0-65 feet; July-October	**Not Expected**. No inland dunes habitat occurs within the study area. Nearest CNDDB occurrence is 5.9 miles away. Not observed during 2023 surveys.
Eriogonum truncatum Mt. Diablo buckwheat* (Polygonaceae)	annual herb	--/--/1B.1	Chaparral, Coastal scrub, Valley and foothill grassland; Microhabitat: Sandy; 10-1,150 feet; April-September (November-December)	**Low Potential.** The nearest extant CNDDB occurrence of this species is approximately 4.9 miles away, from 2016. Valley and foothill grassland and limited sandy soils occur within the study area. Not observed during 2023 surveys.
Eriogonum umbellatum var. *bahiiforme* bay buckwheat (Polygonaceae)	perennial herb	--/--/4.2	Cismontane woodland, Lower montane coniferous forest; Microhabitat: Rocky, Serpentinite (often); 2,295-7,220 feet; July-September	**Not Expected.** No suitable forest or woodland habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eriophyllum jepsonii Jepson's woolly sunflower (Asteraceae)	perennial herb	--/--/4.3	Chaparral, Cismontane woodland, Coastal scrub; Microhabitat: Serpentinite (sometimes); 655-3,365 feet; April-June	**Not Expected.** No chaparral, scrub, or woodland habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

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Eryngium jepsonii Jepson's coyote-thistle (Apiaceae)	perennial herb	--/--/1B.2	Valley and foothill grassland, Vernal pools; Microhabitat: Clay; 10-985 feet; April-August	**Not Expected.** Valley and foothill grassland and clay soils occur within the study area, however, there is no suitable vernal pool microhabitat within the study area. The nearest documented CNDDB occurrence is approximately 3.5 miles from the study area from 1998. Not observed during 2023 surveys.
Erysimum capitatum var. *angustatum* Contra Costa wallflower (Brassicaceae)	perennial herb	FE/CE/1B.1	Inland dunes; Microhabitat: none; 10-65 feet; March-July	**Not Expected**. No inland dunes habitat occurs within the study area. Nearest CNDDB occurrence is 2.3 miles away. Not observed during 2023 surveys.
Erythranthe inconspicua small-flowered monkeyflower (Phrymaceae)	annual herb	--/--/4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: Mesic; 900-2,495 feet; May-June	**Not Expected.** No chaparral, woodland or forest habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Eschscholzia rhombipetala diamond-petaled California poppy (Papaveraceae)	annual herb	--/--/1B.1	Valley and foothill grassland (alkaline, clay); Microhabitat: none; 0-3,200 feet; March-April	**Not Expected**: Marginal habitat occurs within the study area due to absence of alkaline soil conditions. The species is presumed extirpated from Contra Costa County (CNPS 2019). Not observed during 2023 surveys.
Extriplex joaquinana San Joaquin spearscale (Chenopodiaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland; Microhabitat: Alkaline; 5-2,740 feet; April-October	**Not Expected**. Suitable wetland saline/alkaline habitat is absent. The nearest occurrence on the same side of the bay is 5.7 miles away. Not observed during 2023 surveys.
Fritillaria agrestis stinkbells* (Liliaceae)	perennial bulbiferous herb	--/--/4.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland; Microhabitat: Clay, Serpentinite (sometimes); 35-5,100 feet; March-June	**Low Potential.** Some suitable valley and foothill grassland occurs on site (clay soils). Nearest CNDDB record is 9.1 miles away, dating to 1989. Not observed during 2023 surveys.
Fritillaria liliacea fragrant fritillary (Liliaceae)	perennial bulbiferous herb	--/--/1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland; Microhabitat: Serpentinite (often); 10-1,345 feet; February-April	**Not Expected**. Valley and foothill grassland occur within the study area. The only occurrences within 10 miles of the study area are from the north side of the bay. Not observed during 2023 surveys
Galium andrewsii ssp. *gatense* phlox-leaf serpentine bedstraw (Rubiaceae)	perennial herb	--/--/4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: Rocky, Serpentinite; 490-4,755 feet; April-July	**Not Expected.** No chaparral, woodland, or forest habitat present within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Grimmia torenii Toren's grimmia (Grimmiaceae)	moss	--/--/1B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: boulder and rock walls, Carbonate, Openings, Rocky, Volcanic; 1,065-3,805 feet; no bloom period listed	**Not Expected**. No chaparral, cismontane woodland, or forest habitats occur within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Helianthella castanea Diablo helianthella (Asteraceae)	perennial herb	--/--/1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; Microhabitat: Azonal soil, often partial Shade, Rocky (usually); 195-4,265 feet; March-June	**Potential**. The nearest documented CNDDB occurrence is approximately 2.4 miles from the study area, from 2012. Disturbed valley and foothill grassland and riparian woodland habitats occur within the study area. However, suitable rocky microhabitats do not occur within the study area. After a careful protocol-level search, this species was not observed within the study area.
Hesperevax caulescens hogwallow starfish* (Asteraceae)	annual herb	--/--/4.2	Valley and foothill grassland (mesic clay), Vernal pools (shallow); Microhabitat: Alkaline (sometimes); 0-1,655 feet; March-June	**Low Potential.** Clay flats and vernal pools are lacking; marginal habitat on site in form of valley and foothill grassland (mesic clay). No vernal pool habitat on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Hesperolinon breweri Brewer's western flax (Linaceae)	annual herb	--/--/1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland; Microhabitat: Serpentinite (usually); 100-3,100 feet; May-July	**Not Expected**. Marginal habitat occurs within the study area (no serpentinite). Nearest CNDDB occurrence is 4.4 miles away. Not observed during 2023 surveys.
Iris longipetala coast iris (Iridaceae)	perennial rhizomatous herb	--/--/4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps; Microhabitat: Mesic; 0-1,970 feet; March-May (June)	**Not Expected.** No forest, prairie, or meadow habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Isocoma arguta Carquinez goldenbush (Asteraceae)	perennial shrub	--/--/1B.1	Valley and foothill grassland (alkaline); Microhabitat: none; 5-65 feet; August-December	**Not Expected**. Marginal suitable habitat occurs within the study area, but soils are not alkaline. Nearest CNDDB occurrence on the same side of the bay is 9.8 miles away. Not observed during 2023 surveys.
Lasthenia conjugens Contra Costa goldfields (Asteraceae)	annual herb	FE/--/1B.1	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 0-1,540 feet; March-June	**Not Expected.** All HCP/NCCP inventory areas are extirpated. Only occurrence in the region occurs on a soil type not present in the study area. Mesic habitat is limited to constructed ponds and stream habitats. Not observed during 2023 surveys.
Lasthenia ferrisiae Ferris' goldfields (Asteraceae)	annual herb	--/--/4.2	Vernal pools (alkaline, clay); Microhabitat: none; 65-2,295 feet; February-May	**Not Expected.** No vernal pool habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields (Asteraceae)	annual herb	--/--/1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools; Microhabitat: none; 5-4,005 feet; February-June	**Not Expected.** No suitable marsh, swamp, or vernal pool habitat on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

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Lathyrus jepsonii var. *jepsonii* Delta tule pea (Fabaceae)	perennial herb	--/--/1B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-15 feet; May-July (August-September)	**Not Expected**. No coastal marsh/swamp habitat occurs within the study area. The site is above the elevation range. Nearest CNDDB occurrence is from 1.8 miles away, on an island. Not observed during 2023 surveys.
Legenere limosa legenere (Campanulaceae)	annual herb	--/--/1B.1	Vernal pools; Microhabitat: none; 5-2,885 feet; April-June	**Not Expected.** No vernal pools exist within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Leptosiphon ambiguus serpentine leptosiphon (Polemoniaceae)	annual herb	--/--/4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland; Microhabitat: Serpentinite (usually); 395-3,710 feet; March-June	**Not Expected.** No woodland or scrub habitat present within the study area. Valley and foothill grassland occurs below the elevation range. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Leptosiphon grandiflorus large-flowered leptosiphon (Polemoniaceae)	annual herb	--/--/4.2	Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Valley and foothill grassland; Microhabitat: Sandy (usually); 15-4,005 feet; April-August	**Not Expected.** Valley and foothill grassland present within the study areas but no serpentinite soil. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Lessingia hololeuca woolly-headed lessingia* (Asteraceae)	annual herb	--/--/3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; Microhabitat: Clay, Serpentinite; 50-1,000 feet; June-October	**Low Potential.** Valley and foothill grassland on site (clay soil). No CNDDB occurrences within 10 miles. Not observed during 2023 surveys
Lilaeopsis masonii Mason's lilaeopsis (Apiaceae)	perennial rhizomatous herb	--/CR/1B.1	Marshes and swamps (brackish, freshwater), Riparian scrub; Microhabitat: none; 0-35 feet; April-November	**Not Expected**. No coastal marsh/swamp habitat occurs within the study area. The site is above the elevation range. Nearest CNDDB occurrence is 1.8 miles away. Not observed during 2023 surveys.
Lilium rubescens redwood lily (Liliaceae)	perennial bulbiferous herb	--/--/4.2	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest; Microhabitat: Roadsides (sometimes), Serpentinite (sometimes); 100-6,265 feet; (March) April-August (September)	**Not Expected.** No forest or chaparral habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Limosella australis Delta mudwort (Scrophulariaceae)	perennial stoloniferous herb	--/--/2B.1	Marshes and swamps (brackish, freshwater), Riparian scrub; Microhabitat: Usually mud banks, Streambanks (usually); 0-10 feet; May-August	**Not Expected**. No coastal marsh/swamp habitat or riparian scrub habitats occur within the study area. The site is above the elevation range. Nearest CNDDB occurrence is 3.1 miles away, on an island. Not observed during 2023 surveys.
Lupinus albifrons var. *abramsii* Abrams' lupine (Fabaceae)	perennial herb	--/--/3.2	Broadleafed upland forest, Chaparral, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; Microhabitat: Serpentinite (sometimes); 410-6,560 feet; April-June	**Not Expected.** No forest, chaparral, or scrub habitat within the study area. Valley and foothill grassland is below the elevation range. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

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Madia radiata showy golden madia (Asteraceae)	annual herb	--/--/1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: none; 80-3,985 feet; March-May	**Low Potential**. The only documented CNDDB occurrence within 5 miles is a historical occurrence approximately 2.8 miles from the study area, from 1938. No recent documentations within 10 miles. Valley and foothill grassland occurs within the study area. After a careful protocol-level search, this species was not observed within the study area.
Malacothamnus hallii Hall's bush-mallow (Malvaceae)	perennial deciduous shrub	--/--/1B.2	Chaparral, Coastal scrub; Microhabitat: none; 35-2,495 feet; (April) May-September (October)	**Not Expected**. No chaparral or coastal scrub habitats occurs within the study area. Nearest CNDDB documentation is 2.9 miles away, from 1931. Nearest recent documentation is 6.5 miles away. Not observed during 2023 surveys.
Meesia triquetra three-ranked hump moss (Meesiaceae)	moss	--/--/4.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest (mesic); Microhabitat: soil; 4,265-9,690 feet; July	**Not Expected.** No wetland, meadow, or forest habitat occurs within the study area. Site is outside the species' elevation range. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Microseris paludosa marsh microseris (Asteraceae)	perennial herb	--/--/1B.2	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland; Microhabitat: none; 15-1,165 feet; April-June (July)	**Not Expected.** No suitable marsh or wetland habitat on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Microseris sylvatica sylvan microseris* (Asteraceae)	perennial herb	--/--/4.2	Chaparral, Cismontane woodland, Great Basin scrub, Pinyon and juniper woodland, Valley and foothill grassland; Microhabitat: Serpentinite (rarely); 150-4,920 feet; March-June	**Low Potential.** Valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys
Monolopia gracilens woodland woollythreads (Asteraceae)	annual herb	--/--/1B.2	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland; Microhabitat: Serpentinite; 330-3,935 feet; (February) March-July	**Not Expected**. No serpentinite. Nearest CNDDB record is 6.5 miles away. Not observed during 2023 surveys.
Myosurus minimus ssp. *apus* little mousetail* (Ranunculaceae)	annual herb	--/--/3.1	Valley and foothill grassland, Vernal pools (alkaline); Microhabitat: none; 65-2,100 feet; March-June	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Navarretia gowenii Lime Ridge navarretia (Polemoniaceae)	annual herb	--/--/1B.1	Chaparral; Microhabitat: none; 590-1,000 feet; May-June	**Not Expected**. No suitable habitat occurs within the study area. Nearest CNDDB record is 6.6 miles away. Not observed during 2023 surveys.
Navarretia heterandra Tehama navarretia* (Polemoniaceae)	annual herb	--/--/4.3	Valley and foothill grassland (mesic), Vernal pools; Microhabitat: none; 100-3,315 feet; April-June	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Navarretia leucocephala ssp. *bakeri* Baker's navarretia* (Polemoniaceae)	annual herb	--/--/1B.1	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 15-5,710 feet; April-July	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Navarretia nigelliformis ssp. *nigelliformis* adobe navarretia (Polemoniaceae)	annual herb	-/-/4.2	Valley and foothill grassland (vernally mesic), Vernal pools (sometimes); Microhabitat: clay, sometimes serpentinite; 330-3,280 feet; April-June	**Low Potential.** Vernal pools absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Navarretia nigelliformis ssp. *radians* shining navarretia* (Polemoniaceae)	annual herb	--/--/1B.2	Cismontane woodland, Valley and foothill grassland, Vernal pools; Microhabitat: Clay (sometimes); 215-3,280 feet; (March) April-July	**Low Potential**. The nearest CNDDB occurrence is approximately 5.5 miles from the study area, from 2008. Disturbed valley and foothill grassland and mesic areas occur within the study area.
Neostapfia colusana Colusa grass (Poaceae)	annual herb	FT/CE/1B.1	Vernal pools (adobe clay); 15-655 feet; May-August	**Not Expected**. No vernal pool habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose (Onagraceae)	perennial herb	FE/CE/1B.1	Inland dunes; Microhabitat: none; 0-100 feet; March-September	**Not Expected**. No dune habitat occurs within the study area. Nearest CNDDB record is 2.3 miles away, on an island. Not observed during 2023 surveys.
Phacelia phacelioides Mt. Diablo phacelia (Hydrophyllaceae)	annual herb	--/--/1B.2	Chaparral, Cismontane woodland; Microhabitat: Rocky; 1,640-4,495 feet; April-May	**Not Expected**. No chaparral or cismontane habitats occur within the study area. Nearest CNDDB record is 6.9 miles away. Not observed during 2023 surveys.
Piperia michaelii Michael's rein orchid (Orchidaceae)	perennial herb	--/--/4.2	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal scrub, Lower montane coniferous forest; Microhabitat: none; 10-3,000 feet; April-August	**Not Expected.** No chaparral, scrub, woodland, or forest habitat occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Plagiobothrys hystriculus bearded popcornflower (Boraginaceae)	annual herb	--/--/1B.1	Valley and foothill grassland (mesic), Vernal pools (margins); Microhabitat: often vernal swales; 0-900 feet; April-May	**Not Expected**. No mesic grasslands, vernal pools, or vernal swales. Nearest CNDDB record is 7.6 miles away. Not observed during 2023 surveys.
Puccinellia simplex California alkali grass* (Poaceae)	annual herb	--/--/1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Microhabitat: sinks, Alkaline, Flats, Lake Margins, Vernally Mesic; 5-3,050 feet; March-May	**Low Potential.** Vernal pools, chenopod, meadows, and seeps absent, valley and foothill grassland habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Ranunculus lobbii Lobb's aquatic buttercup* (Ranunculaceae)	annual herb (aquatic)	--/--/4.2	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 50-1,540 feet; February-May	**Low Potential.** Limited area of seasonal wetland (within) drainage present in valley and foothill grassland within study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Ravenella exigua chaparral harebell (Campanulaceae)	annual herb	--/--/1B.2	Chaparral (rocky, usually serpentinite); Microhabitat: none; 900-4100 feet; May-June	**Not Expected.** No suitable chaparral habitat present in the study area. Nearest CNDDB record is 7.2 miles away. Not observed during 2023 surveys.
Sanicula saxatilis rock sanicle (Apiaceae)	perennial herb	--/CR/1B.2	Broadleafed upland forest, Chaparral, Valley and foothill grassland; Microhabitat: Rocky, Scree, Talus; 2,035-3,855 feet; April-May	**Not Expected**. Marginal habitat occurs within the study area. Dominated by tall, dense grass cover. No rocky soils. Nearest CNDDB record is 6.6 miles away. Not observed during 2023 surveys.
Senecio aphanactis chaparral ragwort (Asteraceae)	annual herb	--/--/2B.2	Chaparral, Cismontane woodland, Coastal scrub; Microhabitat: Alkaline (sometimes); 50-2,625 feet; January-April (May)	**Not Expected**. No chaparral, cismontane woodland, or coastal scrub habitats. Nearest CNDDB record is 2.9 miles away. Not observed during 2023 surveys.
Senecio hydrophiloides sweet marsh ragwort (Asteraceae)	perennial herb	--/--/4.2	Lower montane coniferous forest, Meadows and seeps; Microhabitat: Mesic; 0-9,185 feet; May-August	**Not Expected.** No forest or meadow occurs within the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Sidalcea keckii Keck's checkerbloom* (Malvaceae)	annual herb	FE/--/1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: Clay, Serpentinite; 245-2,135 feet; April-May (June)	**Low Potential.** Suitable habitat on site in the form of valley and foothill grassland. Only records from within 10 miles are on the north side of the bay. Not observed during 2023 surveys.
Spergularia macrotheca var. *longistyla* long-styled sand-spurrey (Caryophyllaceae)	perennial herb	--/--/1B.2	Marshes and swamps, Meadows and seeps; Microhabitat: Alkaline; 0-835 feet; February-May	**Not Expected.** No suitable marsh, swamp, or meadow habitat present in the study area. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Streptanthus albidus ssp. *peramoenus* most beautiful jewelflower (Brassicaceae)	annual herb	--/--/1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland; Microhabitat: Serpentinite; 310-3,280 feet; (March) April-September (October)	**Not Expected.** No serpentinite soils present on site. Nearest CNDDB record is 7.5 miles away. Not observed during 2023 surveys.
Streptanthus hispidus Mt. Diablo jewelflower* (Brassicaceae)	annual herb	--/--/1B.3	Chaparral, Valley and foothill grassland; Microhabitat: Rocky; 1,200-3,935 feet; March-June	**Low Potential.** Valley and foothill grassland present on site, but no chaparral. Nearest CNDDB record is 7.2 miles away. Not observed during 2023 surveys.
Stuckenia filiformis ssp. *alpina* northern slender pondweed (Potamogetonaceae)	perennial rhizomatous herb (aquatic)	--/--/2B.2	Marshes and swamps (shallow freshwater); Microhabitat: none; 9,85-7055 feet; May-July	**Not Expected.** No marsh or swamp habitat present in the study area. Nearest CNDDB record is 8.5 miles away at base of Mt. Diablo. Not observed during 2023 surveys.
Symphyotrichum lentum Suisun Marsh aster (Asteraceae)	perennial rhizomatous herb	--/--/1B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-10 feet; (April) May-November	**Not Expected.** No marsh or swamp habitat present in the study area. Study area is above elevation range. Nearest CNDDB record is 2.1 mils away. Not observed during 2023 surveys.
Trifolium hydrophilum saline clover* (Fabaceae)	annual herb	--/--/1B.2	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools; Microhabitat: none; 0-985 feet; April-June	**Low Potential.** Limited habitat present on site in the form of valley grassland. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.

Scientific Name **Common Name (Family Name)**	**Life Form**	**Status, Federal/ State/ CRPR[1]**	**Preferred Habitat; Elevation Range; Bloom Period**	**Potential to Occur within the Study Area**
Triquetrella californica coastal triquetrella (Pottiaceae)	moss	--/--/1B.2	Coastal bluff scrub, Coastal scrub; Microhabitat: soil; 35-330 feet; no bloom period listed	**Not Expected.** No suitable coastal bluff scrub or coastal scrub habitat present on site. No CNDDB occurrences within 10 miles. Not observed during 2023 surveys.
Tropidocarpum capparideum caper-fruited tropidocarpum (Brassicaceae)	annual herb	--/--/1B.1	Valley and foothill grassland (alkaline hills); Microhabitat: none; 5-1,495 feet; March-April	**Not Expected.** Species is presumed extinct, and no alkali soils present within study area. Not observed during 2023 surveys.
Viburnum ellipticum oval-leaved viburnum (Viburnaceae)	perennial deciduous shrub	--/--/2B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Microhabitat: none; 705-4,595 feet; May-June	**Not Expected.** No chaparral, cismontane woodland, or lower montane coniferous forest in the study area. Nearest CNDDB record is 8.8 miles away. Not observed during 2023 surveys.

Notes:
Compiled from a CNPS 9-Quad search of the centered on the Honker Bay quadrangle and including all surrounding quadrangles (Walnut Creek, Clayton, Antioch South, Vine Hill, Fairfield South, Denverton, Birds Landing, Antioch North).
Bloom Periods in parentheses indicate that the species *occasionally* blooms during that period.
Species marked with "*" have potential to occur but are not covered by the HCP/NCCP.
Species with potential to occur are highlighted

[1]**Rarity Status Codes**:
E = Federally or State listed as Endangered
T = Federally or State listed as Threatened
R = State listed as Rare
C = State candidate for listing

CRPR Codes:
CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere; CRPR List 1B = Plants rare, threatened or endangered in CA and elsewhere; CRPR 2B = Plants rare, threatened or endangered in California but more common elsewhere; CRPR 3 = More information is needed about plant; CRPR 4 = Plants of limited distribution, a watch list

CRPR: '.1' = Seriously threatened in CA; '.2' = Fairly threatened in CA; '.3' = Not very threatened in CA

California androsace (*Androsace elongata subsp. acuta*) (CRPR 4.2) is an annual herb that is native to California. The plant is found on dry, grassy slopes in the San Francisco Bay Area, Inner South Coast Ranges, and the south Sierra Nevada foothills (Calflora 2023). The plant can also be found in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley, and foothill grassland. The species blooms from March to June and is found at elevations less than 1,200 meters (Jepson 2023). The species is possibly threatened by grazing, trampling, non-native plants, alteration of fire regimes, recreational activities, and wind energy development (CNPS 2024).

Big tarplant (*Blepharizonia plumosa*) (CRPR 1B.1): This species is covered by the HCP/NCCP. The onsite annual grassland habitat with heavy clay soils provides suitable habitat for this species. There are several occurrences mapped within the CNDDB in the vicinity of the study area. The species would have been in bloom during the July 12 botanical survey but was not observed.

Mt. Diablo fairy-lantern (*Calochortus pulchellus*) (CRPR 1B.2): This species is covered by the HCP/NCCP. The onsite annual grassland habitat provides suitable habitat for the species. The closest documented occurrence of the species is just under 4 miles southeast of the study area. The species would likely have been in bloom during the April 12 and May 19 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings, this species is presumed absent from the site.

Johnny-nip (*Castilleja ambigua* var. *ambigua*) (CRPR 4.2) is a hemiparasitic annual herb in the Orobanchaceae family that is found in coastal bluffs and grasslands (Calflora 2023). The species is native to California. The plant can also be found in coastal prairies, coastal scrub, marshes, swamps and the margins of vernal pools. Most occurrences of the species are found in the Central Coast and the North Coast ranges. Johhny-nip blooms from May to August and is found at elevations less than 1640 feet (Jepson 2023). Threats to the species include different types of development (CNPS 2024).

Pappose tarplant (*Centromadia parryi* ssp. *parryi*) (CRPR 1B.2) is an annual herb in the Asteraceae family that is endemic to California. The species is found in grasslands, coastal salt marshes, alkaline springs, and seeps (Calflora 2023). Alkaline soils in general are preferred by the species. Most occurrences of the species are found in the Sacramento Valley and Outer to Inner North Coast Ranges. The plant blooms from May to November and is found at elevations less than 1312 feet (Jepson 2023). Threats to the species include agriculture, competition, development, grazing, foot traffic, habitat disturbance and road maintenance (CNPS 2024).

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) (CRPR 4.2) is an annual herb in the Asteraceae family that is endemic to California. The species is found in grasslands, edges of marshes, vernal pools, and disturbed sites (Calflora 2023). The species is predominately found in the Inner North Coast Ranges and the Sacramento Valley. The plant blooms between May and October and is found at elevations less than 500 meters (Jepson 2023). Threats to the species include development, habitat alteration, habitat disturbance, grazing and road maintenance (CNPS 2024).

Small-flowered morning-glory (*Convolvulus simulans*) (CRPR 4.2) is an annual herb in the Convolvulaceae family that is native to California. The species is found in clay substrates, occasionally serpentine, annual grassland, coastal-sage scrub, and chaparral (Calflora 2023). The species is predominately found in the South Coast and Peninsular ranges with some occurrences being found in the San Francisco Bay Area. The plant blooms from March to July and is found at elevations from 30 to 875 meters (Jepson 2023).

Mt. Diablo buckwheat (*Eriogonum truncatum*) (CRPR 1B.1) is an annual herb in the Polygonaceae family that is native to California. The species is found in sand, northern coastal scrub, chaparral and valley grassland (Calflora 2023). All occurrences of the species are found in either the San Francisco Bay Area or the Sacramento Valley. The plant blooms from April to September and is found at elevations between 200-400 meters (Jepson 2023).

Stinkbells (*Fritillaria agrestis*) (CRPR 4.2) is a perennial herb in the Liliaceae family that is endemic to California. The species is found in clay, often vertic, occasionally serpentine soils (Calflora 2023). The species is predominately found in the San Francisco Bay Area as well as the Inner South Coast Ranges. The plant blooms between March to June and is found at elevations less than 500 meters (Jepson 2023). Threats to the species include development, grazing, vehicles, and non-native plants (CNPS 2024). Populations of the species are also small, which may lead to issues like genetic drift.

Diablo helianthella (*Helianthella castanea*) (CRPR 1B.2): This species is covered by HCP/NCCP. The species is known to occur in open annual grassland but as described in the HCP/NCCP, Diablo helianthella is more associated with thin, rocky, well-drained soils, and is found in grassy openings within woodlands, chaparral, and coastal scrub, often at the transition zone between grasslands and woodland or chaparral habitats. The types of habitat transition zones and openings this species is most commonly associated with do not occur in the study area given the dominance of grassland and golf course habitats. The nearest CNDDB occurrence is approximately two miles southeast of the study area. The species would likely have been in bloom during the April 12 and May 19 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings and the fact that optimal habitat is not present in the study area, this species is presumed absent from the site.

Hogwallow starfish (*Hesperevax caulescens*) (CRPR 4.2) is an annual herb in the Asteraceae family that is native to California. The plant is found in drying shrink-swell clay of vernal pools, flats, and steep slopes, along with being found in serpentine soil (Calflora 2023). The plant is also found around vernal pools and can be found in alkaline soils. Most occurrences of the species are found throughout the Central Valley of California. Hogwallow starfish blooms from March to June and is found at elevations less than 984 feet (Jepson 2023). Threats to the species include agriculture, development, and over-grazing (CNPS 2024).

Woolly-headed lessingia (*Lessingia hololeuca*) (CRPR 3) is an annual herb in the Asteraceae family that is endemic to California. The species is found in coastal scrub, chapparal, grassland, roadsides, as well as serpentine or alkaline soils (Calflora 2023). The species is also found in clay soils. Most occurrences of the plant are found in the San Francisco Bay Area and the Outer South Coast Ranges. The plant blooms from June to October and is found at elevations between 33 and

1969 feet (Jepson 2023). Threats to wooly-headed lessingia include grazing and non-native plants. The species is suspected to be more prevalent in the southern Sacramento Valley, southern North Coast ranges and Northern San Francisco Bay.

Showy golden madia (*Madia radiata*) (CRPR 1B.1): This species is covered by the HCP/NCCP. The onsite annual grassland habitat provides suitable habitat for the species. According to the CNPS Rare and Endangered Plant Inventory, this species is presumed extirpated from Contra Costa County. There is an occurrence mapped within the CNDDB that is just over three miles southeast of the study area, but the occurrence date is 1938 and its location is listed as non-specific. The species would likely have been in bloom during the April 12 botanical survey by VNLC in the study area but was not observed. Given the negative survey findings and that the species is presumed extirpated from Contra Costa County, it is presumed absent from the site.

Sylvan microseris (*Microseris sylvatica*) (CRPR 4.2) is a perennial herb, in the Asteraceae family, endemic to California. The species is found in grassland and open woodland (Calflora 2023). Most occurrences of the species are found in the south Sierra Nevada foothills with some occurrences being found in the San Francisco Bay Area. The plant blooms from March to June and is found at elevations less than 1,700 meters (Jepson 2023). The species is threatened by wind energy development, grazing, agriculture, vehicles, recreational activities, and non-native plants (CNPS 2024).

Little mousetail (*Myosurus minimus* ssp. *apus*) (CRPR 3.1) is an annual herb in the Ranunculaceae family, native to California. The species is found in vernal pools and alkali flats (Calflora 2023). Most occurrences of the species are found in the Sacramento and San Joaquin Valley. The plant blooms from March to June and is found at elevations from 3-1,600 meters (Jepson 2023).

Tehama navarretia (*Navarretia heterandra*) (CRPR 4.3) is an annual herb, in the Polemoniacea family, native to California. The species can be found in heavy soils, vernal pools, and wet or drying flats (Calflora 2023). Most occurrences are found in the San Francisco Bay Area as well as the Inner North Coast Ranges. The plant blooms from April to June and is found at elevations less than 1,100 meters (Jepson 2023). The species can also be found in mesic valley and foothill grasslands.

Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) (CRPR 1B.1) is an annual herb in the Polemoniaceae family that is endemic to California. The plant is found in vernal pools, cismontane woodland, lower montane coniferous forest, meadows, seeps, and valley/foothill grassland, with a preference for mesic areas (Calflora 2023). Most occurrences of the species are found in the San Francisco Bay Area. Baker's Navarretia blooms from April until July and is found at elevations less than 5577 feet (Jepson 2023). The species may be more widespread, but more information is needed (CNPS 2024).

Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*) (CRPR 4.2): This species is covered by the HCP/NCCP. Adobe navarretia occurs on heavy clay soils of vernal pools and other low, usually seasonally moist areas in grasslands (Baldwin et al. 2012). The species does occasionally occur along clay slopes within grasslands (author's observation). Five occurrences of

this species have been documented in HCP/NCCP inventory area, but there are no occurrences in the CNDDB. The species would likely have been in bloom during the April 12 and May 19 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings, this species is presumed absent from the study area.

Shining navarretia (*Navarretia nigelliformis* ssp. *radians*) (CRPR 1B.2): Shining navarretia occurs in heavy clay soils of vernal pools and other low, usually seasonally moist areas in grasslands (Baldwin et al. 2012). Like the adobe navarretia, the species does occasionally occur along clay slopes within grasslands. Based on the CNDDB, this species was documented about five miles from the study area. The species would likely have been in bloom during all 3 botanical surveys by VNLC in the study area but was not observed. Given the negative survey findings, this species is presumed absent from the study area.

California alkali grass (*Puccinellia simplex*) (CRPR 1B.2) is an annual grasslike herb in the Poaceae family that is native to California. The plant is found in saline flats and mineral springs. The plant can also be found in alkaline soils, lake margins and vernally mesic areas (Calflora 2023). Most occurrences of the species are found in the Central Valley with some occurrences being found in the San Francisco Bay Area. California alkali grass blooms from March to May and is found at elevations less than 900 meters (Jepson 2023). Threats to the species include hydrological alterations, urbanization, agricultural conversion, development, and habitat fragmentation, disturbance, alteration, and loss. The species may also be threatened by solar energy, grazing and proximity to roads (CNPS 2024).

Lobb's aquatic buttercup (*Ranunculus lobbii*) (CRPR 4.2) is an aquatic annual herb in the Ranunculaceae family that is endemic to California. The plant is found in ponds as well as cismontane woodland, North Coast coniferous forest, valley and foothill grassland and vernal pools, with a preference for mesic areas (Calfora 2023). Most occurrences of the species are found in the San Francisco Bay Area. Lobb's aquatic buttercup blooms from February until May and is found at elevations less than 1,640 feet (Jepson 2023). Threats to the species include urbanization, habitat alteration, agriculture, and development (CNPS 2024).

Keck's checkerbloom (*Sidalcea keckii*) (CRPR 1B.1) is an annual herb in the Malvaeceae family that is endemic to California. The plant is found on grassy slopes. The species may also be found in clay or serpentinite soils (Calflora 2023). Most occurrences of the species are found in the Inner North Coast Ranges. Keck's checkerbloom blooms from April to May and is found at elevations between 75-650 meters (Jepson 2023). The species is endangered federally.

Mt. Diablo jewelflower (*Streptanthus hispidus*) (CRPR 1B.3) is an annual herb in the Brassicaceae family that is endemic to California. The species is found in rocky chapparal and grasslands (Calflora 2023). All occurrences of the species are found in the San Francisco Bay Area. Mt. Diablo jewelflower blooms from March until June and is found at elevations between 600 to 1,200 meters (Jepson 2023). Most pressing threat to the species is habitat degradation (Calflora 2023).

Saline clover (*Trifolium hydrophilum*) (CRPR 1B.2) is an annual herb in the Fabaceae family that is native to California. The species is found in salt marshes and open areas in alkaline soils. The

plant is also found in swamps, valley/foothill grassland and vernal pools (Calflora 2023). Most occurrences of the plant are found in the San Francisco Bay Area and the San Joaquin Valley. Saline clover blooms from April until June and is found at elevations less than 984 feet (Jepson 2023). Threats to the species include development, trampling, road construction and vehicles, while possibly being threatened by non-native plants. Many sites are extirpated but more information needs to be gathered on the rarity of the species (CNPS 2024).

7.0 AQUATIC AND RIPARIAN RESOURCES

7.1 Regulatory Background

Non-isolated wetlands, streams, and permanent and intermittent drainages are subject to the joint jurisdiction of the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) under the CWA. The CDFW also generally has jurisdiction over these resources under Porter-Cologne, together with other aquatic features that provide an existing fish and wildlife resource pursuant to FGC 1600. While CWA jurisdiction extends to the ordinary high-water mark, the CDFW asserts FGC 1600 jurisdiction to the top of bank or to outer edge of vegetation associated with a riparian corridor, whichever is greater. Placement of dredge or fill material in jurisdictional waters of the U.S. would require a CWA Section 404 permit. Impacts to Waters of the State of California (which are not Waters of the U.S.) would be subject to Waste Discharge Requirements under Porter-Cologne. Impacts to riparian habitats would require a Lake and Stream Bed Alteration Notification, and possibly a Lake and Streambed Alteration Agreement under FGC 1600. Each of these may be subject to required avoidance, minimization, and mitigation measures.

7.2 Waters and Wetlands

Wetlands are those areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted to life in saturated soil. Section 404 jurisdictional wetlands are vegetated areas that meet specific vegetation, soil, and hydrologic criteria defined by the USACE Wetlands Delineation Manual and Regional Supplement. Waters of the U.S. are drainage features or water bodies as described in 33 CFR 328.4.

VNLC conducted an aquatic resources delineation of the study area. The delineation identified a total of 1.916 acres of potential jurisdictional waters and wetlands within the study area. The acreage of each habitat type is listed in **Table 4** below and the habitat types are mapped on **Figure 5**. Of the features described, only a portion are within the proposed project work limits. These include 0.150 acres of perennial wetland within drainage, 0.014 acres of seasonal wetland drainage, and 0.114 acres of seasonal wetland within drainage; for a total of 0.278 acres of aquatic resources. These areas are displayed on **Figure 3**. Not all of these features will necessarily be filled by the proposed project.

The delineation also identified 1.597 acres of canal and 1.673 acres of artificial basins that were constructed in upland habitats. (Note that the study area for this document differs slightly from the study area for the delineation report; the aquatic resource areas reported here differ slightly due to that change in study area boundary). Basin features in the study area include golf course landscape ponds. These basin features are isolated features that are unlikely to be considered jurisdictional

as Waters of the United States but may be considered Waters of the State of California. None of the artificial basin or canal features will be filled by the proposed project.

Recommended PDMs to reduce project impacts to aquatic and riparian habitats are presented in **Section 11**.

7.3 Riparian Habitats

As described above, the study area includes 1.87 acres of riparian habitat beyond the edge of CWA/Porter-Cologne jurisdiction. This includes 0.44 acre of Himalayan blackberry thickets and 1.43 acres of Valley Foothill Riparian. Both the Himalayan blackberry thickets and Valley Foothill Riparian areas are classified as a sensitive habitat due to their status as riparian areas; they may be subject to CDFW jurisdiction under the California Fish and Game Code §1600 *et seq*. These habitats occur along the stream in the utility corridor east and south of the project area. None occur within the proposed limits of work for the project area.

TABLE 4. Acreage of Mapped Potential Jurisdictional Waters and Other Features within the Study Area.

Habitat Type	Acreage
Potentially Jurisdictional Wetlands	
Seasonal Wetland Drainage	0.787
Perennial Wetland within Drainage	0.169
Seasonal Wetland within Drainage	0.953
Total	**1.909**
Other Potentially Jurisdictional Features	
Un-vegetated Channels and Basins	0.007
Total	**0.007**
TOTAL	**1.916**
Artificial Basins Constructed in Uplands (presumed non-jurisdictional)	
Canals	1.597
Golf Course Landscape Pond	1.673
Total	**3.270**

Representative photographs of potential jurisdictional Waters are provided in **Appendix A**. Additional information is available in a separate report that documents such habitats.

8.0 SENSITIVE PLANT COMMUNITIES

Sensitive plant communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special-status species or their habitat. The most current version of the CDFW's *List of California Terrestrial Natural Communities* as well as the Manual of California Vegetation (Sawyer et al. 2009) indicate which natural communities are of special status given the current state of the California classification. As previously discussed, the study area is dominated by annual grasslands and disturbed habitats associated with the golf course development, which

are not considered sensitive plant communities. The riparian vegetation types in the study area are considered sensitive; they are discussed above.

Oaks and other native trees have a mosaic of protection in different jurisdictions. Within Contra Costa County, trees meeting the following criteria are considered “protected trees”:

Must occur in one of the following:

1. Unincorporated areas of the County;
2. Developed property within any commercial,sec professional office or industrial district;
3. Any undeveloped property within any district;
4. Any area designated on the general plan for recreational purposes or open space;
5. Any area designated in the county general plan open space element as visually significant riparian or ridge line vegetation and where the tree is adjacent to or part of a riparian, foothill woodland or oak savanna area.

And also must be described by one of:

1. Any tree measuring twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level;
2. Any multistemmed tree with the sum of the circumferences measuring forty inches or larger, measured four and one-half feet from ground level; or
3. Occurring within any significant grouping of trees, including groves of four or more trees.

Felling, trimming and earthwork within the dripline of these trees is subject to county permitting requirements. A tree survey of the project area has been prepared separately to analyze the applicability of the above to the proposed project.

9.0 WILDLIFE MOVEMENT CORRIDORS AND NURSERY SITES

CEQA requires an analysis of whether projects would 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 corridors are pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural or manmade obstacles such as urbanization.

The California Essential Habitat Connectivity project identifies major habitat corridors connecting large areas of open space. None are identified within the study area. The nearest such are on the north side of Suisun Bay, and approximately 10 miles southwest of the study area in the east bay hills.

The HCP/NCCP also emphasizes smaller, local corridors, particularly riparian corridors. The project area is located at the edge of the City of Pittsburg. North of it lies suburban development, and to the west and south lie other portions of the former golf course, separated from the project area by the Contra Costa Canal. In addition, the study area is enclosed in fencing on its western border and the south and southwestern borders along the canal. There is also golf barrier netting

along a portion of the eastern part of the study area. To the east lies a generally open power transmission corridor, containing a stream. This corridor provides direct connectivity from the Diablo Range hills directly to the bayland edge. As such, it represents a potentially significant wildlife movement corridor. Other than this corridor, the project area itself provides little opportunity for wildlife to move due to the barriers along the north, west, and south edges. **Figure 11** is a map of the wildlife corridors and barriers on and around the study area.

North-south habitat connectivity in the project vicinity (including along the corridor described above) is partially fragmented by the Contra Costa Canal, which has relatively few crossings accessible to wildlife. One of the largest such crossings is present at the southeast corner of the study area. This location may represent an important location along the corridor. Construction of barriers to wildlife movement in this location could significantly impact the habitat value of the entire corridor. The project as designed avoids new structures or barriers to movement near this crossing.

Nursery sites may include sites where animals breed, lay eggs, or rear young. These can include features as diverse as nesting trees, estuaries, ponds, caves, and structures. Trees in the study area provide potential nesting habitat for birds and bats; these values and mitigation are discussed in **Section 6.1**, above. Similarly, the ability of ponds and wetlands on the site to support amphibian breeding is discussed above. No other special nursery sites are present within the study area.

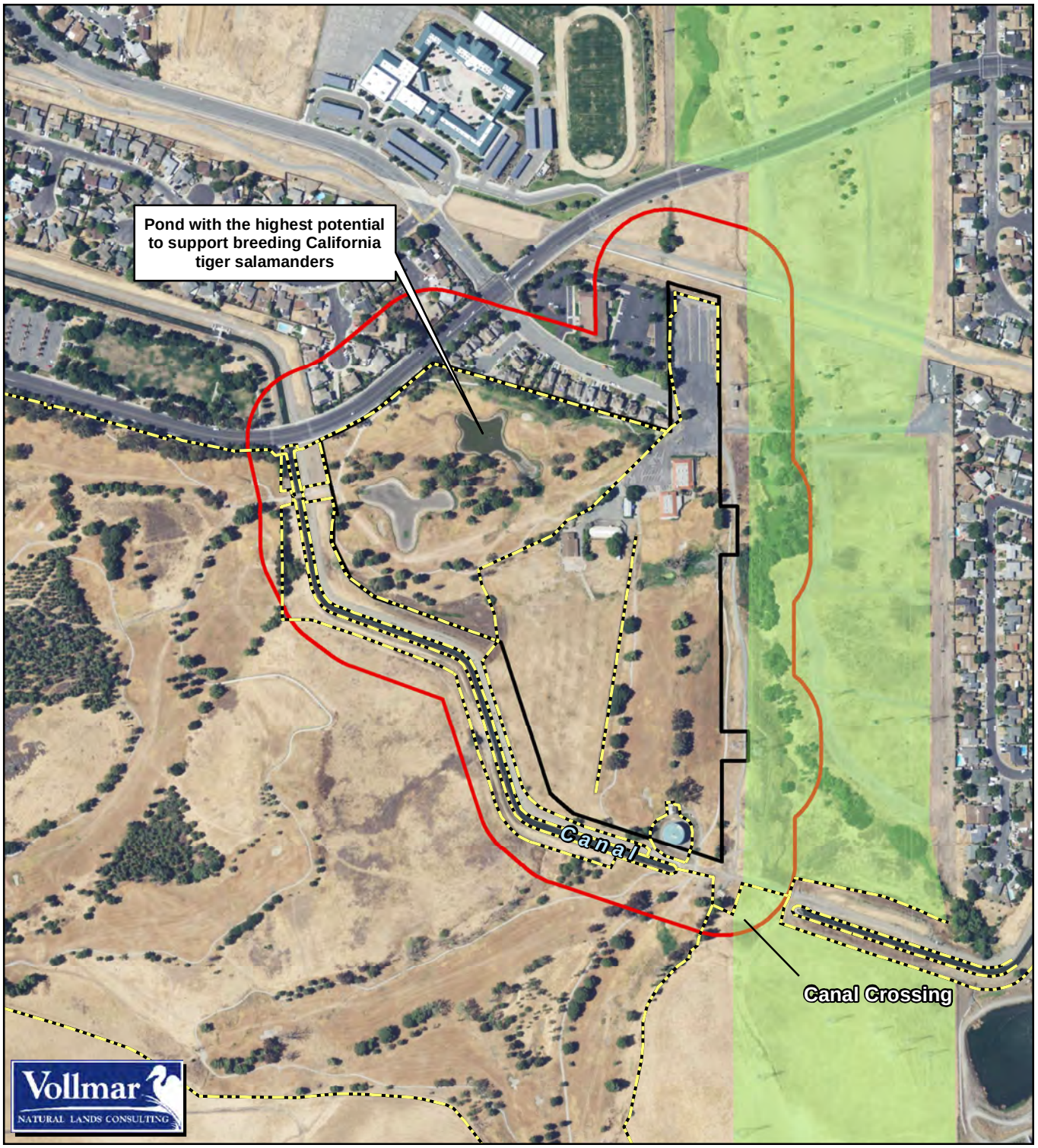
10.0 REGIONAL EFFECTS

The Project's effects are generally expected to be restricted to the study area as defined above. The CEC SPPE application requires an analysis of the effects of atmospheric nitrogen deposition caused by the project on sensitive habitats within six miles of the source.

10.1 Effects of Atmospheric Nitrogen Deposition

The proposed project would have 37, 2.75-MW diesel fired backup generators. Operation of these generators would result in the emission of several air pollutants, including nitrogen oxides (NOx) and ammonia (NH_3). California ecosystems are typically nitrogen limited (Weiss 2006), leading to increased productivity and competition by invasive species when high nitrogen deposition increases available supply (Fenn et al. 2003).

VNLC staff analyzed sensitive habitats (defined for the purpose of this analysis as all special habitats mapped in the CNDDB, and all Designated Critical Habitat identified by USFWS) within a six-mile buffer of the project area. However, due to the small generation capacity and low stacks of proposed on site generators, nearly all nitrogen deposition is expected to occur in the immediate vicinity of the project area. Other reports on similar projects have similarly found that any nitrogen plume produced would quickly dilute and become indistinguishable from background levels by the time it reached 6 miles from site (CEC 2022).



Legend

- Golf Course/Canal Border Fencing
- Wildlife Corridor
- Project Site
- 250-foot Buffer of Project Site

FIGURE 11
Nurseries and Corridors Map

Pittsburg Data Hub Project
City of Pittsburg, California

N
W E
S

1:6,000

(1 in. = 500 ft. at letter-size layout)

0 75 150 300 M

0 300 600 1,200 Ft

Data Sources: USDA, 2018 | CDFW, 2023
WSP, 2023 | TIGER, 2021
GIS/Cartography by T. Hurd, Oct. 2023
Map File: 567_BE_Corridors_A-P_2024-0212.mxd

Conservative modeling using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), performed by CEC staff for similar facilities, estimated very low contributions of those projects. The CA3 project's 47, 2.75 MW diesel fired backup generators' estimated contributions to existing nitrogen deposition were between 0.02 and 0.20 kg N/ha/yr at 2 miles from the project site (CEC 2022). The McLaren Data Center (47, 2.75 MW diesel fired backup generators) and Laurelwood Data Center (56, 3.0-MW diesel fired backup generators) had estimated contributions to existing nitrogen deposition of between 0.01 and 0.03 kg N/ha/yr at approximately 4 to 5 miles distance (CEC 2021). Each of these were found to have less-than-significant impacts on sensitive habitats at those distances.

Coastal brackish marsh and Antioch dunes are CDFW designated sensitive habitats, located 1.8 miles and 5.9 miles from the site respectively (**Figure 11**). USFWS designated critical habitat exists within the 6-mile buffer of the project area for Delta smelt, Alameda whipsnake (*Masticophis lateralis euryxanthus*), Antioch dunes evening primrose (*Oenothera deltoides* ssp. *howelii*), and Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) (USFWS 2023). Both Antioch dunes evening primrose and Contra Costa wallflower critical habitat is coincident with the Antioch dunes sensitive habitat. Alameda whipsnake does not inhabit any CDFW sensitive habitat within 6 miles, preferring chaparral, scrub, grassland, and woodlands. The nearest critical habitat for this species is 5.6 miles southwest of the project site. Delta smelt may potentially inhabit all suitable aquatic habitat within the buffer zone, including coastal brackish marsh.

Critical load is one tool for quantifying nitrogen deposition, defined as "the input of a pollutants below which no detrimental ecological effects occur over the long term" (Fenn et al. 2010). Estuarine intertidal wetlands critical loads are higher than terrestrial ecosystems due to having an open nutrient cycle (Pardo et al. 2011). Additionally, nitrogen loads from other sources are typically much higher than atmospheric deposition in aquatic ecosystems (ibid). Early successional coastal brackish marsh has an estimated critical load of 30-40 kg N/ha/yr (Bobbink et al. 2002), 50-100 kg N/ha/yr for intertidal marsh and 63-400 kg N/ha/yr for intertidal salt marsh (Pardo et al. 2011). Antioch dunes were historically a shifting coastal dune habitat, but are classified as "stabilized" by CDFW (USFWS n.d., CNDDB 2023). Critical load for stabilized dunes is estimated at 10-20 kg N/ha/yr (Bobbink et al. 2002). Woodlands and chaparrals have critical loads ranging from 10-14 kg N/ha/yr (Pardo et al. 2010). Scrub habitat critical load is estimated to be 7.8-10 kg N/ha/y (ibid). Sensitive nutrient-limited grasslands such as serpentine grasslands, desert grasslands, and alpine grasslands have low critical loads (6 kg N/ha/yr, 3-8.4 kg N/ha/yr, and 4-10 kg N/ha/yr, respectively, Fenn et al. 2010). None of these specialized grasslands occur in the project vicinity. Non-specialized grasslands such as those that do occur in the project vicinity are less well studied. No critical loads are available for these habitats. However, these habitats are significantly more productive than serpentine, desert, or alpine grasslands, and likely have a much higher critical threshold.

Potentially significant impacts could occur if nitrogen deposition resulting from the proposed project exceeded the critical load when in conjunction with baseline deposition. Baseline atmospheric nitrogen deposition within the project area and 6-mile buffer is estimated to range from 5.16 kg N/ha/yr to 7.41 kg N/ha/yr (Bay Area Open Space Council 2019). The addition of project-related deposition of up to 0.2 kg N/ha/yr would result in a combined nitrogen deposition

rate of 5.36-7.61 kg N/ha/yr. This is far below the conservative critical load estimates (with minimum values of 30-63 kg N/ha/yr) of any of the sensitive aquatic habitats in the region.

The sensitive habitats with the lowest critical thresholds are scrublands, woodlands, or grasslands within Alameda whipsnake critical habitat. Alameda whipsnake critical habitat occurs approximately 5.6 miles southwest of the project site. In this area, background nitrogen deposition rates are less than 6 kg N/ha/yr. At this distance from the project site, project-related, nitrogen deposition is expected to be below 0.03 kg N/ha/yr, approximately 0.5% of the background rate.

The resultant rate will remain below 6 kg N/ha/yr, below documented critical load thresholds for woodland, scrub, and even some of the specialized and nutrient-limited grasslands.

The stabilized dune habitats at Antioch Dunes also have a relatively low critical load threshold. However, these habitats occur at the edge of the analysis radius, 5.9 miles away. At this distance, nitrogen deposition is expected to be below 0.03 kg N/ha/yr, approximately 0.4% of the background rate. This addition will not exceed critical load thresholds for the habitat.

Overall, the project is only expected to have immediate impacts to the project specific area and not nearby critical habitats or listed species. The nitrogen deposition levels are minimal in areas near the boundary of the analysis radius and even areas closer to the project specific area are still low. There is expected to be minimal impact to the surrounding environment.

11.0 SUMMARY OF POTENTIAL IMPACTS

Figure 3 depicts the location of project activities that will result in direct destruction or modification of existing habitats. These activities are planned in approximately 24.73 acres, composed of 19.25 acres of annual grassland, 3.06 acres of paved/developed, 2.12 acres of landscaping trees, 0.03 acres of Himalayan blackberry thicket, 0.15 acres of perennial wetland within drainage, 0.01 acres of seasonal wetland drainage, and 0.11 acres of seasonal wetland within drainage. Not all these habitats will necessarily be destroyed or directly modified.

Construction

Habitat destruction or modification within this area will result in the loss of potential habitat for special-status species. Compensatory mitigation is recommended to ensure the continued availability of habitat for those species. The project may also result in direct impacts to individuals of special-status species, if they occur in the project area. Project design measures are recommended which, if implemented, would minimize that risk.

The project may also result in direct impacts on sensitive aquatic and riparian habitats. Appropriate permits should be obtained for any direct impacts, and the required mitigation implemented.

Operation and Maintenance

Operation and maintenance of the proposed project are expected to result in extremely low levels of atmospheric nitrogen deposition to sensitive habitats, below the critical load threshold for those habitats. Operation and maintenance may result in indirect impacts on sensitive aquatic and

riparian habitats through improperly controlled runoff. Mitigation measures to minimize indirect impacts are recommended above.

Potentially significant impacts could occur if nitrogen deposition resulting from the proposed project exceeded the critical load when in conjunction with baseline deposition. Atmospheric nitrogen deposition within the project area and 6-mile buffer was estimated to range from 5.16 kg N/ha/yr and 7.41 kg N/ha/yr by the Conservation Lands Network's 2019 San Francisco Bay Area conservation plan. Nitrogen deposition contribution for the similarly sized Sequoia Data Center in Santa Clara County was estimated to be between 0.02 kg N/ha/yr and 0.20 kg N/ha/yr.

Decommissioning

No additional impacts to sensitive biological resources are likely to occur as a result of closure and decommissioning.

Project Design Measures

We recommend the following measures be incorporated into the project design to minimize the project's impacts to biological resources. These measures are primarily based on the HCP/NCCP, for those resources which the HCP/NCCP directly addresses. For resources not directly addressed by the HCP/NCCP, we have recommended measures based on the best available science, and on measures shown to be successful on other projects.

PDM BIO-1: Project Coverage under ECC HCP/NCCP

The Project Owner shall obtain coverage for the project under the ECC HCP/NCCP. This shall include submittal of all required application materials per HCP/NCCP Section 6.2.1 and payment of a Development Fee consistent with current HCP/NCCP requirements. Alternatively, the project Project Owner may, in accordance with the terms of PMC Chapter 15.108, offer to dedicate land in lieu of some or all of the HCP/NCCP Development Fee.

All applicable fees shall be paid, and/or an "in-lieu-of-fee" agreement fully executed, prior to the issuance of a grading permit for the project. If a grading permit is not required, fee payment and/or an "in-lieu-of-fee" agreement shall be fully executed prior to issuance of the project's building permit. Proof of applicable fees and/or "in-lieu-of-fee" agreement shall be provided to the City of Pittsburg Community Development Director.

PDM BIO-2: Worker Awareness Training for Biological Resources

Because of the potential for nesting birds and other protected wildlife to be present on the project site, the Project Owner shall prepare and ensure delivery of a Worker Environmental Awareness Program (WEAP). The WEAP shall include the following information.

- The sensitive habitats on the project site.
- Special-status species known or potentially present on the site, including their
    - listing status and causes of decline,
    - habitat preferences, and
    - distinguishing physical characteristics.

- The measures (PDMs and ECC HCP/NCCP measures) required to protect sensitive habitats and special-status species, including next steps and notifications in the event of a special-status species sighting.

The WEAP shall include a hard copy handout that summarizes information presented in the training and includes photographs of habitat resources and species to facilitate identification in the field by construction personnel.

The Project Owner shall ensure that all construction personnel undergo WEAP training before they begin work. Training shall be delivered by a qualified biologist approved by the City of Pittsburg Community Development Director and shall be provided bilingually in English and Spanish if appropriate.

PDM BIO-3: Adherence to ECC HCP/NCCP Requirements

The Project Owner shall ensure that the project adheres to all applicable ECC HCP/NCCP requirements.

Planning surveys per HCP/NCCP Section 6.3.1 were completed in 2018 – 2023 (see Section 4.2 of this report). Based on the outcomes of the planning surveys, preconstruction surveys by USFWS- and DFW-approved biologists shall be conducted for the following species per HCP/NCCP Sections 6.3.2 and 6.3.4(see HCP/NCCP pages 6-12 – 6-13 and Table 6-1 following HCP/NCCP page 6-50).

- Golden Eagle
- Burrowing Owl
- Swainson's Hawk
- San Joaquin kit fox

If preconstruction surveys determine that any of the above species is present on the site (or, for the bird species, within a distance where they could be disturbed by construction activity), the Best Management Practices and Constructing Monitoring requirements in HCP/NCCP Table 6-1 will apply. If construction monitoring is required, the Project Owner shall ensure that monitoring is conducted per HCP/NCCP Section 6.3.3 (HCP/NCCP pages 6-12 – 6-13). This will include submittal of a Construction Monitoring Plan (CMP) to the East Contra Costa County Habitat Conservancy for approval; the CMP must be submitted and approved prior to issuance of the grading permit (or, if no grading permit is required, the building permit) for the project.

Based on results of the planning surveys, which indicate that no suitable habitat is available on the project site, preconstruction surveys, Best Management Practices, and construction monitoring are not required for the following species.

- Covered shrimp species
- Giant garter snake
- Townsend's big-eared bat

The Project Owner shall also comply with all applicable provisions of ECC HCP/NCCP Section 6.4, Specific Conditions on Covered Activities (beginning on HCP/NCCP page 6-14), as follows.

- **Section 6.4.1: Landscape-Level Measures**
  - Conservation Measure 1.10 – Maintain Hydrologic Conditions and Minimize Erosion (HCP/NCCP pages 6-21 – 6-22)
  - Conservation Measure 1.11 – Avoid Direct Impacts on Extremely Rare Plants, Fully Protected Wildlife Species [and] Covered Migratory Birds (HCP/NCCP pages 6-23 – 6-25)
  - Conservation Measure 1.7 – Establish Stream Setbacks (HCP/NCCP pages 6-15 – 6-18)
- **Section 6.4.2: Natural Community–Level Measures**
  - Conservation Measure 2.12 – Wetland, Pond, and Stream Avoidance and Minimization (HCP/NCCP pages 6-33 – 6-35)
- **Section 6.4.3: Species-Level Measures for the following species**
  - California tiger salamander (begins on HCP/NCCP page 6-45; see also Table 6-1) (requires planning surveys for potential breeding habitat and notification to CDFW, USFWS, and HCP/NCCP Implementing Entity prior to disturbance of suitable breeding habitat in order to enable relocation of individuals if agencies consider it warranted)
  - California red-legged frog (begins on HCP/NCCP page 6-46; see also Table 6-1) (requires planning surveys for potential breeding habitat and notification to CDFW, USFWS, and HCP/NCCP Implementing Entity prior to disturbance of suitable breeding habitat in order to enable relocation of individuals if agencies consider it warranted)
  - Burrowing Owl (begins on HCP/NCCP page 6-39; see also Table 6-1) (requires planning surveys; preconstruction surveys required if planning surveys identify potential habitat for the species; prescribes avoidance and minimization measures and construction monitoring to protect occupied nests)
  - Golden Eagle (begins on HCP/NCCP page 6-38; see also Table 6-1) (requires planning surveys and design-phase avoidance measures to protect known nests, and preconstruction surveys to establish whether known nests are occupied at the time of construction; stipulates avoidance and minimization to protect active nests, verified by construction monitoring)
  - Swainson's Hawk (begins on HCP/NCCP page 6-41; see also Table 6-1) (requires planning surveys, preconstruction surveys of known nests, and avoidance and minimization measures plus construction monitoring for occupied nests; also requires mitigation for loss of nest trees)
  - San Joaquin kit fox (begins on HCP/NCCP page 6-37; see also Table 6-1) (requires planning surveys and preconstruction surveys; avoidance and minimization requirements and construction monitoring apply if kit fox dens are observed)

PDM BIO-4: Rare Plant Survey & Protection

Protocol-level rare plant surveys were conducted in 2023; rainfall and temperature conditions were good that year, surveys were conducted during the peak blooming period for the species potentially

present, and survey results were negative. Thus, if project construction occurs before 2025, no further action is required.

If project construction begins in 2025 or later, an updated protocol-level rare plant survey shall be conducted by a qualified biologist/botanist who is familiar with the rare plants of the project region and has been approved by the City of Pittsburg Community Development Director. Surveys shall be conducted prior to construction, with enough lead time to allow for the follow-up actions described below, if they are warranted. Surveys shall be conducted during the peak blooming periods of the target species and shall cover all potentially suitable habitats within the project site and surrounding 250-foot-wide buffer. Target species and blooming periods are listed in the matrix below; the matrix is highlighted to group species with similar blooming periods.

Table 5. Rare Plant Survey Periods

Species	Blooming Period
Lobb's aquatic buttercup (*Ranunculus lobbii*)	February – May
Johnny-nip (*Castilleja ambigua* var. *ambigua*)	March – August
Showy golden madia (*Madia radiata*)	March – May
California alkali grass (*Puccinellia simplex*)	March – May
California androsace (*Androsace elongata* ssp. *acuta*)	March – June
Stinkbells (*Fritillaria agrestis*)	March – June
Diablo helianthella (*Helianthella castanea*)	March – June
Hogwallow starfish (*Hesperevax caulescens*)	March – June
Stinkbells (*Fritillaria agrestis*)	March – June
Mt. Diablo jewelflower (*Streptanthus hispidus*)	March – June
Sylvan microseris (*Microseris sylvatica*)	March – June
Little mousetail (*Myosurus minimus* ssp. *apus*)	March – June
Small-flowered morning-glory (*Convolvulus simulans*)	March – July
Keck's checkerbloom (*Sidalcea keckii*)	April – May, sometimes into June
Mt. Diablo fairy-lantern (*Calochortus pulchellus*)	April – June
Tehama navarretia (*Navarretia heterandra*)	April – June
Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*)	April – June
Saline clover (*Trifolium hydrophilum*)	April – June
Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)	April – July
Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)	April – July
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	May – November
Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*)	May – October
Woolly-headed lessingia (*Lessingia hololeuca*)	June – October
Big tarplant (*Blepharizonia plumosa*)	July – October
Mt. Diablo buckwheat (*Eriogonum truncatum*)	September, sometimes into November/December

If no special-status plants are documented within the area to be disturbed for project construction (including staging and access), no further action is required.

If special-status plants covered by the ECC HCP/NCCP, or plants designated as "no take" by the ECC HCP/NCCP, are present on the site, the relevant survey report(s) shall be submitted to the East Contra Costa Habitat Conservancy per HCP/NCCP Section 6.3.1 (see page 6-9).

If any of the following species covered by the ECC HCP/NCCP is found to be present, the Project Owner shall promptly notify the East Contra Costa County Habitat Conservancy of the species' presence and the planned construction schedule, to enable the East Contra Costa County Habitat Conservancy to salvage the occurrence(s) in accordance with HCP/NCCP Conservation Measure 3.10 (Plant Salvage when Impacts Are Unavoidable). The Project Owner shall confirm with the East Contra Costa County Habitat Conservancy that the take limits established by the HCP/NCCP for the species in question have not been breached.

- Big tarplant
- Mount Diablo fairy lantern
- Diablo helianthella
- Showy golden madia
- Adobe navarretia

Under no circumstance shall any of the following HCP/NCCP "no-take" plants be harmed.

- Large-flowered fiddleneck
- Alkali milkvetch
- Mt. Diablo buckwheat
- Diamond-petaled poppy
- Contra Costa goldfields
- Caper-fruited tropidocarpum

Due to their extreme rarity, none of these species is expected to be present on the project site, but if any of them are found, the applicant shall notify the East Contra Costa County Habitat Conservancy immediately and shall work with the Conservancy to determine and execute the appropriate course of action.

If any special-status plant not covered by the ECC HCP/NCCP is found to be present, the occurrence(s) shall be avoided and protected in place to the extent feasible. If the occurrence(s) cannot be entirely avoided, then a Plant Salvage and Mitigation Plan shall be prepared and implemented. The Plan shall be prepared by a qualified biologist/botanist who is familiar with the rare plants of the project region and has experience conducting rare plant salvage operations. Plant salvage techniques shall be consistent with those outlined in HCP/NCCP Conservation Measure 3.10. The plan shall, at a minimum, include the following.

- Quantity and species of plants to be planted or transplanted
- Location of the mitigation/transplant site(s)
- Salvage methods, such as relocation/transplantation, seed collection, etc., including storage locations and methods to preserve the plants
- Procedures for propagating collected seed, including storage methods
- Planting procedures, including the use of soil preparation and irrigation
- Schedule and action plan to maintain and monitor the mitigation/transplant site for a minimum 3-year period
- Interim and final success criteria and corrective action thresholds (e.g., growth, plant cover, survivorship)

- Potential corrective actions/contingency measures in the event interim success criteria are not being met (e.g.., weed removal, supplemental irrigation, supplemental plantings, etc.).
- Reporting requirements and procedures, including the contents of annual progress reports, report submittals, review/approval responsibilities, etc.

The Project Owner shall implement the Plant Salvage and Mitigation Plan. The Plan shall be implemented under the oversight of the biologist/botanist who prepared it or another individual with equivalent qualifications. The biologist shall be approved by the City of Pittsburg Community Development Director.

PDM BIO-5: Special-Status Bumble Bee Surveys & Protection

No more than 1 year prior to the initiation of vegetation removal and grading at the project site, the Project Owner shall retain an appropriately qualified biologist (see next paragraph) who has been approved by the City of Pittsburg Community Development Director to conduct surveys for Crotch bumble bee, obscure bumble bee, and American bumble bee. As of this writing, no survey protocol has been published, although DFW has issued preliminary survey guidance for candidate bumble bee species (California Department of Fish and Wildlife 2023). Consequently, there are no official requirements for bumble bee surveyor qualifications. Biologist qualifications for bumble bee surveys will conform to current guidance prevailing at the time surveys are performed.

Surveys shall be performed by a qualified entomologist familiar with the species' behavior and life history and shall include both habitat evaluations and foraging bee surveys consistent with the recommendations in Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (California Department of Fish and Wildlife 2023). Surveys shall be conducted during each species' peak worker activity period, detailed in the matrix below. Surveys shall cover all areas of onsite habitat determined by the biologist to be suitable for any of the three target bumble bee species, based on habitat mapping conducted for the project to date. A minimum of 3 – 4 surveys shall be conducted, spaced 2 weeks apart; the total number, timing, and duration of surveys performed shall depend on the biologist's judgment, in consideration of weather, site conditions, and protocol requirements. Surveys shall be designed to identify all foraging bumble bee species; a single survey may be used to detect all species with peak activity periods including the survey date.

Table 6. Bumblebee Survey Periods

Species	Peak Activity
Crotch bumble bee	April 1 – July 31
Obscure bumble bee	April 20 – August 20
American bumble bee	June 1 – October 1

Source: Williams et al. (2014)

If Crotch bumble bee, obscure bumble bee, or American bumble bee is observed onsite during the surveys, an additional survey or surveys shall be conducted to determine whether a nest or colony is present, unless the biologist is satisfied that the initial survey(s) were sufficient to rule out the presence of nests/colonies.

If a nest or colony is present onsite, the biologist shall consult with CDFW to determine appropriate next steps, and shall ensure that the City of Pittsburg is informed of consultation outcomes. At a minimum, the biologist shall establish an avoidance buffer determined in consideration of site

conditions, the species involved, and the construction activities planned prior to the close of the nesting season. No entry into the buffer shall be permitted. The buffer shall be delineated in the field using orange construction fencing or another appropriate medium, under the biologist's oversight, and shall remain in place until the end of the nesting species' gyne flying season, or until the qualified biologist determines that the nest has been abandoned

If no nest/colony is present onsite, no further action will be taken. However, all workers shall be required to avoid injury and mortality to bumble bees they may encounter; this requirement shall be discussed during the WEAP training (PDM BIO-2) and shall be reiterated to all workers if special-status bumble bees are confirmed onsite.

To support improved understanding and conservation of all three bumble bee species, survey results, including negative findings, shall be submitted to CDFW prior to implementing project-related ground-disturbing activities. At a minimum, the survey report shall include the following information.

(1) A description and map of the survey area, focusing on areas that could provide suitable habitat for Crotch bumble bee, obscure bumble bee, or American bumblebee
(2) Field survey conditions, including name(s) of qualified entomologist(s) and brief qualifications; date(s) and time(s) of survey; survey duration; general weather conditions; survey goals; and species searched
(3) Map(s) showing the location of nests/colonies, if any
(4) A description of physical (e.g., soil, moisture, slope) and biological (e.g., plant composition) conditions where each nest/colony is found, including native plant composition (e.g., density, cover, and abundance) within impacted habitat (e.g., species list separated by vegetation class; density, cover, and abundance of each species)
(5) The measures that will be implemented to avoid adverse effects on the bumble bee species present
(6) An assessment of potential project effects on special-status bumble bees during project construction and project operation/maintenance, with avoidance and minimization measures in place

PDM BIO-6: Monarch Butterfly Protection

No more than 2 days prior to the initiation of vegetation trimming or removal for construction, the Project Owner shall ensure that a qualified biologist approved by the City of Pittsburg Community Development Director surveys all areas of potentially suitable habitat for monarch butterfly larval host plants. If host plants are found, the biologist shall survey all host plants for monarch eggs, larvae, and pupae. If no eggs, larvae, or pupae are found, plants may be removed within 2 days. If eggs, larvae, or pupae are present, host plants shall be protected in place until the biologist has determined that no more eggs, larvae, or pupae are present.

PDM BIO-7. Western Pond Turtle Protection

Prior to the start of construction or O&M activities, The Project Owner shall ensure that a qualified biologist approved by the City of Pittsburg Community Development Director conducts a pedestrian preconstruction survey of the project site and adjacent suitable habitat for western pond turtle. The survey shall be conducted no more than 24 hours prior to start of work, and shall include

walking the work area limits and interior and investigating all areas that could be used by the species. If western pond turtle individuals are found, the biologist shall relocate them to suitable habitat outside the disturbance area and far enough away that they would not be expected to return. If the biologist determines that it is warranted, exclusion measures shall be implemented to prevent individuals returning to the active work site.

PDM BIO-8: Nesting Bird Protection (General)

If project-related disturbance (e.g., vegetation removal or trimming, clearing/grubbing, grading) commences any time during the nesting/breeding season of native bird species potentially nesting in or near the study area (February 1 – August 31 for most species; January 1 through August 31 for Golden Eagle; March 15 – September 15 for Swainson's Hawk), a preconstruction survey for nesting birds shall be conducted by a qualified biologist approved by the City of Pittsburg Community Development Director, using binoculars. The survey shall take place no more than 2 weeks prior to the initiation of work.

If active nests are found in areas that could be directly affected or are within 300 feet of disturbance activities and would be subject to prolonged construction-related noise, a no-disturbance buffer zone shall be created around active nests for the remainder of the breeding season or until the biologist determines that all young have fledged or that the nest has been abandoned. No entry into the no-activity buffer shall be permitted. The no-activity buffer shall be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The size of the buffer zone(s) shall be determined by the biologist based on the species involved, the amount of vegetative and other screening between the nest and areas where construction activity shall take place, and, if appropriate, other site-specific factors. The minimum buffer width shall be 50 feet for species other than raptors, and a minimum of 500 feet for raptor species, and may be enlarged by taking into account factors such as the following.

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity.
- Sensitivity of nesting species and behaviors of the individual nesting birds.

If nesting Swainson's Hawk or Golden Eagle are observed, buffers and other avoidance measures shall conform to Species-Level Measures for these species as laid out in ECC HCP/NCCP Section 6.4.3. Buffers stipulated in the ECC HCP/NCCP for these species are as follows.

- Swainson's Hawk: nest survey – 1,000 feet; no-project-activity nest protection buffer – 1,000 feet
- Golden Eagle: nest survey – not specified; no-project-activity nest protection buffer – 0.5 mile

If site-specific conditions (e.g., steep topography, dense vegetation) or the nature of the covered activity (e.g., limited activities or limited potential for disturbance due to low noise levels) indicate that a smaller nest protection buffer could be used, the applicant will coordinate with the East Contra Costa Habitat Conservancy as the ECC HCP/NCCP Implementing Entity (for both species), California Department of Fish and Wildlife (CDFW) (for both species), and/or U.S. Fish

and Wildlife Service (USFWS) (for Golden Eagle only). The City of Pittsburg will be notified of any resulting adjustments to nest protection buffers

PDM BIO-9: Nesting Bird Protection (Bald Eagle)

Bald Eagle nests may be built throughout the year. Consequently, the Project Owner shall retain a qualified biologist approved by the City of Pittsburg Community Development Director to conduct a preconstruction survey for nesting Bald Eagles prior to the initiation of work at the site (including vegetation removal or trimming, clearing/grubbing, grading, etc.). The survey shall be conducted using binoculars and shall take place no more than 2 weeks prior to the initiation of work.

If an occupied or active nest is present, construction-related activity shall be prohibited within 0.5 mile of the nest unless site-specific conditions or the nature of the construction activity (e.g., dense vegetation, limited noise generation, limited activities) indicate that a smaller buffer could be appropriate or that a larger buffer should be implemented. The biologist shall coordinate with the East Contra Costa County Habitat Conservancy, DFW, and USFWS to determine the appropriate buffer size.

The nest buffer shall be delineated in the field using temporary construction fencing or another suitable low-impact medium. Buffer fencing shall be placed only on the project site; the buffer shall not be put in place on neighboring properties not involved in project construction and staging Construction shall be monitored by a qualified biologist to ensure that the buffer remains in place and that no construction activities occur within the buffer zone until the biologist has determined that the young have fledged or that the nest has been abandoned.

PDM BIO-10: Special-Status Bat Survey & Protection

Prior to the initiation of any activity that could disturb roosting bats (including vegetation trimming/removal, surveys involving the use of lasers that produce high-frequency sounds, drilling, or other activity producing high-frequency sounds, a qualified biologist (as stipulated in Section 5 of H.T. Harvey & Associates 2019, and subject to approval by the City of Pittsburg Community Development Director) shall conduct a habitat evaluation for special-status bats, focusing on the needs of pallid bat, western red bat, and hoary bat, the species identified by planning surveys as having potential to be present on the site. For purposes of this PDM, high-frequency sound is defined as sound in the 20 kHz – 50 kHz frequency range, based on bat disturbance information in California Department of Transportation (Caltrans) bat mitigation guidelines (H.T. Harvey & Associates 2019). If Caltrans guidance is updated, or if frequency sensitivity information relevant to the bat species with potential to occur becomes available prior to project construction, this definition shall be updated accordingly.

Surveys shall include the entirety of the project site plus a 400-foot-wide buffer. If no roosting habitat suitable for these species is present on the project site, no further action is required. If roosting habitat is present, the following additional requirements shall apply. Any potential roost trees/other potential roosting habitat shall also be considered potential bat maternity roosts.

- Before any activities with the potential to disturb roosting bats begin, the approved biologist(s) shall conduct focused surveys for roost occupancy. These shall be conducted at least 2 weeks prior to the start of work and shall include:
    - Daytime visual surveys for bats and evidence of bat presence such as guano or urine staining
    - Evening emergence and acoustic surveys

  If bat presence is confirmed, the species, number of individuals, and roost type (maternity/non-maternity) shall be documented and reported to the CNDDB. Bats shall not be disturbed or relocated during the surveys.

- Confirmed non-maternity roosts shall be protected by buffers as laid out in the matrix that follows. Buffers shall be delineated in the field with temporary construction fencing or another suitable measure, installed under biologist oversight. Note that buffer distances vary depending on the species and the type of noise/disturbance involved. (If bat species other than those addressed here are encountered, buffer distances shall be consistent with H.T. Harvey & Associates 2019; see Table 7-1). The biologist shall coordinate with construction staff to determine the appropriate buffer width; if there is uncertainty, the more conservative buffer width shall prevail.

Table 7. Bat Disturbance Buffers

Disturbance Source	Pallid Bat	Other Bat Species
Construction trucks and heavy equipment	120 feet	100 feet
Smaller vehicles	90 feet	65 feet
Drilling, trenching, and small equipment	150 feet	150 feet
Unshielded light source	400 feet	300 feet
Pedestrian traffic	65 feet	65 feet
Stationary source of diesel/gasoline exhaust operating for more than 2 minutes	250 feet	250 feet
Any equipment generating high-frequency (20 kHz – 50 kHz) sound (laser survey transits, drilling, etc.), as identified by the biologist	Buffer shall be determined on a case-by-case basis by identifying the distance at which high-frequency sound generated by the equipment becomes indistinguishable from background levels, using one of the acoustic methods described on pp. 7-16 – 7-18 of the California Department of Transportation bat mitigation guidelines (H.T. Harvey & Associates 2019), or updated equivalent	

Source: H.T. Harvey and Associates 2019

If a confirmed roost must be removed or trimmed for construction, or if work must occur within the buffers laid out above, work shall be restricted to daylight hours when the DFW-approved biologist has confirmed that it the roost is not occupied, and shall be overseen by the biologist to prevent injury or mortality. The biologist shall have authority to divert or stop work in the event of excessive risk to bats

- Confirmed maternity roosts shall be protected by the same buffers identified above. Maternity roosts shall not be removed unless removal cannot be avoided, and in no case shall a confirmed maternity roost be removed during the breeding/non-volant season (April

– August). If removal of a maternity roost is necessary, the Project Owner shall consult with DFW to determine appropriate compensatory mitigation such as the provision of bat boxes and shall submit a Bat Habitat Mitigation Plan for DFW approval. Consultation and submittal of the Mitigation Plan shall occur prior to the removal, and the removal shall not take place until DFW has approved the Plan. The Project Owner shall then be responsible for implementing DFW-approved mitigation for removal of bat maternity roost habitat

PDM BIO-11: San Joaquin Pocket Mouse Protection

Vegetation removal, clearing/grubbing, and grading activities for each work phase shall be conducted in a uniform direction to allow mobile animals such as San Joaquin pocket mouse the ability to escape the disturbance area into adjacent undisturbed habitat. Project construction shall also avoid the creation of fragmented islands of habitat where individuals may become trapped, isolated from resources, and at risk from eventual clearing/grading operations.

PDM BIO-12: American Badger Survey & Protection

No more than 4 weeks before the commencement of ground disturbance at the site, a qualified biologist approved by the City of Pittsburg Community Development Director shall conduct a survey for American badger den sites.

If an occupied den is found, and young are not present, then any badgers present shall be removed from the den either by the use of appropriate exclusionary devices or by trapping and relocation. The removal method shall be approved by DFW prior to implementation; if trapping and relocation are used, it shall be carried out by biologist(s) with all required permits for badger handling. Any trapped badgers shall be relocated to other suitable habitat at least 500 feet outside the project site boundary. Once any badgers are excluded or trapped and relocated, den(s) shall be excavated by hand and backfilled to prevent reoccupation. Exclusion shall continue until the badgers are successfully removed from the site, as determined by the biologist.

Badgers shall not be excluded or relocated if it is determined by the biologist that young are or may be present. Any occupied dens shall be protected with a 50-foot-wide no-activity buffer. The buffer shall be delineated in the field by a qualified biologist, using temporary construction fencing or another appropriate low-impact medium, and shall remain in place until the biologist has determined that the young are no longer dependent on their mother and the den site. No entry into the buffer area shall be permitted.

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APPENDIX A

REPRESENTATIVE PHOTOGRAPHS OF THE STUDY AREA

(Recorded 04/2019 to 05/2023)

Representative Photographs of the Study Area

Photo 1. Representative photo of Study Area, annual grassland dominated by non-native annual grasses and large patches of black mustard (*Brassica nigra*). (4/12/2023)

Photo 2. Remnant golf cart path covered by overgrown black mustard. (4/12/2023)

Representative Photographs of the Study Area

Photo 3. Representative view of landscaping trees, dominated by Peruvian pepper tree (*Schinus molle*) and Bishop pine (*Pinus muricata*). (5/31/2023)

Photo 4. Representative view of the paved areas with weedy species growing in asphalt cracks. (5/19/2023)

Representative Photographs of the Study Area

Photo 5. Valley foothill riparian habitat in corridor on east edge of study area.

Photo 6. Perennial wetland dominated by broad-leaved cattail (*Typha latifolia*), with Himalayan blackberry (*Rubus armeniacus*) thickets behind. (4/12/2023)

Representative Photographs of the Study Area

Photo 7. Remnant golf pond with margins dominated by upland species including wall barley (*Hordeum murinum*) and short pod mustard (*Hirschfeldia incana*). (7/12/2023)

Photo 8. Seasonal wetland near eastern edge of project area, 2019.

Representative Photographs of the Study Area

Photo 9. Perennial wetland near eastern edge of project area, 2019.

Photo 10. Perennial wetland in seasonal drainage near southern edge of project area, 2019.

Representative Photographs of the Study Area

Photo 11. Native wildflowers within grazed annual grassland outside of former golf course, southwestern edge of study area. 2019.

Photo 12. Ruderal habitat in formerly irrigated/mowed golf course green, 2019.

Representative Photographs of the Study Area

Photo 13. Ground Squirrel Burrow Complex, 2019.

Photo 14. Cracking within clay soils, 2019.

APPENDIX B

WETLAND DELINEATION REPORT

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Delineation of Potential Jurisdictional Waters Pittsburg Technology Park Project

City of Pittsburg
Contra Costa County, California

Prepared for:

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August 22 2023

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ACRONYMS AND ABBREVIATIONS

APN	Assessor's Parcel Number
CWA	Clean Water Act
CDFW	California Department of Fish and Wildlife
EPA	U.S. Environmental Protection Agency
FAC	facultative; 33%-67% probability of occurring in a wetland
FACU	facultative upland; 1%-33% probability of occurring in a wetland
FACW	facultative wetland; 67%-99% probability of occurring in a wetland
GIS	Geographic Information System
HCP	East Contra Costa County Habitat Conservation Plan/ Natural Community Conservation Plan
NL	not listed
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
NWP	Nationwide Permit
NWPL	National Wetland Plant List
OBL	obligate wetland; >99% probability of occurring in a wetland
OHWM	ordinary high water mark
PEM	palustrine emergent
PGE	Pacific Gas & Electric Company
RHA	Rivers and Harbors Act
RWQCB	Regional Water Quality Control Board
SR	State Route
TNW	Traditional Navigable Water
UPL	obligate upland; <1% probability of occurring in a wetland
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator coordinate system
WDR	Waste Discharge Requirements

Executive Summary

The aquatic resources delineation was conducted in accordance with the 1987 "Corps of Engineers Wetland Delineation Manual", Arid West Supplement, Version 2.0 (September 2008). The results of this delineation are preliminary and must be reviewed and verified in writing by the U.S. Army Corps of Engineers (USACE) to be considered an official delineation.

The delineation identified 1.990 acres of potentially jurisdictional aquatic resources within the 78.7-acre Delta View Technology Park study area. The aquatic resources consisted of the following habitats and Cowardin classifications:

- 0.714 acre of Seasonal Wetland Drainages (R4 and R6)
- 0.169 acre of Perennial Wetland within Drainage (PEM)
- 1.027 acre of Seasonal Wetland within Drainage (PEM)
- 0.712 acre of Unvegetated Drainages (R4)

The delineation also identified 3.312 acres of artificial features constructed in uplands. The constructed features consisted of the following habitats and Cowardin classifications:

- 1.673 acres of Golf Course Landscaping Ponds (PUB)
- 1.639 acres of Artificial Canal (R4)

Delineated features within the Study Area may be subject to federal jurisdiction by the USACE through Section 404 of the Clean Water Act and may also be subject to State jurisdiction by the Regional Water Quality Control Board (RWQCB), and/or the California Department of Fish and Wildlife (CDFW) through State regulations.

1.0 INTRODUCTION

This report summarizes the methods and results of the updated delineation of potential jurisdictional Waters of the United States and/or State of California within the Delta View Technology Park Project study area (study area), located in the hills above the City of Pittsburg, in northern Contra Costa County, California (**Figure 1**). The study area is the site of a proposed project, which would allow redevelopment of portions of the recently closed golf course as a technology park. Vollmar Natural Lands Consulting (VNLC) ecologists conducted an updated delineation during December 2022. The study area was modified in 2023 to include a 250-foot buffer around the project area, per the standards of the East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan (ECCHCP/NCCP, or "HCP"). The proposed project area is approximately 38.0 acres. The Study Area, including the project area and the 250-foot buffer, is approximately 78.7 acres.

The purpose of the delineation was to identify, map, and document potential jurisdictional Waters of the United States and of the State of California within the study area. The updated delineation identified a total of 1.990 acres of potentially jurisdictional aquatic resources within the study area, as well as an additional 3.312 acres of artificial features constructed in uplands (see **Section 5.0**).

All Waters delineated within the study area may be subject to federal jurisdiction by the USACE through Section 404 of the Clean Water Act and may also be subject to state jurisdiction by CDFW, and/or RWQCB through state regulations. The results of this delineation are preliminary and must be reviewed and verified in writing by the USACE to be considered an official delineation.

2.0 PROJECT BACKGROUND INFORMATION

2.1 Study Area Location

The approximately 78.7-acre study area is comprised of a single parcel and a 250-foot buffer around it. The parcel is comprised of a portion of the former Delta View Golf Club. The 250-foot buffer includes additional portions of the former golf club, the Contra Costa Canal, residential development to the north of the Project parcel, and undeveloped land east of the parcel (**Figure 2**). The study area is located along the southern edge of the City of Pittsburg, California, and is mapped on the Honker Bay 7.5' United States Geological Survey (USGS) topographic quadrangle. The study area is within Sections 18 and 19 of Township 2 North, Range 1 East, and Sections 13 and 14 of Township 2 North, Range 1 West, of the Mount Diablo Base & Meridian; this area is within the Los Medanos land grant. The study area may be accessed from State Highway 4 heading east by exiting at Bailey Road, then turning right (south) on to Bailey Road, then turning left (east) on West Leland Road. Golf Club Road, which heads south from West Leland Road 1.7 miles east of Bailey Road, dead ends at the Delta View Golf Course. Much of the study area is accessible via golf cart trails, though some areas have become inaccessible as a result of trees falling onto the trails.

2.2 General Setting of Study Area

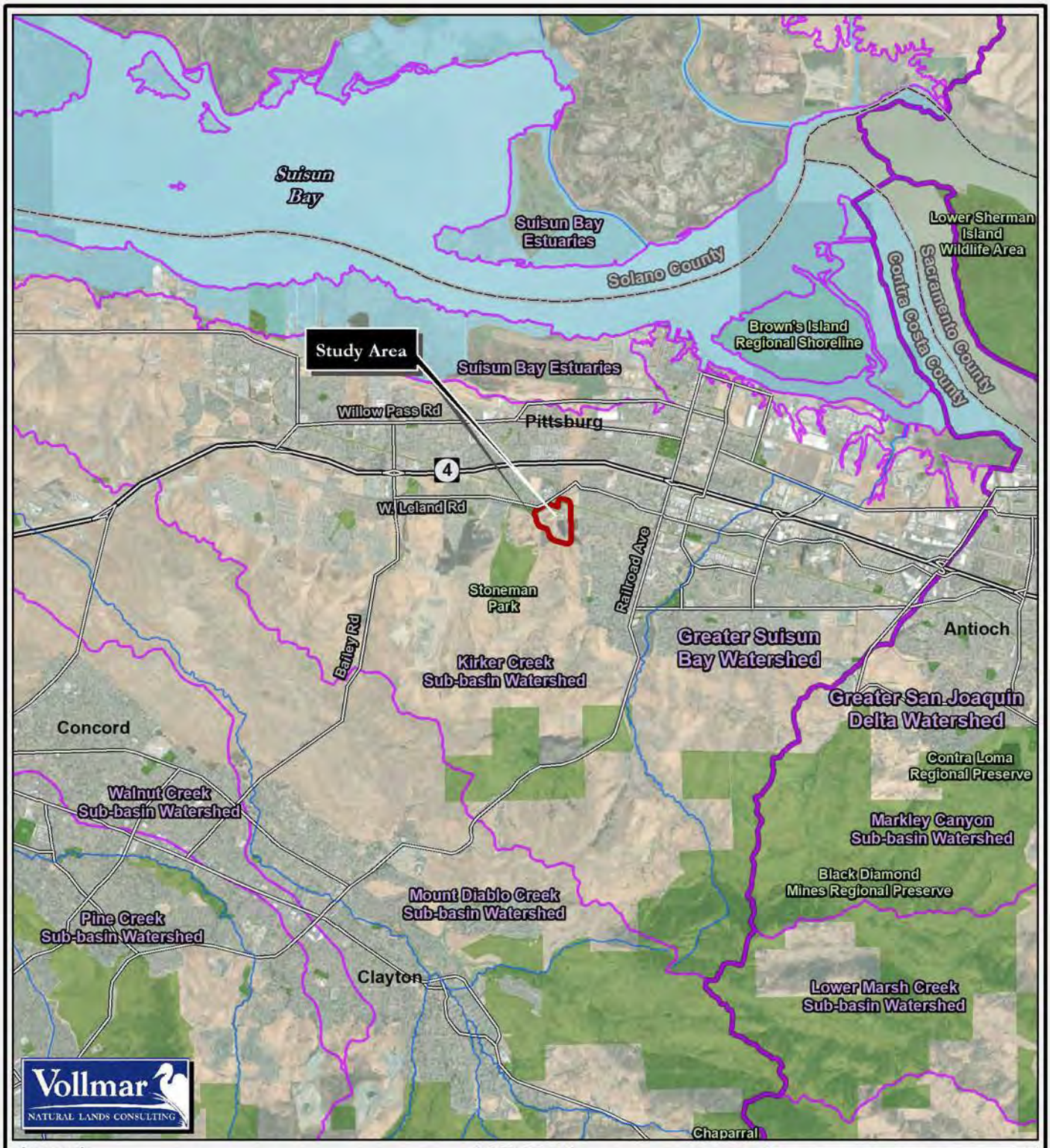
The study area consists of rolling hills along the lower slopes of the eastern Los Medanos Hills, overlooking the City of Pittsburg. Elevation within the study area ranges from approximately 57 feet to 164 feet above sea level (USGS 1997), trending upward in elevation from the northeast to the southwest.

The study area is dominated by silt and clay soils that support annual grassland in undeveloped areas, though extensive areas have been partially leveled and native soils have been replaced by soils suited for golf course landscaping. The fine-textured soils within natural and excavated concave areas support seasonal wetlands.

Lands to the north of the Study Area are mostly comprised of suburban residential development. To the east of the Study Area lies a corridor of open land owned by Pacific Gas and Electric Company (PGE). The property south and west of the study area includes more of the original golf course.

2.2.1 Site Conditions

Following the closure of the golf course in 2018, previously managed areas have been colonized by dense and tall stands of invasive weeds. Portions of the study area that were never maintained as golf course grounds are also fairly disturbed, either due to the planting of stands of exotic trees and shrubs, or due to a complete lack of grazing or other forms of management. The remnant intact drainages that flow through the golf course itself support a few riparian tree species, but these are



Legend

- Highway
- Road
- Stream
- Preserved Land or Public Property
- Water Body or Bayland
- Sub-basin Watershed (HUC08)*
- Major Watershed (HUC12)*

* HUC=Hydrologic Unit Code (from USGS GIS database, 2013))

Data Sources: TIGER, 2010 | City of Pittsburg, 2018 USGS, Various | | CPAD, 2014 | Landsat Imagery Gap, 1998 | SFEI, 2015| USFWS, 2014 | VNLC, 2019
GIS/Cartography by R. Miller, January 2023
Map File: Vicinity_567_A-P_2023_0822.mxd

FIGURE 1
Regional Vicinity Map

Pittsburg Technology Park Project Area
City of Pittsburg, California

N
W E
S

1:95,040
(1 in. = 1.5 miles, at letter-size layout)

0 0.5 1 2 Km

0 0.5 1 2 Miles

Section 2, Township T02N, Range R01W

Section 1, Township T02N, Range R01W

Section 6, Township T02N, Range R01E

Section 5, Township T02N, Range R01E

Section 11, Township T02N, Range R01W

Section 12, Township T02N, Range R01W

Section 7, Township T02N, Range R01E

Section 8, Township T02N, Range R01E

Section 14, Township T02N, Range R01W

Study Area

Section 18, Township T02N, Range R01E

Section 17, Township T02N, Range R01E

Section 13, Township T02N, Range R01W

Section 23, Township T02N, Range R01W

Section 24, Township T02N, Range R01W

Section 19, Township T02N, Range R01E

Section 20, Township T02N, Range R01E

Section 26, Township T02N, Range R01W

Section 25, Township T02N, Range R01W

Section 30, Township T02N, Range R01E

Section 29, Township T02N, Range R01E

Section 36, Township T02N, Range R01W

Section 31, Township T02N, Range R01E

Mallard Island

New York Point

West Reach

Los Medanos

Pittsburg

Contra Costa County Richard E Arnason Justice Center

Mulligan Hill

Data Sources: Vollmar Natural Lands Consulting, 2023
City of Pittsburg, 2019 | TIGER, 2010
USGS DRG Honker Bay and Clayton quads | Gap, 1998
Contra Costa County, 2014 | USDA, 2005
GIS/Cartography by A. Bokisch, August 2023
Map File: 567_SPA_Topo_B-P_2023_0822.mxd

Vollmar NATURAL LANDS CONSULTING

Legend

- Study Area (78.7 ac.)
- Project Area (38.0 ac.)
- Public Land Survey Boundary

FIGURE 2
USGS Topographic Map

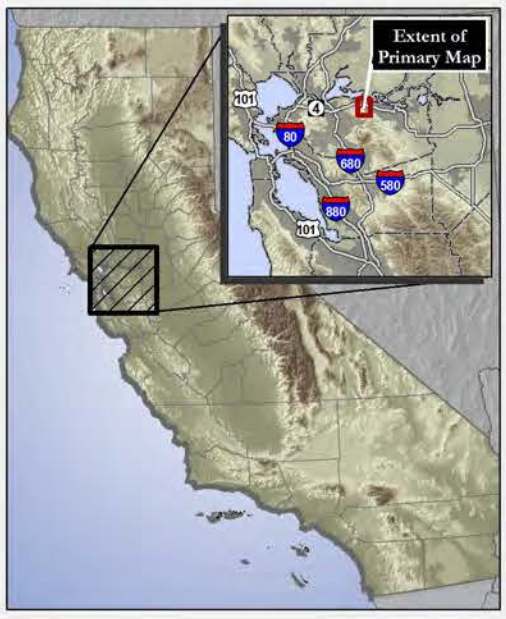
Pittsburg Technology Park Project Area
City of Pittsburg, California

N W E S

1:24,000
(1 in. = 2,000 ft. at tabloid layout)

0 500 1,000 Meters

0 1,000 2,000 4,000 Feet



widely scattered, include many exotic trees, and do not form contiguous riparian habitat. The drainage in the PGE land in the eastern portion of the Study Area (outside of the Project area) is a more developed stream corridor, with more evidence of active streamflow, and a better-developed riparian community (described in **Section 5**, below).

A vegetation fire occurred during the summer of 2022. The area that was burned is now coming back as non-native grasses and invasive weeds.

2.2.2 Site Hydrology

The study area is within the Kirker Creek-Frontal Suisun Bay Estuaries sub-basin watershed, which in turn is within the greater Suisun Bay watershed (USGS 2013) (**Figure 1**). There are no named streams within or immediately adjacent to the study area, but all drainages in the area discharge into the unnamed stream in the eastern portion of the Study Area, which in turn discharges into Suisun Bay. The Contra Costa Canal flows through the study area, bringing water to the East Bay from the Sierra Nevada Mountains (**Figure 1**).

2.2.3 Climate Conditions

The climate of the study area and surrounding vicinity is characterized as "Mediterranean," with cool, wet winters and warm, dry summers as well as high inter- and intra-annual variability in precipitation. On average, nearly 98% of precipitation occurs during the "wet season," from October through May. According to the Parameter-elevation Regression on Independent Slopes Model (PRISM) climate data model (2023), mean annual temperature at the study area from 1991 to 2020 is 60.2° Fahrenheit (F) and the mean annual precipitation is 18.1 inches. In contrast, mean precipitation along the coast, at approximately the same latitude and elevation, amounts to over 36 inches, and features a mean temperature of 56°. Areas of equal distance to the east experience less than half the annual precipitation than at the study area and are hotter on average, due to a complete lack of coastal influence.

The study area experienced higher than normal rainfall during the 2018-2019 wet season, with precipitation amounting to 21.7 inches—122% of normal. Based on the preceding three-month period, the 2019 fieldwork was conducted at a time where the prior period was normal, as indicated in **Table 1**.

Table 1. WETS Table Analysis for the April 2019 Survey

Precipitation Data from the Last 30 Years (1989 - 2019)[1]			Recent Field Conditions Compared to Precipitation Data from the Last 30 Years, and Analysis[1]					
Date	**30th Percentile (inches)**	**70th Percentile (inches)**	**Date**	**Recorded Rainfall (inches)**	**Rainfall Condition Compared to Previous 30 Years[2]**	**Numeric Condition Value[3]**	**Weighting Factor[4]**	**Product of Condition Value and Weighting Factor[5]**
Mar	0.79	2.27	Mar 2019	1.69	Normal	2	3	6
Feb	1.05	2.96	Feb 2019	3.82	Wet	3	2	6
Jan	1.03	3.57	Jan 2019	2.93	Normal	2	1	2
[1] Precipitation data was obtained from the Antioch Pumping Station #3 and Mt. Diablo Weather Stations. [2] Below 30th percentile = dry; between 30th and 70th percentile = normal; above 70th percentile = wet. [3] Relative rainfall conditions are then translated to a numeric condition value, as follows: dry = 1, normal = 2, wet = 3. [4] Greater weight is given to the most recent month as this would most likely influence what hydrologic or vegetative characteristics are observed. [5] The numeric condition value is then multiplied by the weighting factor, then the subtotals are added to get the total value. Total value equivalents: 6-9 = dry; 10-14 = normal; 15-18 = wet.							**TOTAL[5]**	14 or NORMAL

According to the PRISM climate data model, the total annual 2022 precipitation at the study area was 10.7 inches (59% of the 30-year normal precipitation). However, field conditions during the three months leading up to the 2022 field survey were considered wetter than normal due to above average precipitation in November, as indicated in **Table 2**.

Table 2. WETS Table Analysis for the December 2022 Survey

Precipitation Data from the Last 30 Years (1991 - 2022)[1]			Recent Field Conditions Compared to Precipitation Data from the Last 30 Years, and Analysis[1]					
Date	**30th Percentile (inches)**	**70th Percentile (inches)**	**Date**	**Recorded Rainfall (inches)**	**Rainfall Condition Compared to Previous 30 Years[2]**	**Numeric Condition Value[3]**	**Weighting Factor[4]**	**Product of Condition Value and Weighting Factor[5]**
Nov	0.51	1.41	Nov 2022	1.87	Wet	3	3	9
Oct	0	0.39	Oct 2022	0	Normal	2	2	4
Sep	0	0	Sep 2022	1.02	Wet	3	1	3
[1] Precipitation data was obtained from the Antioch Pumping Station #3 and Mt. Diablo Weather Stations. [2] Below 30th percentile = dry; between 30th and 70th percentile = normal; above 70th percentile = wet. [3] Relative rainfall conditions are then translated to a numeric condition value, as follows: dry = 1, normal = 2, wet = 3. [4] Greater weight is given to the most recent month as this would most likely influence what hydrologic or vegetative characteristics are observed. [5] The numeric condition value is then multiplied by the weighting factor, then the subtotals are added to get the total value. Total value equivalents: 6-9 = dry; 10-14 = normal; 15-18 = wet.							**TOTAL[5]**	16 or WET

According to the PRISM climate data model, the total precipitation for the wet season (October-April) preceding the 2023 field survey was 30.17 inches, 180% of the normal precipitation for that period. However, most of that precipitation fell during December, January, and March. Field conditions during the three months leading up to the 2023 field survey (April-June) were considered normal, as indicated in **Table 3**.

Table 3. WETS Table Analysis for the July 2023 Survey

Precipitation Data from the Last 25 Years (1999 – 2023)[1]			Recent Field Conditions Compared to Precipitation Data from the Last 30 Years, and Analysis[1]					
Date	**30th Percentile (inches)**	**70th Percentile (inches)**	**Date**	**Recorded Rainfall (inches)**	**Rainfall Condition Compared to Previous 30 Years[2]**	**Numeric Condition Value[3]**	**Weighting Factor[4]**	**Product of Condition Value and Weighting Factor[5]**
Jun	0	0.04	Jun 2023	trace	Normal	2	3	6
May	0.10	0.34	May 2023	0.46	Wet	3	2	6
Apr	0.33	1.36	Apr 2023	0.04	Dry	1	1	1
[1] Precipitation data was obtained from the Concord Buchanan Field Weather Station, due to the closure of the Antioch Pumping Station #3 Weather Station. [2] Below 30th percentile = dry; between 30th and 70th percentile = normal; above 70th percentile = wet. [3] Relative rainfall conditions are then translated to a numeric condition value, as follows: dry = 1, normal = 2, wet = 3. [4] Greater weight is given to the most recent month as this would most likely influence what hydrologic or vegetative characteristics are observed. [5] The numeric condition value is then multiplied by the weighting factor, then the subtotals are added to get the total value. Total value equivalents: 6-9 = dry; 10-14 = normal; 15-18 = wet.						**TOTAL[5]**		13 or NORMAL

2.3 Project Personnel

The initial wetland delineation in spring 2019 was conducted by VNLC Senior Ecologist Jake Schweitzer with assistance by VNLC Staff Ecologist Kristen Chinn, who conducted hydrologic studies in the study area. The updated wetland delineation in December 2022 was conducted by VNLC Senior Ecologist Eric Smith with assistance by VNLC Staff Ecologist Anton Bokisch. The delineation of the 250-foot buffer zone in July of 2023 was also conducted by VNLC Senior Ecologist Eric Smith and Staff Ecologist Anton Bokisch.

3.0 REGULATORY BACKGROUND

3.1 Federal Regulatory Framework

The federal government, through Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA), has jurisdiction over all Waters of the United States. Waters of the United States are divided into four subsets – territorial seas and traditional navigable waters (TNWs); tributaries to TNWs; lakes, ponds, and impoundments of TNWs; and wetlands adjacent to territorial seas and TNWs. Section 404 of the CWA regulates the discharge of dredged or fill material into Waters of the United States. The CWA grants dual regulatory authority of Section 404 to the U.S. Environmental Protection Agency (EPA) and USACE. The USACE is responsible for issuing and enforcing permits for activities in jurisdictional Waters in conjunction with prior permitting authorities in navigable Waters under the RHA of 1899. The EPA is responsible for providing oversight of the permit program. In this capacity, the EPA has developed guidelines for permit review (Section 404 [b][1] Guidelines) and has the authority to veto permits by designating certain sites as non-fill areas (Section 404[c] of the CWA). The EPA also has enforcement authority under Section 404. The USACE generally extends its jurisdiction to all areas meeting the criteria for Waters of the United States.

On May 25th, 2023, the U.S. Supreme Court issued a decision in *Sackett v. U.S. Environmental Protection Agency* which holds that the CWA extends only to wetlands that have a continuous surface connection with Waters of the United States. As of the date of this report, USACE has not yet issued new guidance for determining jurisdiction.

Projects which propose activities that fall under the jurisdiction of Section 404 of the CWA and/or Section 10 of the RHA must obtain approval from the USACE through the individual or nationwide permit (NWP) process. Individual permits entail a full public interest review that includes consultation with other federal and state agencies.

3.2 California State and Regional Regulatory Framework

California Department of Fish and Wildlife

The CDFW regulates river, stream, and lake habitats through Fish and Game Code section 1600 *et seq*. Fish and Game Code section 1602 requires an entity to notify the CDFW prior to commencing any activity that may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- Deposit debris, waste, or other materials that could pass into any river, stream, or lake.

A “river, stream, or lake” includes those that are episodic (i.e., they are dry for periods of time) as well as those that are perennial. This definition includes ephemeral streams, desert washes, and

watercourses with a subsurface flow (CDFW 2016). It may also apply to work undertaken within the floodplain of a body of water, the boundary of which may be identified as a topographic feature or as riparian vegetation. In addition, the CDFW does not distinguish between a "pond" and a "lake," such that relatively small bodies of water, including both natural and artificial features, may be regulated under section 1600.

The CDFW requires a Lake and Streambed Alteration (LSA) Agreement when it determines that the activity, as described in a complete LSA Notification, may substantially adversely affect existing fish or wildlife resources (ibid). A LSA Agreement includes measures necessary to protect existing fish and wildlife resources. The CDFW may suggest ways to modify a project that would eliminate or reduce harmful impacts to fish and wildlife resources. Before issuing a LSA Agreement, CDFW must comply with the California Environmental Quality Act (CEQA).

Regional Water Quality Control Board

The study area is located within the San Francisco Bay (Region 2) Regional Water Quality Control Board, which has authority to regulate projects that could potentially impact wetlands and/or other Waters. According to the California State Water Resources Control Board (2006), this authority derives from the following:

- The state's Porter-Cologne Water Quality Control Act through Waste Discharge Requirements to protect Waters of the state;
- The CWA under Section 4013;
- Governor's Executive Order W-59-93 (i.e., the "California Wetland's Policy" which requires "No Net Loss of Wetlands");
- Senate Concurrent Resolution No. 28; and
- California Water Code Section 13142.5 (applies to coastal marine wetlands).

In addition to the state directives to protect wetlands, for individual permits (but not NWPs), the Basin Plan also directs the Water Board staff to use the EPA's CWA 404(b)(1) guidelines to determine circumstances under which the filling of wetlands may be permitted and requires that attempts be made to avoid, minimize, and only lastly to mitigate for adverse impacts (ibid).

California's jurisdiction to regulate its water resources is much broader than that of the federal government. While the U.S. Supreme Court's 2001 decision in SWANCC vs. U.S. Army Corps of Engineers (the "SWANCC" Decision) called into question the extent to which the federal government may regulate isolated, intrastate, non-navigable waters as "Waters of the United States" under the CWA, state law is unaffected by that decision. The State Water Resource Control Board's (State Water Board's) Executive Director issued a memorandum directing the Regional Water Boards to regulate such waters under Porter-Cologne authorities. Porter-Cologne extends to "Waters of the State," which is broadly defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." This definition includes isolated wetlands and

any action that may impact isolated wetlands is subject to the Water Board's jurisdiction, which may include the issuance of Statewide General Waste Discharge Requirements (WDRs). For projects that will impact less than 0.2 acres of "isolated" wetlands, the State Water Board issues Order No. 2004-004-DWQ, WDRs for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction (General WDRs). These General WDRs streamline the permitting process for low impact projects in isolated wetlands (ibid).

Activities or discharges from a project that could affect California's surface, coastal, or ground waters, require a permit from the local RWQCB. Discharging pollutants (or proposing to) into surface water requires the applicant to file a complete National Pollutant Discharge Elimination System permit application form with the RWQCB. Other types of discharges, such as those affecting groundwater or from diffused sources (e.g., erosion from soil disturbance or waste discharges to land) are handled by filing a Report of Waste Discharge with the RWQCB in order to obtain WDRs. For specified situations, some permits may be waived, and some discharge activities can be handled through enrollment in an existing general permit (ibid). The State is currently in the process of adopting updated Dredge and Fill procedures, which became effective May 28, 2020. These changes modify the current State definition and jurisdictional determination of State wetlands.

3.3 Local Regulatory Framework

The proposed Project is within the coverage area of the ECCHCP/NCCP. The HCP is a regional Habitat Conservation Plan/Natural Community Conservation Plan. The function of the HCP is to provide a coordinated process for projects within its coverage area to obtain biological resource permit coverage and mitigate for their impacts. The HCP is administered by the East Contra Costa County Habitat Conservancy, a Joint Powers Authority created for this purpose. Contra Costa County, and the Cities of Brentwood, Clayton, Oakley, and Pittsburg, have all passed ordinances requiring development projects to comply with the HCP.

The HCP provides projects with CWA Section 404 permit coverage via Regional General Permit 1 for Minimal Impact Activities in East Contra Costa County, California ("RGP-1", SPK-2001-00147). The HCP also provides projects with coverage for incidental take of species listed under the Endangered Species Act and California Endangered Species Acts by way of programmatic permits issued by USFWS and CDFW.

RGP-1 applies to many types of projects within the Urban Limit Line of Contra Costa County or inside the City Limits of the Cities of Brentwood, Clayton, Oakley, and Pittsburg, including, but not limited to, residential, commercial, industrial, institutional, and other urban developments. The loss of waters of the US (including wetlands) resulting from individual projects under RGP-1 may not exceed a total of 1.5 acres or more than 300 linear feet of perennial, intermittent or 3rd or higher order ephemeral streams, unless the linear foot limit is waived in writing by the Corps.

Covered projects must be a single and complete project. Other conditions and requirements also apply.

The Project Area is entirely within the City and County urban limit lines, and within the Initial Urban Development Area defined by the HCP (ECCHC 2007). This places it within the coverage area for HCP permits.

4.0 METHODS

4.1 Preliminary Review and Field Preparation

Prior to conducting the initial and updated field delineation, the VNLC project ecologists reviewed site aerial photography, topographic data, existing preliminary wetland and watershed mapping, geology maps, and soil survey maps of the study area and surrounding areas. This information was used to help characterize the study area, identify any potential Waters of the United States on a preliminary basis, and guide the on-site survey. Background imagery and a project boundary map were loaded on to a professional GPS (Trimble GeoXH 6000 or Geo7x) for use in navigation and mapping in the field.

4.2 Field Survey

The initial delineation field survey was conducted on April 19, 2019. The updated delineation field survey was conducted on December 2, 2022. The final delineation was conducted on July 10, 2023. During the initial survey, the ecologists walked the entire study area, established delineation data points, recorded additional notes on plant community and site characteristics, and took representative photographs of habitats and features of interest. During the updated survey, ecologists walked the entire study area, re-sampled a subset of the original delineation points, recorded notes on plant community changes and updated site characteristics, and took representative photographs of habitats and features of interest. The 2022 survey focused on previously established delineation points which fell within the burned portion of the study area. During the 2023 survey, ecologists established new delineation points within the 250-foot buffer around the boundary of the study area, took photos of habitats and features of interests, and recorded notes on the changes within the plant community and site characteristics.

Section 5.0 below presents summaries of the notes recorded during the field surveys. A total of 11 delineation data points (seven wetland delineation data points and four Ordinary High Water Mark, or OHWM, delineation data points) were established in the study area within representative wetland habitat types. Four of these data points were established during the initial field survey. Two of these points were re-sampled during the 2022 survey, and one data point was additionally established during the 2022 field survey in order to characterize the wetland feature conditions. Two wetland delineation data points, and four OHWM data forms were added in 2023 to delineate new wetland features. Copies of wetland delineation data and OHWM forms are provided in **Appendix D**.

At each data point, data were collected on soils, hydrology, and plant cover following the Routine Wetland Determination Method developed by the USACE and described in the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Delineation points were established as pairs, with one in the wetland or other Water habitat, and one in the adjacent upland habitat. If a given point established that a habitat type was upland, no additional point was established, because there was no need to delineate a habitat boundary. All potential jurisdictional Waters that were identified were mapped using a professional GPS unit (Trimble GeoXH 6000 or Trimble Geo 7x) with sub-meter precision.

The specific methods for collecting data on soils, hydrology, and plant cover at delineation data points are described below.

4.2.1 Soils

Prior to the site surveys, the U.S. Department of Agriculture (USDA) Soil Conservation Service database was consulted to identify soil map units found within the Study Area. During site surveys, soil profiles were taken at each data point using a tile spade shovel and/or a mattock (for difficult digging situations). Soils were examined for positive hydric soil indicators such as low matrix chromas, redox features, gleys, and iron and manganese concretions. The color and texture of the soil layers encountered were recorded on the delineation forms. A standardized soil texture chart used by the California Native Plant Society (CNPS) for assessing soils (adapted from Brewer and McCann 1982) was used to determine texture (e.g., clay versus clay loam, etc.). Soil color was identified using a Munsell soil color chart (Kollmorgen 2000). All soil samples were moistened before determining the color. Soil map units were cross-referenced with the California hydric soils list (SCS 1993) and the national hydric soils list (SCS 1991). Determination of whether or not the hydric soil criterion was met was based upon the criteria specified by the National Technical Committee for Hydric Soils (ibid), and informed by additional information provided by the US Department of Agriculture Natural Resource Conservation Service (USDA-NRCS 2018).

4.2.2 Hydrology

Indicators of wetland hydrology were noted, such as the presence of drainage patterns, surface soil cracks, saturated soil, water-stained leaves or vegetation, and deep cattle hoof prints. Hydrological connectivity was investigated throughout the study area and surrounding habitats. It should be noted that some wetlands in the Arid West region periodically lack indicators of wetland hydrology. If a given theoretical location is in a geomorphic position where a wetland could occur, but the site visit was during the dry season (i.e., June to October), followed by a period of 2-3 months of below-normal rainfall, or was during a year of an unusually low winter snowpack, indicators of wetland hydrology might not be present. According to the Arid West Supplement, “under these conditions, a given theoretical location that contains hydric soils and hydrophytic

vegetation and no evidence of hydrologic manipulation should be considered a wetland" (USACE 2008). Part of the delineation was conducted during the late spring season during a wet season that resulted in normal wetland habitat conditions (see **Section 2.2** above).

4.2.3 Vegetation

At each delineation data point, all herbaceous plant species within a five-foot radius were identified and a visual estimate of percent coverage for each species was recorded. The nearest trees and shrubs were accounted for at distances of 25 and 15 feet, respectively. Plant species and strata cover estimations were calibrated using CNPS percent cover templates—see the following website: http://www.cnps.org/cnps/vegetation/pdf/percent_cover_diag-cnps.pdf.

The indicator status of each species was then checked using the most recent USACE National Wetland Plant List—Version 3.5 (Lichvar et al. 2020). Indicator status categories are as follows:

OBL = obligate wetland; >99% probability of occurring in a wetland
FACW = facultative wetland; 67%-99% probability of occurring in a wetland
FAC = facultative; 33%-67% probability of occurring in a wetland
FACU = facultative upland; 1%-33% probability of occurring in a wetland
UPL = obligate upland; <1% probability of occurring in a wetland
NI = no indicator, insufficient information available to determine indicator status
NL = not listed (plants not listed in Lichvar et al. [2020], including some known to occur occasionally or primarily in wetlands)

The wetland plant cover criterion is met when the vegetation passes the dominance test: greater than 50 percent of the dominant plants are designated as OBL, FACW, or FAC wetland indicators. The USACE defines dominant plant species as those that, when included in descending order of their percent cover, together sum up to 50 percent of the total cover in their stratum (tree, sapling/shrub/subshrub, herb, or woody vine). In addition, all species with at least 20 percent coverage of the total canopy within a stratum are always counted as dominants. All scientific and common plant names correspond to Baldwin et al. (2012) and/or the Calflora database (2023).

If the dominance test is not passed, vegetation can be considered hydrophytic if it meets the requirements of the prevalence index, morphological adaptations, or problematic wetland situations (USACE 2008).

5.0 RESULTS

5.1 Overview

The delineation identified a total of 1.990 acres of potentially jurisdictional aquatic resources within the 78.7-acre study area. Additionally, the delineation identified 3.312 acres of artificial features constructed within uplands within the study are, including the Contra Costa Canal and golf course ponds. **Table 4**, below, lists the habitat types, Cowardin code, location, and acreage of each feature mapped within the study area. **Figure 3**, below, display the mapped aquatic resources within the study area. Representative photographs of study area habitats and features taken during the initial field study on April 19, 2019, are provided in **Appendix A**. Representative photographs taken during the updated field survey on December 2, 2022, are provided in **Appendix B**. Representative photographs taken during the field study on July 10, 2023 are provided in **Appendix C**. Copies of all wetland delineation data and OHWM forms, of which there are 11, are provided in **Appendix D**. A list of all plant species identified within the study area is provided in **Appendix E.**

5.2 Wetland Ecology of the Study Area

The soils, hydrology, and vegetation of the potentially jurisdictional aquatic features and the uplands found within the study area are described below. Artificial features constructed entirely in uplands are described in **Section 5.3**.

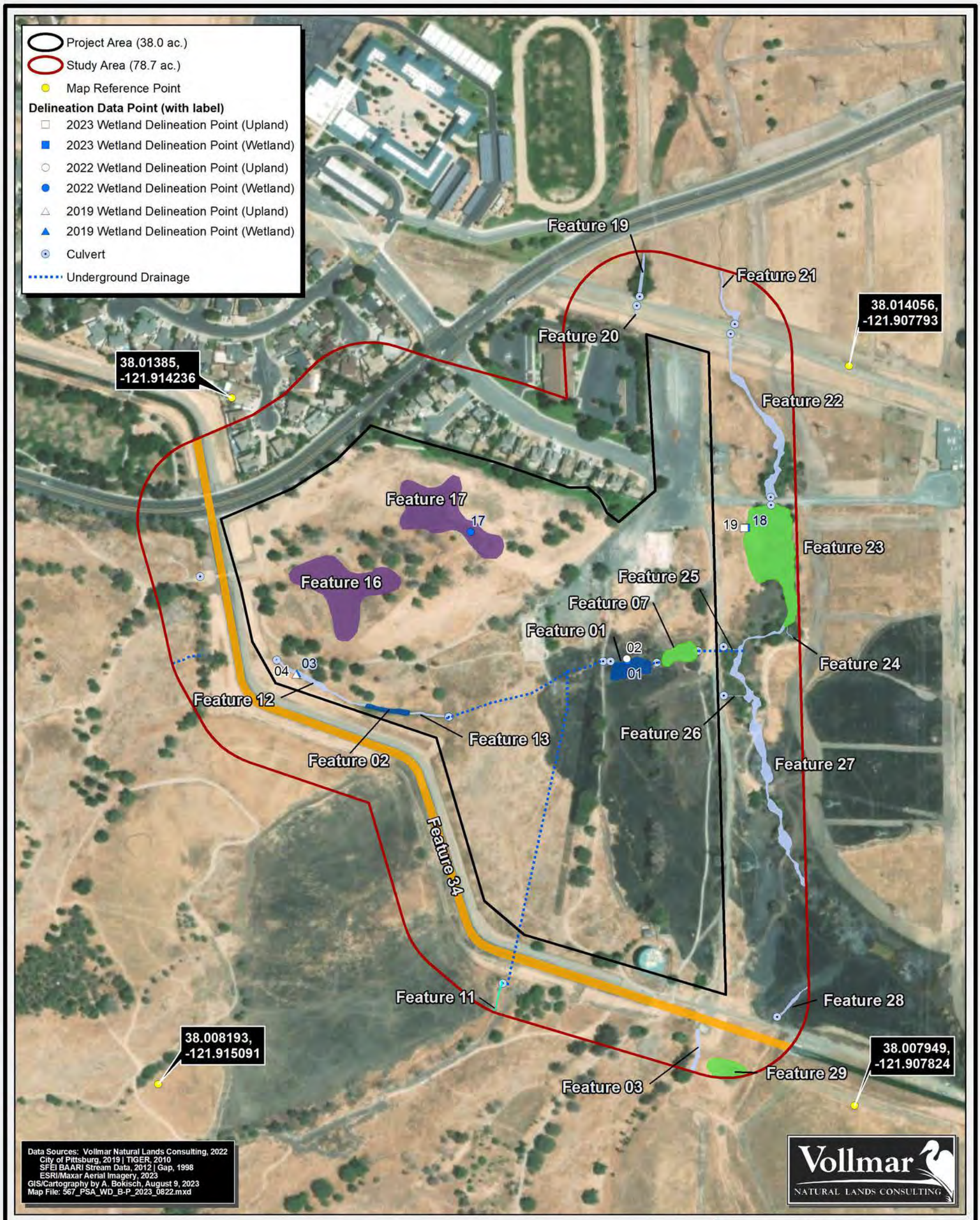
5.2.1 Soils

Soil Map Unit Types: Three soil units are mapped within the study area, including Capay clay (45.6% of the study area), Altamont clay (11.3%), and Rincon clay loam (43.1%). All of these are residuum or alluvium derived from sedimentary rocks, primarily sandstone and shale. The pH of the soils is generally neutral to slightly alkaline, with pH values ranging from 6.8 to 7.5 in the top 24 inches (USDA-NRCS 2023). Though none of these are rated as hydric soils, all of them consist of high amounts of clay materials, ranging from 35% to 51% clay (ibid). Clay soils are fairly poorly drained and concave areas within the study area tend to support at least some hydrophytic vegetation.

Figure 4, below, displays the soil map units found in the study area, and their . **Table 5**, below, displays the soil map units identified within the study area.

Table 4. Potential Jurisdictional Waters and Other Features within Study Area

Aquatic Resource Name	Cowardin Code	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Aquatic Resource Size (Acre)	Aquatic Resource Size (Linear Feet)
Seasonal Wetland Drainage					
Feature 3	R4	38.005955	-121.910255	0.036	1,953
Feature 12	R4	38.011491	-121.913394	0.069	498
Feature 13	R4	38.011220	-121.912240	0.014	308
Feature 22	R4	38.013529	-121.908691	0.213	561
Feature 24	R6	38.012536	-121.908612	0.003	67
Feature 25	R6	38.011846	-121.908432	0.002	43
Feature 26	R6	38.011734	-121.909060	0.003	59
Feature 27	R4	38.011344	-121.909037	0.353	951
Feature 28	R6	38.010883	-121.908724	0.021	132
Seasonal Wetland Drainage Total				**0.714**	**4,573**
Perennial Wetland within Drainage					
Feature 1	PEM	38.011581	-121.910111	0.129	N/A
Feature 2	PEM	38.011259	-121.912637	0.040	N/A
Perennial Wetland within Drainage Total				**0.169**	**N/A**
Seasonal Wetland within Drainage					
Feature 7	PEM	38.011693	-121.909588	0.114	N/A
Feature 23	PEM	38.012536	-121.908612	0.789	N/A
Feature 29	PEM	38.008226	-121.909148	0.124	N/A
Seasonal Wetland within Drainage Total				**1.027**	**N/A**
Other Waters (unvegetated channel)					
Feature 11	R4	38.008849	-121.911560	0.008	134.3
Feature 19	R4	38.014814	-121.909945	0.028	136.1
Feature 20	R4	38.014536	-121.910010	0.006	42.9
Feature 21	R4	38.014573	-121.909040	0.040	190.0
Other Waters (unvegetated channel) Total				**0.081**	**503**
Potentially Jurisdictional Aquatic Resources Total				**1.990**	**5,076**
Artificial Features Constructed in Uplands					
Golf Course Landscape Pond					
Feature 16	PUB	38.012259	-121.913092	0.874	N/A
Feature 17	PUB	38.012862	-121.912026	0.799	N/A
Golf Course Landscape Pond Total				**1.673**	**N/A**
Canals					
Feature 34	R4	38.010423	-121.912141	1.639	2,889
Canals Total				**1.639**	**2,889**
Artificial Features Constructed in Uplands Total				**3.312**	**2,889**
Grand Total				**5.302**	**7,965**



Legend

Wetlands, Drainages, and Other Waters (2023)

Aquatic Resource Habitat Type

- Seasonal Wetland Drainage (0.714 ac.)
- Perennial Wetland within Drainage (0.169 ac.)
- Seasonal Wetland within Drainage (1.027 ac.)
- Unvegetated Channel (0.081 ac.)

Artificial Features Constructed in Uplands

- Golf Course Landscape Pond (1.673 ac.)
- Canals (1.639 ac.)

FIGURE 3
Potential Jurisdictional Aquatic Resources

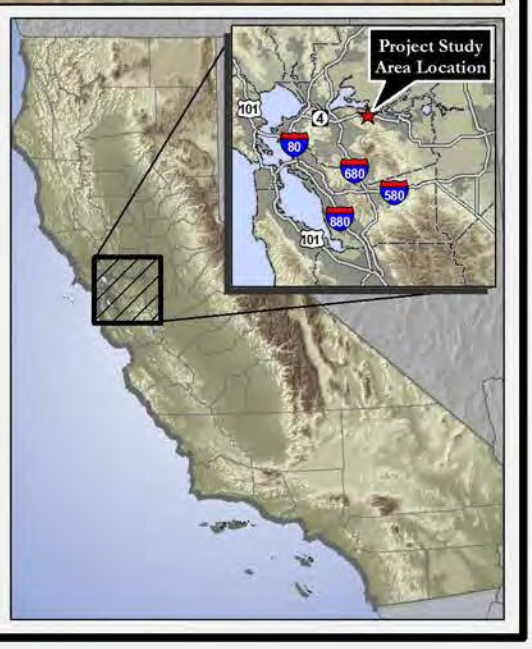
Pittsburg Technology Park Project Area
City of Pittsburg, California

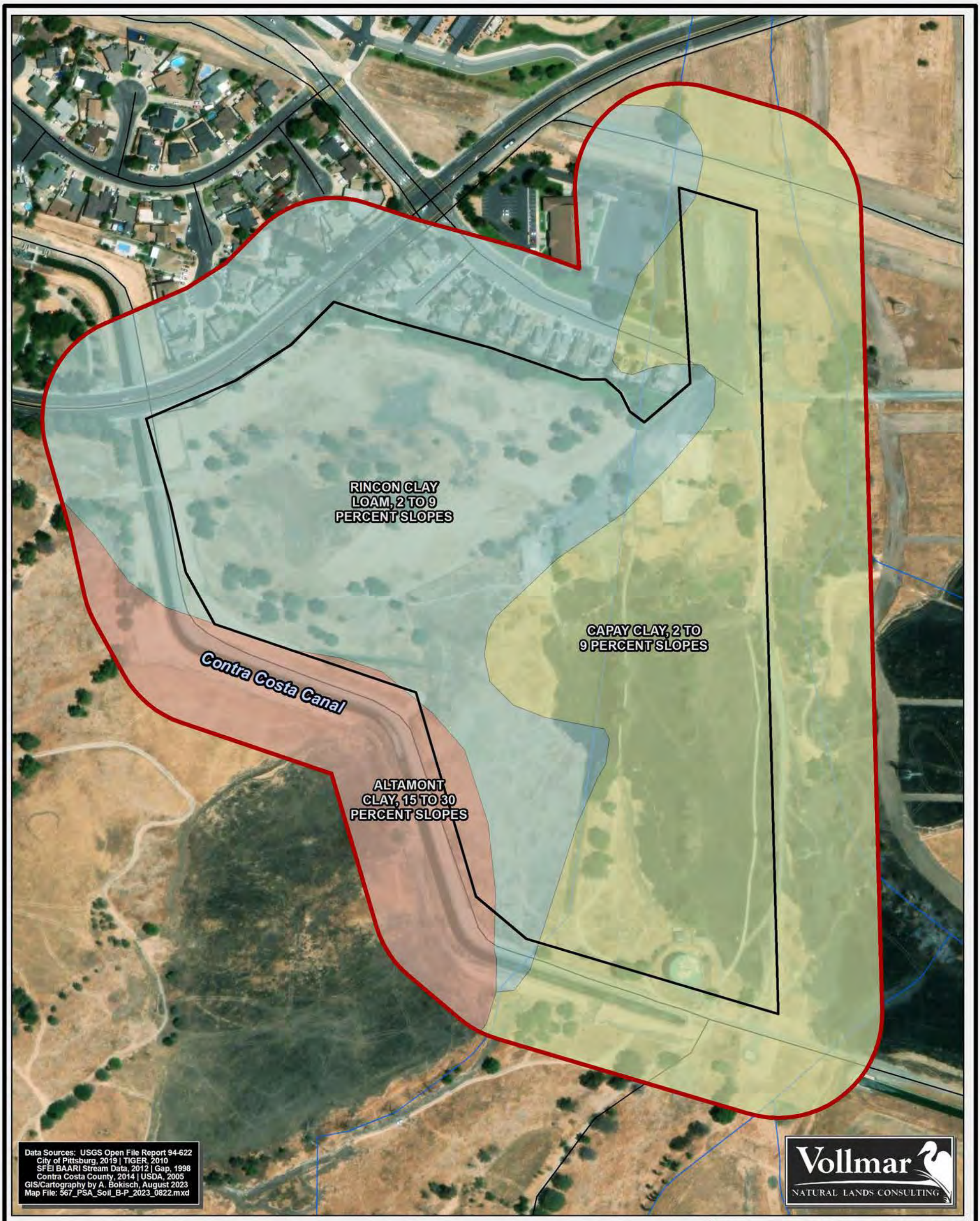
N W E S

1:3,500
(1 in. = 292 ft. at tabloid layout)

0 100 200 Meters

0 200 400 800 Feet





Legend

- Road
- Stream or Drainage
- Project Area (38.0 ac.)
- Study Area 250-foot Buffer (78.7 ac.)

Soil Map Unit Type

- Altamont Clay, 15-30% Slopes
- Capay Clay, 2-9% Slopes
- Rincon Clay Loam, 2-9% Slopes

FIGURE 4
Soil Unit Map

Pittsburg Technology Park Project
City of Pittsburg, California

N W E S

1:2,800
(1 in. = 233 ft. at tabloid layout)

0 37.5 75 150 Meters

0 150 300 600 Feet

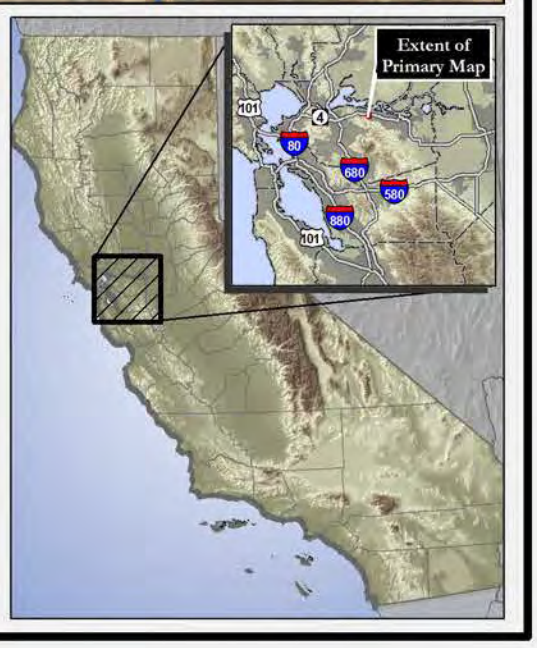


Table 5. Soil Map Units Identified Within the Study Area

Soil Map Unit Name	Hydric Rating	Acres Within Study Area	Percent of Study Area
Altamont clay, 15 to 30 percent slopes	Not Hydric	8.9	11.3%
Capay clay, 2 to 9 percent slopes	Not Hydric	35.9	45.6%
Rincon clay loam, 2 to 9 percent slopes	Not Hydric	33.9	43.1%

Source: USDA Web Soil Survey (USDA-NRCS 2023).

Hydric Soil Indicators: During the initial delineation in 2019, soils observed at wetland soil pits were consistently within the fairly yellow 10YR and 2.5Y hues and were generally dark or with a depleted matrix, and with low chromas (of 1 or 2) within the Munsell soil color chart (2000). Redox features were present and with high contrast. Upland habitat soils were similar but often slightly less dark, with values between 1-2. Significant soil cracking was noted across much of the study area, but particularly within the wetland habitats. As noted above, soils throughout portions of the study area that were developed as the golf course consist of imported soils overlain on top of the native soil. The imported soils include sandy materials and were imported to support turf grass, and apparently do not readily support native hydrophytic plant species.

During the 2022 field survey, typical wetland soils consisted of clay or clay loam with matrix values ranging from 10YR 2/1, 10YR 3/1-3/2, or 10YR 4/1-4/2 with 2-10% prominent redox concentrations ranging from 2.5YR 5/4, 7.5YR 5/8, 5YR 3/4-5/8, or 10YR 5/6. Wetland soil textures also included silty clay loam, sandy loam, and silty clay. Redox features occurred as concentrations within the pore linings. In contrast, the upland soils consisted of loam, silt loam, or clay loam with matrix values of 10YR 2/1, 3/1, or 3/2. In upland soils, redox features were absent or at low concentrations which did not qualify for hydric soil indicators.

During the 2023 field survey wetland soils consisted of clay with a matrix value of 10YR 3/2 and 5% prominent redox concentrations of 5YR 4/6. Wetland soil textures were a fine clay. Redox features occurred as pore linings. The upland soil was recorded as clay with a matrix value of 10YR 3/1. Redox features were absent in the upland point, not qualifying it as a hydric soil indicator.

Some unvegetated channel features lacked hydric soil indicators; these features were treated as other waters (unvegetated channel) due to the presence of an OHWM, and indications that the features convey water for significant intervals throughout the wet season. Features which lacked hydric soil or other wetland indicators, and also lacked indicators of significant flow, were treated as non-wetland swales, and not delineated as aquatic resources.

5.2.2 Hydrology

The study area is situated along the lower slopes of the Los Medanos Hills. The general hydrologic pattern of the study area is that of drainage from the hills into the third-order stream at the eastern edge of the study area, and thence north, toward the Suisun Bay. The Suisun Bay, in turn, drains into San Pablo Bay via the Carquinez Strait, which ultimately drains into the Pacific Ocean through the Golden Gate.

Drainages: Several drainages that conduct water from the surrounding hill slopes run through the study area. The drainages are second or third order (Strahler), but for the most part do not feature bed and bank topography. Four small drainages (**Features 11**, **19**, **20**, and **21**), however, do feature bed and bank topography, but lack vegetation. Several natural and artificial basins retain water from the drainages, forming seasonal wetlands (**Features 7**, **23**, and **29**) or perennial wetlands (**Features 1** and **2**).

Underground Drainages: Long stretches of several low-order drainages have been re-routed underground, and had their surface topography leveled to suit the needs of the golf course (**Figure 3**). Several surface water drainage inlet features were observed within areas of concave topography that appeared to be altered swales, and water flow has been carefully managed via a system of pipes and culverts that conduct most of the flow underground. Because of their condition as undergrounded pipes, it is impossible to accurately map these features, or characterize their hydrology.

Hydrology Indicators: During the 2019 field study, indicators of wetland hydrology within wetlands included soil cracks, drainage patterns, water-stained vegetation and thatch, and surface water presence. During the 2022 field survey, surface soil cracks were the only wetland hydrology indicators present within wetlands. Most of the upland delineation points had no hydrology indicators present. One upland delineation point (09) contained remnant clam shells from the area's former use as a golf course pond; this upland delineation point did not contain hydrophytic vegetation or hydric soil indicators. During the 2023 field survey, indicators of wetland hydrology included soil cracks, drainage patterns, and racking/deposited vegetation. No other hydrology indicators were observed outside of wetlands and other Waters.

5.2.2.1 Artificial Features Constructed Entirely Within Uplands

Three aquatic features are present in the study area which were constructed entirely within uplands, do not impound the flow of a natural Water, and do not replace the original channel of a natural water. Because of these conditions, we do not consider these features to meet the criteria for jurisdictional waters of the U.S.

Golf Course Ponds: Two golf course landscape ponds (**Features 16** and **17**) were excavated within uplands in the study area. Following the closure of the course, these ponds appear to have transitioned into seasonal, rain-fed features.

Contra Costa Canal: The Contra Costa Canal is an aqueduct constructed in the 1930s and 1940s as part of the Bureau of Reclamation's Central Valley Project. The Bureau of Reclamation uses it to deliver Central Valley Project water from the Sacramento-San Joaquin Delta near Knightsen to the Contra Costa Water District, which delivers the water to customers in the east bay. This east-west flow along the southern edge of the Delta and Suisun Bay is not characteristic of any historical flow regime; it represents artificial delivery of water through a system of created canals and pumps.

5.2.3 Vegetation

A list of all plant species identified within the study area is provided in **Appendix E**. Descriptions of dominant vegetation within the survey area habitats is provided below. During the 2019 field survey, the vegetation within mapped features generally varied as a function of ponding duration, amount of scouring from water flow, and/or degree of water turbidity.

Unvegetated or Sparsely Vegetated Features: The golf course landscaping ponds (**Features 16-17**, **Figure 3**) were sparsely vegetated during the 2019 field surveys as result of long ponding duration and/or high water turbidity. **Features 11**, **19**, **20**, and **21** (mapped as other Waters, **Figure 3**) were narrow channels where scouring had limited plant growth. Most of the remaining features held water for only short periods or had sufficiently clear and/or shallow water that enabled relatively dense plant growth.

During the 2022 field survey, the golf course landscaping ponds were again sparsely vegetated with hydrophytic vegetation, including common knotweed (*Persicaria lapathifolia*) [FACW] and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) [FAC] (see delineation point 17, taken within **Feature 17**). No substantial changes to **Feature 11** (mapped as other Waters) were noted during the 2022 field survey updates.

Seasonally Inundated Features: Most of the vegetated basins and drainages mapped within the study area were dominated by seasonal wetland vegetation during the 2019 field survey. Seasonal wetland features were mapped within isolated basins and seasonal wetland swales occurred within drainage corridors. Dominant plant species recorded within seasonal wetlands and seasonal wetland swales consisted of Italian ryegrass (*Festuca perennis*) [FAC], Mediterranean barley [FAC], bristly ox-tongue (*Helminthotheca echioides*) [FAC], and green dock (*Rumex conglomeratus*) [FACW]. Native species observed during the 2019 field survey were limited to small stands of generalist species such as tall nutsedge (*Cyperus eragrostis*) [FACW], cocklebur (*Xanthium strumarium*) [FAC], and beardless wild rye (*Elymus triticoides*) [FAC].

During the 2022 field survey, seasonally inundated features were dominated by facultative wetland species and invading upland species. Dominant species observed in seasonally inundated features included Italian ryegrass [FAC], Mediterranean barley [FAC], and black mustard (*Brassica nigra*) [NL], with some ripgut brome (*Bromus diandrus*) [NL]. Grass cotyledons which were too immature for a positive identification were also observed. The dry conditions on site during 2022 likely decreased inundation periods within the seasonal wetlands and seasonal wetland swales and allowed the invasion of the upland species.

During the 2023 field survey, seasonally inundated features were dominated mostly by the same set of species that were observed during the 2022 field survey. These species include Italian ryegrass [FAC], Mediterranean barley [FAC], black mustard (*Brassica nigra*) [NL], and ripgut brome.

Perennially Inundated Features: **Features 1** and **2** supported wetland vegetation characteristic of perennially saturated soils during the 2019 field surveys. These two features supported dense stands of broadleaf cattail (*Typha latifolia*) [OBL] and, along the basin edges, many of the same plants occurring within the seasonal wetland features. As noted above in **Section 5.2.2**, the hydrology of the swale in which both of these two features occur appeared to be enhanced by a leak in the Contra Costa Canal.

During the 2022 field survey, **Features 1** and **2** were dominated by facultative wetland vegetation, including dallis grass (*Paspalum dilatatum*) [FAC], with some curly dock (*Rumex crispus*) [FAC] and Himalayan blackberry (*Rubus armeniacus*) [FAC]. The dry conditions on site during 2022 likely favored the shift within the vegetation community towards facultative wetland species. These features remain classified as perennial wetlands because they would be perennially inundated during a non-drought year.

Intermittently Flowing Features: The stream along the eastern edge of the study area supported a mix of mostly facultative wetland vegetation such as curly dock, Himalayan blackberry, and cocklebur during the 2023 survey, while narrower and deeper portions of the channel were occasionally scoured and unvegetated.

Tree Species: Tree species occurring within and along the edges of the basins and drainages during the 2019 field survey were limited to a few scattered Fremont cottonwood (*Populus fremontii*) [FACW], willows (*Salix* spp.) [FACW], Mexican fan palm (*Washingtonia robusta*) [FACW], and gum trees (*Eucalyptus* spp.) [NL]. Mexican fan palm were again observed during the 2022 field surveys within a seasonal wetland. The intermittent stream at the eastern edge of the study area supports occasional Fremont cottonwood, boxelder (*Acer negundo*) [FACW], though they showed signs of drought stress during the 2023 survey (**Feature 3**, **Figure 4**; see **Appendix B**).

Upland Habitats: Upland habitats within the study area were dominated by a mix of non-native plant species and more localized native species. A wide variety of horticultural plants had been propagated and maintained as part of the golf course development. Horticultural woody species observed during the 2019 delineation survey included weeping willow (*Salix babylonica*) [FAC], shamel ash (*Fraxinus uhdei*) [NL], Italian stone pine (*Pinus pinea*) [NL], deodar cedar (*Cedrus deodara*) [NL], and several species of gum tree (*Eucalyptus* spp.) [NL]. Some native woody species were also observed, including a few interior live oaks (*Quercus wislizeni*) [NL] and valley oaks (*Q. lobata*) [FACU]. However, early aerial photography of the area suggests these species may not have existed in the area prior to the golf course.

During the 2019 field surveys, the upland herb layer of the study area had undergone dramatic changes following the closure of the golf course. Imported soils that were once intensively managed to maintain turf grass had been colonized by a variety of invasive weeds, including Italian thistle (*Carduus pycnocephalus*) [NL], prickly wild lettuce (*Lactuca serriola*) [FACU], black mustard [NL], and common sow-thistle (*Sonchus oleraceus*) [UPL]. At the time of the 2019 delineation survey these invasive species had formed extensive dense and tall stands within the study area. Along the hill slopes adjacent to the golf course, where native soils remained intact, many of these same invasive species were present along with high covers of annual grasses. Hill slopes outside of the golf course within the study area were grazed by cattle and thus supported notable stands of native wildflowers along with annual grasses during the 2019 field survey.

During the 2022 and 2023 field surveys, upland habitats were again dominated by upland species and invasive weeds. Dominant species observed in upland habitats in both 2022 and 2023 included black mustard [NL], foxtail barley (*Hordeum murinum*) [FACU], cheeseweed (*Malva parviflora*) [NL], mustard (*Hirschfeldia incana*) [NL], milk thistle (*Silybum marianum*) [NL], and ripgut brome [NL].

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APPENDIX A:

REPRESENTATIVE PHOTOGRAPHS OF THE STUDY AREA

(Recorded during the initial field survey, April 19, 2019)

Appendix A: Representative Photographs (April 19, 2019)

Feature 7. Seasonal Wetland within swale, facing northwest.

Feature 1. Perennial Wetland within Swale. Facing Northwest

Appendix A: Representative Photographs (April 19, 2019)

Feature 2. Perennial Wetland within Swale. Enhanced by leak in canal. Facing Southwest

Feature 12. Seasonal Wetland Swale (Delineation Point 03). Facing Southeast

Appendix A: Representative Photographs (April 19, 2019)

Hydric Clay Soils from **Feature 12**

Feature 16. Golf Course Landscape Pond. Facing North

Appendix A: Representative Photographs (April 19, 2019)

Feature 11. Un-vegetated Channel (other Waters). Facing Northeast

Feature 3. Seasonal Wetland Swale. Facing North

Appendix A: Representative Photographs (April 19, 2019)

Representative Upland Habitat—Planted Trees and Ruderal Grassland. Facing North

APPENDIX B:

REPRESENTATIVE PHOTOGRAPHS OF THE STUDY AREA

(Recorded during the field survey updates, December 2, 2022)

Appendix B: Representative Photographs (December 2, 2022)

Photo 1. Representative photo of study area conditions.

Photo 2. Aerial drone photo showing burned area, facing east.

Appendix B: Representative Photographs (December 2, 2022)

Photo 3. Aerial drone photo showing burned area, facing southeast.

Photo 4. Representative wetland soil at data point 17 showing prominent redox features.

Appendix B: Representative Photographs (December 2, 2022)

Photo 5. View of **Feature 1**, Perennial Wetland within drainage, facing west.

Photo 6. View of **Feature 1**, Perennial Wetland within drainage, facing north.

Appendix B: Representative Photographs (December 2, 2022)

Photo 7. Representative view of Mexican fan palms within **Feature 3**.

Photo 8. View of burned area, facing east.

APPENDIX C:

REPRESENTATIVE PHOTOGRAPHS OF THE STUDY AREA

(Recorded during the field survey, July 10, 2023)

Appendix C: Representative Photographs (July 10, 2023)

Photo 1. OHWM at **Feature 22** (southern extent). Facing North

Photo 2. Pulaski tool at OHWM at **Feature 23**. Facing South

Appendix C: Representative Photographs (July 10, 2023)

Photo 3. OHWM at **Feature 22** (northern extent). Facing North

Photo 4. Tools along OHWM of **Feature 22**. Facing South

APPENDIX D:

WETLAND DELINEATION AND OHWM DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pittsburg Data Center | City/County: Pittsburg, Contra Costa | Sampling Date: 12/2/2022

Applicant/Owner: WSP USA | State: CA | Sampling Point: 01 Updated

Investigator(s): Eric Smith, VNLC | Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): Edge of Swale | Local relief (concave, convex, none): Convex | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 38.011639 | Long: -121.910138 | Datum: NAD83

Soil Map Unit Name: Capay Clay, 2 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] 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 (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:

Re-sample of wetland data point collected in 2019 by Jake Schweitzer, VNLC. Purpose is to confirm conditions. Vegetation disturbance: area burned approximately 6 months ago.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum Plot size: 25 feet			
1. *N/A*			
2.			
3.			
4.			
	%		
Sapling/Shrub Stratum Plot size: 15 feet			
1. *N/A*			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum Plot size: 5 feet			
1. *Paspalum dilatatum*	35	Yes	FAC
2. *Rumex crispus*	2	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	37 %		
Woody Vine Stratum Plot size:			
1. *Rubus armeniacus*	1	Yes	FAC
2.			
Total Cover:	1 %		

% Bare Ground in Herb Stratum 63 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	38	x 3 =	114
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	38 (A)		114 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

Vegetation is hydrophytic.

SOIL

Sampling Point: 01 Update

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-6	10YR 3/2	95	5YR 4/6	5	C	PL	Silty Clay Loam	
6-12	10YR 3/2	90	5YR 5/8	10	C	PL	Sandy Loam	Golf balls present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- [x] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? **Yes** (•) **No** ( )

Remarks:

Golf balls indicate this material is recent fill from golf course operation.
Prominent redox features observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [x] 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 along 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 (2 or more 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): N/A

Water Table Present? Yes ( ) No (•) Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ( ) No (•) Depth (inches): N/A

Wetland Hydrology Present? **Yes** (•) **No** ( )

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

Remarks:

Surface soil cracks observed.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pittsburg Data Center | City/County: Pittsburg, Contra Costa | Sampling Date: 12/2/2022

Applicant/Owner: WSP USA | State: CA | Sampling Point: 02 Updated

Investigator(s): Eric Smith, VNLC | Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): Slope by Swale | Local relief (concave, convex, none): Concave | Slope (%): 2%

Subregion (LRR): C - Mediterranean California | Lat: 38.01166 | Long: -121.910147 | Datum: NAD83

Soil Map Unit Name: Capay Clay, 2 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] 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 ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks:

Re-sample of wetland data point collected in 2019 by Jake Schweitzer, VNLC. Purpose is to confirm conditions. Vegetation disturbance: area burned approximately 6 months ago.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum Plot size: 25 feet			
1. *N/A*			
2.			
3.			
4.			
	%		
Sapling/Shrub Stratum Plot size: 15 feet			
1. *N/A*			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum Plot size: 5 feet			
1. *Brassica nigra*	3	Yes	Not Listed
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	3 %		
Woody Vine Stratum Plot size:			
1. *N/A*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 97 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks:

Hydrophytic vegetation is not present.

SOIL

Sampling Point: 02 Update

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-4	10YR 4/2	100					Silt Loam	No redox features
4-12	10YR 3/2	97	5YR 4/6	3	C	PL	Silt Loam	Prominent redox features

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ○ No ◉

Remarks:

Prominent redox features observed below 4 inches at low concentrations that do not qualify for hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ 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 along 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 (2 or more 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): N/A

Water Table Present? Yes ○ No ◉ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): N/A

Wetland Hydrology Present? Yes ○ No ◉

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

N/A

Remarks:

No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Delta View Technology Park | City/County: Contra Costa County | Sampling Date: 4/19/2019

Applicant/Owner: City of Pittsburgh | State: CA | Sampling Point: 03

Investigator(s): Jake Schweitzer, VNLC | Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): seasonal drainage | Local relief (concave, convex, none): concave | Slope (%): 1-5%

Subregion (LRR): C - Mediterranean California | Lat: UTM: 4207656 | Long: UTM: 595370 | Datum: NAD83

Soil Map Unit Name: Rincon clay loam, 2 to 9 percent slopes | NWI classification: N/A

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 (•)	No ( )		
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?**	**Yes (•) No ( )**
Wetland Hydrology Present?	Yes (•)	No ( )		

Remarks:

Seasonal swale, adjacent to P04

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	%		
Sapling/Shrub Stratum Plot size: 15 feet			
1. N/A			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum Plot size: 5 feet			
1. *Festuca perennis*	75	Yes	FAC
2. *Rumex conglomeratus*	5	No	FACW
3. *Bromus diandrus*	3	No	Not Listed
4. *Helminthotheca echioides*	3	No	FAC
5.			
6.			
7.			
8.			
Total Cover:	86 %		
Woody Vine Stratum Plot size: 15 feet			
1. N/A			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 14 % | % Cover of Biotic Crust %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species	78	x 3 =	234
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	83 (A)		244 (B)

Prevalence Index = B/A = 2.94

Hydrophytic Vegetation Indicators:

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

Seasonal wetland vegetation present

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-3	10YR 2/2	100					silty clay loam	moist
3-12	10YR 4/1	60	7.5YR 5/8	10	C	M	silt	moist
3-12	2.5Y	30					silt	moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- [x] 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)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[4]

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes (•) No ( )

Remarks:

Dark hydric soils present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] 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 along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [x] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [x] 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? (includes capillary fringe) Yes ( ) No (•) Depth (inches):

Wetland Hydrology Present? Yes (•) No ( )

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

Remarks:

Water-stained vegetation present

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Delta View Technology Park | City/County: Contra Costa County | Sampling Date: 4/19/2019

Applicant/Owner: City of Pittsburgh | State: CA | Sampling Point: 04

Investigator(s): Jake Schweitzer, VNLC | Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): convex | Slope (%): 20-30%

Subregion (LRR): C - Mediterranean California | Lat: UTM: 4207655 | Long: UTM: 595369 | Datum: NAD83

Soil Map Unit Name: Rincon clay loam, 2 to 9 percent slopes | NWI classification: N/A

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 (•)	No ( )	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks:

Hillslope above P03

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus fremontii*	2	Yes	Not Listed
2.			
3.			
4.			
	2 %		
Sapling/Shrub Stratum Plot size: 15 feet			
1. *N/A*			
2.			
3.			
4.			
5.			
Total Cover: %			
Herb Stratum Plot size: 5 feet			
1. *Bromus diandrus*	60	Yes	Not Listed
2. *Avena barbata*	15	No	Not Listed
3. *Sinapis arvensis*	10	No	Not Listed
4. *Festuca perennis*	5	No	FAC
5. *Carduus pycnocephalus*	3	No	Not Listed
6. *Helminthotheca echioides*	1	No	FAC
7.			
8.			
Total Cover:	94 %		
Woody Vine Stratum Plot size: 15 feet			
1. *N/A*			
2.			
Total Cover: %			

% Bare Ground in Herb Stratum 6 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	6	x 3 =	18
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	6 (A)		18 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks:

Seasonal wetland vegetation present

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture[3]	Remarks
0-18	10YR 2/2	100					silty clay loam	moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[4]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil indicators not present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ 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 along 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 (2 or more 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? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No indicators of wetland hydrology present

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pittsburg Data Center City/County: Pittsburg, Contra Costa Sampling Date: 12/2/2022

Applicant/Owner: WSP USA State: CA Sampling Point: 17

Investigator(s): Eric Smith, VNLC Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): Midway down pond bottom Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR): C - Mediterranean California Lat: 38.012722 Long: -121.911763 Datum: NAD83

Soil Map Unit Name: Rincon Clay Loam, 2 to 9 percent slopes NWI classification: PUBHx Freshwater Pond

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 (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:

Feature is former golf course pond. Point collected to characterize feature conditions, not due to doubt about wetland status.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1. *N/A*			
2.			
3.			
4.			
	%		
Sapling/Shrub Stratum Plot size: 15 feet			
1. *N/A*			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum Plot size: 5 feet			
1. *Persicaria lapathifolia*	5	Yes	FACW
2. *Hordeum marinum ssp. gussoneanum*	1	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	6 %		
Woody Vine Stratum Plot size:			
1. *N/A*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 94 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species	1	x 3 =	3
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	6 (A)		13 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

Vegetation is hydrophytic.

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-10	10YR 2/1	90	7.5YR 5/8	10	C	PL	Clay	Artificial pond liner
10-15	10YR 5/4	85	5YR 4/6	15	C	PL	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- [x] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [x] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes (•) No ( )

Remarks:

Golf balls indicate this material is recent fill from golf course operation. Prominent redox features observed in top 10 inches of soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] 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 along 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 (2 or more 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):	See remarks
Water Table Present?	Yes ( ) No (•)	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes ( ) No (•)	Depth (inches):	N/A

Wetland Hydrology Present? Yes (•) No ( )

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

Hydrology recordings reported by VNLC, 2019

Remarks:

Surface water not present at time of survey, indicator is based on 2019 report.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pittsburg Data Center City/County: Pittsburg, Contra Costa Sampling Date: 07/10/2023

Applicant/Owner: WSP USA State: CA Sampling Point: 18

Investigator(s): Anton Bokisch, VNLC Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): Bank Local relief (concave, convex, none): Slope (%): 10

Subregion (LRR): C - Mediterranean California Lat: 38.012729 Long: -121.908885 Datum: NAD83

Soil Map Unit Name: Capay clay 2 to 9 percent slopes NWI classification: N/A

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 (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 25 feet	Absolute % Cover	Dominant Species?	Indicator Status
1. *N/A*			
2.			
3.			
4.			
	%		
Sapling/Shrub Stratum Plot size: 15 feet			
1. *N/a*			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum Plot size: 5 feet			
1. *Rumex crispus*	15	Yes	
2. *Festuca perennis*	10	No	
3. *Xanthium strumarium*	3	No	
4.			
5.			
6.			
7.			
8.			
Total Cover:	28 %		
Woody Vine Stratum Plot size:			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 72 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [●] Dominance Test is >50%
- [●] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-5	10YR 3/2		5YR 4/6	5	C	PL	FICA	
5-12+	10YR 3/2						FICA	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Redox features present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ 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 along 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 (2 or more 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? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Drift deposits present

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Pittsburg Data Center City/County: Pittsburg, Contra Costa Sampling Date: 07/10/2023

Applicant/Owner: WSP USA State: CA Sampling Point: 19

Investigator(s): Anton Bokisch, VNLC Section, Township, Range: Los Medanos Landgrant

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 12

Subregion (LRR): C - Mediterranean California Lat: 38.012727 Long: -121.908906 Datum: NAD83

Soil Map Unit Name: Capay clay 2 to 9 percent slopes NWI classification: N/A

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 (●)	No ( )	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks:

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum Plot size: 25 feet			
1. *N/A*			
2.			
3.			
4.			
	%		
Sapling/Shrub Stratum Plot size: 15 feet			
1. *N/A*			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum Plot size: 5 feet			
1. *Festuca perennis*	45	Yes	
2. *Lactuca serriola*	3	No	
3. *Centaurea solstitialis*	10	No	
4. *Avena barbata*	2	No	
5.			
6.			
7.			
8.			
Total Cover:	60 %		
Woody Vine Stratum Plot size:			
1. *N/A*			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks:

SOIL

Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture[3]	Remarks
0-12+	10YR 3/1						FICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2] CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
[3]Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[4]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redox features present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ 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 along 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 (2 or more 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? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No hydrology indicators present

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: 567	Site Name: Feature 22	Date and Time: 7/10/2023, 0943
Location (lat/long): 38.014573 -121.909040	Investigator(s): Eric Smith, VNLC	

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- [ ] gage data
- [x] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [ ] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources.
Were there any recent extreme events (floods or drought)?
High flows spring 2023

Step 2 Site conditions during field assessment
First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Dry, unvegetated, showing clear line on bank with change in grain size.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.
OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.
OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:*
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [x] **Shelving:**
  - [x] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* forbs
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [ ] **Wracking/presence of organic litter:**
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:
Culvert sizing and rusting

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: 567

Step 5 Describe rationale for location of OHWM

Change in slope and vegetation near valley bottom. Transition from FAC herbs to unvegetated. Matches nearby culvert.

Additional observations or notes

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? [X] Yes [ ] No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
4	Channel center, looking south (upstream), tools laid at OHWM.

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: 567	Site Name: Feature 22	Date and Time: 7/10/2023, 1006
Location (lat/long): 38.013529 -121.908691	Investigator(s): Eric Smith, VNLC	

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- [ ] gage data
- [x] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [ ] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [ ] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources.
Were there any recent extreme events (floods or drought)?
Major flows spring 2023

Step 2 Site conditions during field assessment
First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Stream is dry, with obvious destruction of terrestrial vegetation and change in grain size at OHWM. Location is just downstream of where stream overflowed a dirt road (possibly with blocked culverts).

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.
OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.
OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:**
  - [ ] *on the bank:*
  - [ ] *undercut bank:*
  - [x] *valley bottom:*
  - [ ] Other: _____
- [x] **Shelving:**
  - [x] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [ ] **Mudcracks:**
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [ ] **Change in vegetation type and/or density:**

Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

- [ ] *vegetation absent to:*
- [ ] *moss to:*
- [ ] *forbs to:*
- [ ] *graminoids to:*
- [x] *woody shrubs to:* forbs
- [ ] *deciduous trees to:*
- [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:**
- [x] **Presence of large wood:**
- [x] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: 567

Step 5 Describe rationale for location of OHWM

Abrupt change in slope and material

Additional observations or notes

Location where stream overflowed road, cut sharp channel for short distance below road.

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☐ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
1	Anton at OHWM

U.S. Army Corps of Engineers (USACE)

RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

OMB Control No. 0710-XXXX

Approval Expires:

Project ID #: 567	Site Name: Feature 22	Date and Time: 7/10/2023, 1017
Location (lat/long): 38.013529 -121.908691	Investigator(s): Eric Smith, VNLC	

Step 1 Site overview from remote and online resources
Check boxes for online resources used to evaluate site:

- [ ] gage data
- [x] LiDAR
- [ ] geologic maps
- [ ] climatic data
- [ ] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [ ] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

Step 2 Site conditions during field assessment

First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

Stream is dry. Site is downstream of incised area where stream overtopped road, but still shows a channel, flattened vegetation, and a change in vegetation.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below 'b', at 'x', or just above 'a' the OHWM.

OHWM. Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [ ] **Break in slope:**
  - [ ] *on the bank:*
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [ ] **Instream bedforms and other bedload transport evidence:**
  - [ ] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)*
  - [ ] *bedforms (e.g., poofs, riffles, steps, etc.):*
  - [ ] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)*
- [ ] **Secondary channels:**

Sediment indicators

- [ ] **Soil development:**
- [ ] **Changes in character of soil:**
- [x] **Mudcracks:**
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:**

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [ ] *vegetation absent to:*
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [x] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:**
- [x] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [ ] **Weathered clasts or bedrock:**

Other observed indicators?

Describe:

Step 4 Is additional information needed to support this determination?

- [ ] Yes
- [x] No

If yes, describe and attach information to datasheet:

Project ID #: 567

Step 5 Describe rationale for location of OHWM

Change in vegetation from Juncus to Lepidium latifolium. Stream banks flatten and become indistinct after incised portion below road overflow.

Additional observations or notes

Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? [X] Yes [ ] No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
3	Anton standing at OHWM

APPENDIX E:

PLANT LIST

Appendix E: Plant List

Table D-1. Plant Species Identified Within the Study Area

Scientific Name	Common Name	Wetland Indicator Status[1]
Abies sp. (horticultural variety)	Fir	FACU
Acer negundo	Box Elder	FACW
Acmispon americanus var. americanus	Spanish Lotus	UPL
Amaranthus albus	Tumbleweed	FACU
Amaranthus blitoides	Procumbent Pigweed	FACU
Amsinckia lycopsoides	Bugloss-Flowered Fiddleneck	NL
Amsinckia menziesii	Common Fiddleneck	NL
Asclepias fascicularis	Narrow-Leaf Milkweed	FAC
Avena barbata	Slender Wild Oat	NL
Bellardia trixago	Mediterranean Linseed	NL
Bolboschoenus maritimus ssp. paludosus	Saltmarsh Bulrush, Alkali Bulrush	OBL
Brachypodium distachyon	annual false-brome	NL
Brassica nigra	Black Mustard	NL
Bromus catharticus var. catharticus	Rescue Grass	NL
Bromus diandrus	Ripgut Brome	NL
Bromus hordeaceus	Soft Chess	FACU
Bromus madritensis	compact brome	UPL
Capsella bursa-pastoris	shepherd's purse	FACU
Carduus pycnocephalus ssp. pycnocephalus	Italian Thistle	NL
Castilleja exserta ssp. exserta	exserted Indian paintbrush	NL
Cedrus deodara	Deodar Cedar	NL
Centaurea melitensis	Tocalote	NL
Centaurea solstitialis	Yellow Star-Thistle	NL
Chenopodium album	Lamb's Quarters	FACU
Chlorogalum pomeridianum	wavyleaf soap plant	NL
Claytonia perfoliata ssp. perfoliata	miner's lettuce	NL
Convolvulus arvensis	Bindweed, Orchard Morning-Glory	NL
Cotula australis	Australian Cotula	FAC
Cotula australis	Australian Cotula	FAC
Croton setigerus	Turkey-Mullein	NL
Crypsis schoenoides	Swamp Prickle Grass	FACW
Cuscuta campestris	Field Dodder	NL
Cyclospermum leptophyllum	marsh parsley	FACU
Cynara cardunculus ssp. cardunculus	Artichoke	NL
Cynara cardunculus ssp. flavescens	Artichoke	NL
Cynodon dactylon	Bermuda Grass	FACU
Cyperus eragrostis	tall flatsedge	FACW
Dipterostemon capitatus	bluedicks	NL

Appendix E: Plant List

Scientific Name	Common Name	Wetland Indicator Status[1]
Distichlis spicata	Salt Grass	FAC
Dittrichia graveolens	Stinkwort	NL
Echinochloa crus-galli	barnyardgrass	FACW
Elymus triticoides	Beardless Wild Rye	FAC
Epilobium brachycarpum	tall annual willowherb	FAC
Erigeron canadensis	Horseweed	FACU
Erodium cicutarium	Redstem Filaree	NL
Erodium moschatum	Greenstem Filaree	NL
Eschscholzia californica	California Poppy	NL
Eucalyptus camaldulensis	Red Gum, River Red Gum	FAC
Eucalyptus globulus	Blue Gum	NL
Festuca bromoides	Brome Fescue	FACU
Festuca myuros	Rattail Sixweeks Grass	FACU
Festuca perennis	Rye Grass	FAC
Ficus carica	Edible Fig	FACU
Foeniculum vulgare	Fennel	NL
Fraxinus uhdei	Shamel ash	NL
Geranium dissectum	cutleaf geranium	NL
Grindelia camporum	Great Valley gumweed	FACW
Hedera canariensis	Canary Islands Ivy	NL
Helminthotheca echioides	Bristly Ox-Tongue	FAC
Heterotheca grandiflora	Telegraph Weed	NL
Hirschfeldia incana	summer mustard	NL
Hordeum marinum ssp. gussoneanum	Mediterranean Barley	FAC
Hordeum murinum	Wall Barley	FACU
Hypochaeris glabra	Smooth Cat's-Ear	NL
Hypochaeris radicata	Rough Cat's-Ear	FACU
Juncus bufonius var. bufonius	toad rush	FACW
Juncus bufonius var. congestus	Clustered Toad Rush	FACW
Kickxia elatine	sharpleaf cancerwort	UPL
Lactuca serriola	Prickly Lettuce	FACU
Lepidium didymum	Lesser Swine Cress	NL
Lupinus affinis	fleshy lupine	NL
Lupinus bicolor	Miniature Lupine	NL
Lupinus formosus var. formosus	summer lupine	NL
Lupinus microcarpus var. microcarpus	whitewhorl lupine	NL
Lupinus nanus	sky lupine	NL
Lysimachia arvensis	Scarlet Pimpernel	FAC

Appendix E: Plant List

Scientific Name	Common Name	Wetland Indicator Status[1]
Lythrum hyssopifolia	hyssop loosestrife; grass poly; hyssop lythrum	OBL
Malva parviflora	Cheeseweed, Little Mallow	NL
Marah fabacea	California Man-Root	NL
Medicago polymorpha	Burclover	FACU
Melica californica	California Melic	NL
Melilotus albus	White Sweetclover	NL
Melilotus indicus	Sourclover	FACU
Myoporum laetum	Myoporum, Ngaio Tree	FACU
Nicotiana glauca	Tree Tobacco	FAC
Olea europaea	olive	NL
Paspalum dilatatum	Dallis Grass	FAC
Persicaria lapathifolia	Willow Weed	FACW
Persicaria maculosa	Lady's Thumb	FACW
Persicaria punctata	Doted Smartweed	OBL
Phalaris aquatica	Harding Grass	FACU
Phalaris aquatica	Harding Grass	FACU
Phoenix canariensis	Canary Island Palm	NL
Pinus contorta ssp. murrayana	Lodgepole Pine	FAC
Pinus muricata	Bishop Pine	NL
Pinus ponderosa	Ponderosa Pine	FACU
Pinus ponderosa var. pacifica	Pacific Ponderosa Pine	FACU
Pittosporum tobira	Mock Orange	NL
Plantago major	Common Plantain	FAC
Poa annua	Annual Blue Grass	FAC
Poa secunda	Nevada Blue Grass	FACU
Polygonum aviculare	Knotweed, Knotgrass	FAC
Polypogon monspeliensis	Annual Beard Grass, Rabbitfoot Grass	FACW
Populus fremontii ssp. fremontii	Alamo Or Fremont Cottonwood	NL
Portulaca oleracea	Purslane	FAC
Prunus caroliniana	Carolina cherry laurel	FACU
Prunus cerasifera	Cherry Plum	NL
Prunus domestica	Common Plum	NL
Prunus dulcis	Almond	NL
Prunus emarginata	Bitter Cherry	FACU
Pseudognaphalium californicum	ladies' tobacco	NL
Quercus agrifolia var. agrifolia	California live oak	NL
Quercus lobata	Valley Oak	FACU

Appendix E: Plant List

Scientific Name	Common Name	Wetland Indicator Status[1]
Robinia pseudoacacia	Black Locust	FACU
Robinia pseudoacacia	Black Locust	FACU
Rubus armeniacus	Himalayan Blackberry	FAC
Rumex crispus	Curly Dock	FAC
Salix gooddingii	Goodding's Black Willow	FACW
Salix lasiandra var. lasiandra	Pacific Willow	FACW
Schinus molle	Pepper Tree	FACU
Senecio vulgaris	Common Groundsel	FACU
Sequoia sempervirens	redwood	NL
Silybum marianum	milk thistle	NL
Sinapis arvensis	Charlock	NL
Solanum nigrum	Black Nightshade	FACU
Sonchus asper ssp. asper	Prickly Sow Thistle	FAC
Sonchus oleraceus	Common Sow Thistle	UPL
Spergularia marina	Saltmarsh Sand-Spurrey	OBL
Spergularia rubra	Red Sand-Spurrey	FAC
Stellaria media	Common Chickweed	FACU
Tamarix parviflora	Smallflower Tamarisk	FAC
Torilis arvensis	Tall Sock-Destroyer	NL
Tragopogon dubius	Yellow Salsify	NL
Trifolium hirtum	Rose Clover	NL
Triteleia laxa	Ithuriel's Spear	NL
Typha latifolia	Broad-Leaved Cattail	OBL
Ulmus pumila	Siberian Elm	UPL
Ulmus pumila	Siberian Elm	UPL
Urtica urens	Dwarf Nettle	NL
Vicia sativa ssp. sativa	Spring Vetch	FACU
Xanthium spinosum	Spiny Cocklebur	FACU
Xanthium strumarium	Cocklebur	FAC

[1] Wetland Indicator Status (Lichvar et al. 2020):
OBL = obligate wetland; >99% probability of occurring in a wetland
FACW = facultative wetland; 67%-99% probability of occurring in a wetland
FAC = facultative; 33%-67% probability of occurring in a wetland
FACU = facultative upland; 1%-33% probability of occurring in a wetland
UPL = obligate upland; <1% probability of occurring in a wetland
NI = no indicator, insufficient information available to determine indicator status
NL = not listed (plants not listed in Lichvar et al. [2020], including some known to occur occasionally or primarily in wetlands)

APPENDIX C

RARE PLANT SURVEY REPORT

SACRAMENTO OFFICE
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Sacramento, CA 95816
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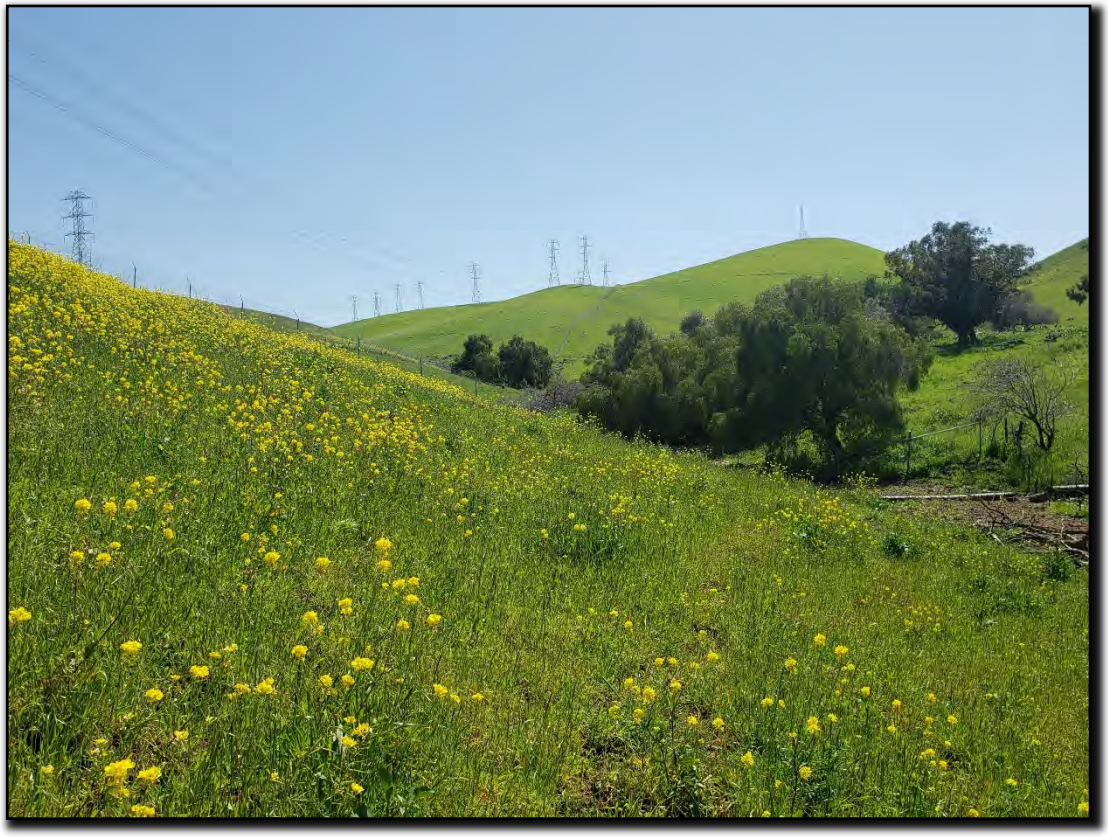
www.vollmarconsulting.com

Rare Plant Survey Report
Pittsburg Data Center Project



City of Pittsburg
Contra Costa County, California

Prepared for:

WSP USA
401 B Street, Suite 1650
San Diego, CA 92101
Contact: Stephanie Whitmore

Prepared by:

Vollmar Natural Lands Consulting
2401 Capitol Avenue, Sacramento, CA 95816
Contact: Rachel Miller
916/758-6928

October 2023

TABLE OF CONTENTS

FIGURES, TABLES, and APPENDICES

1.0 INTRODUCTION

This report summarizes the methods and results for focused rare plant surveys and a floristic inventory conducted within the Pittsburg Data Center Project study area (Study Area), located in the hills above the City of Pittsburg, in northern Contra Costa County, California (**Figures 1** and **2**). The Study Area includes the entirety of the Pittsburg Data Center Project (Project Specific Area, or "PSA"), as well as a 250-foot buffer around the Project Specific Area, per the standards of the East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan (ECCHCP/NCCP, or "HCP"). This project would redevelop portions of the recently closed Delta View Golf Course as a data center. The proposed Project Specific Area covers approximately 38.0 acres; the Study Area (including the 250-foot buffer) is approximately 78.7 acres.

This report documents existing or potentially occurring rare plant species and sensitive plant communities for review by regulatory agencies. It is intended to support permitting for the Project. This rare plant survey and floristic inventory was completed by Vollmar Natural Lands Consulting on behalf of WSP USA. Vollmar Natural Lands Consulting (VNLC) previously prepared a separate wetland delineation in the Study Area in 2019, as well as an updated delineation in 2023 (VNLC 2023).

The purpose of the rare plant surveys and floristic inventory was to document any sensitive botanical resources that could potentially be impacted by Project activities. The surveys were protocol in nature, and were scheduled to coincide with early spring, peak spring, and summer botanical seasons for the region, during the blooming periods of special-status plants with potential to occur in the Study Area.

No special-status plant species were detected during the surveys. A total of 1.90 acres of riparian habitats occur within the Study Area, including Himalayan blackberry thicket (0.44 acre), and Valley Foothill Riparian habitats (1.46 acres). Separately delineated aquatic resources cover 1.99 acres of the Study Area. Aquatic resource habitat types include seasonal wetland drainages (0.71 acres), perennial wetlands within a drainage (0.17 acre), seasonal wetlands within a drainage (1.03 acres), and unvegetated channel (0.71 acre).

Legend

- Highway
- Selected Local Road
- Stream
- Public or Preserved Land
- Urban Area
- County Boundary

Data Sources: TIGER, 2010 | City of Pittsburg, 2018 USGS, Various | | CPAD, 2014 | Landsat Imagery Gap, 1998 | SFEI, 2015| USFWS, 2014 | VNLC, 2023
GIS/Cartography by R. Miller, Oct. 2023
Map File: 567_PSA_RP_Vicinity_A-P_2023_1006.mxd

FIGURE 1
Regional Vicinity Map

Pittsburg Technology Park Project
City of Pittsburg, California

N
W E
S

1:95,040
(1 in. = 1.5 miles, at letter-size layout)

0 0.5 1 2 Km

0 0.5 1 2 Mi

Provided Separately Under Confidential Cover

2.0 TARGETED BOTANICAL RESOURCES

For the purposes of this report, special-status plants include all taxa appearing on the Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2023a). This includes all species listed under the Endangered Species Act and/or California Endangered Species Act, species of concern, and species included within an inventory maintained by the California Native Plant Society (CNPS), including taxa of all ranks.

Sensitive natural communities include those designated as such by the California Department of Fish and Wildlife (CDFW), either in the List of California Sensitive Natural Communities (CDFW 2023b) or as alliances classified in the Manual of California Vegetation Online (MCV) (CNPS 2023a). MCV alliances designated with a global rank of G1-G3 or a state rank of S1-S3 are designated as "rare or threatened" and are considered sensitive. In addition, wetland and riparian habitats are considered sensitive and are regulated by environmental regulatory agencies.

All plant taxa are identified using the nomenclature listed in the Jepson eFlora (2023). Natural communities which are not considered sensitive are classified using the California Wildlife Habitat Relationships (CWHR) system used by the California Department of Fish and Wildlife (CDFW) for the Vegetation Classification and Mapping Program (VegCAMP) (Mayer and Laudenslayer 1998).

3.0 METHODS

3.1 Preliminary Review and Field Preparation

Prior to field surveys, the botanists reviewed site aerial photography, topographic data, existing wetland delineation mapping, previous biological reports, and soil survey maps for the Study Area and vicinity to develop a list of special-status plant species with potential to occur in the Study Area. A map of documented occurrences of special-status plant species within approximately 5 miles of the Study Area was compiled from the most recent data available from the California Natural Diversity Database (CNDDB) (CDFW 2023c).

The botanists also compiled a list of known occurrences of special-status plant species from a nine-quadrangle search using the CNPS's online Rare Plant Inventory (CNPS 2023b). Specifically, the search centered on the Honker Bay 7.5-minute quadrangle and included the eight surrounding quadrangles (Fairfield South, Denverton, Birds Landing, Vine Hill, Antioch North, Walnut Creek, Clayton, and Antioch South).

The project botanists compiled information on each target plant species, including preferred habitat, microhabitat, elevation range, and blooming period. This information guided the timing and strategies of the field surveys to detect special-status plants with potential to occur in the Study Area. **Appendix B** provides the target list of special-status plant taxa with potential to occur in the Study Area. **Figure 2** displays the CNDDB occurrences of special-status plant species in the Project vicinity.

3.2 Field Surveys

The botanical field surveys were conducted by VNLC botanist Rachel Miller on April 12, May 19, and July 12, 2023. The survey dates were scheduled to coincide with the blooming periods of all special-status plants for which potentially suitable habitats occur in the Study Area (**Appendix B**). During each field survey, the botanist walked the entire Study Area, searching for special-status plant species and recording all plant species observed within the Study Area.

The rare plant surveys conformed to the CNPS 'Intuitive Controlled' method as well as the CDFW guidelines for conducting protocol-level botanical surveys (2018). The surveys also satisfy the U.S. Fish and Wildlife Service guidelines for conducting and reporting botanical inventories for federally listed, proposed, and candidate plants (USFWS 2000). The entirety of the Study Area was investigated, and areas with higher potential to support special-status or otherwise unique plants were surveyed with greater intensity. Examples of such areas include more localized plant community types, the stream corridor, and areas generally supporting a notably high proportion of native plants. All plant taxa present were recorded according to the lowest taxonomic level necessary to determine their regulatory status (i.e., species, subspecies, or variety as applicable) and dominant species as well as general habitat conditions were noted throughout each habitat type (see below). Project maps and GPS background files depicting the project boundaries, soil unit boundaries, and other features were used to navigate throughout the survey areas. Field manuals, particularly the "Jepson eFlora" (Jepson 2023), were used to confirm the taxonomy of plant taxa in the field.

Within each primary habitat and microhabitat, the most prevalent plant species from each stratum (tree, shrub/sapling/vine, and herb) were recorded in order of dominance, with an effort to classify the habitat types according to the CWHR system (Mayer and Laudenslayer 1998). Other habitat parameters, such as the extent of canopy cover, soil conditions, and level of disturbance, were also noted as applicable. If necessary for the identification of sensitive natural communities (i.e., alliances ranked in the MCV as S1-3 and/or G1-3), visual cover estimates of dominant plant species were also recorded.

During the field surveys, representative photographs were taken of onsite plant communities, general habitat conditions, and plant species of interest. Representative photos are included in **Appendix A**.

3.3 Remote Mapping

Field data were overlaid onto aerial photography and topographic data in ESRI ArcGIS software in order to map natural communities observed during the field surveys. Natural communities were typically classified according to CWHR habitat type classification (Mayer and Laudenslayer 1998); any potential sensitive natural communities were classified according to the MCV Alliance level.

As stated in **Section 2.0**, MCV alliances with a global rank of G1-G3 or a state rank of S1-S3 are considered sensitive. Wetland and riparian habitats are considered sensitive and are regulated by environmental regulatory agencies.

4.0 ENVIRONMENTAL SETTING

4.1 Study Area Location

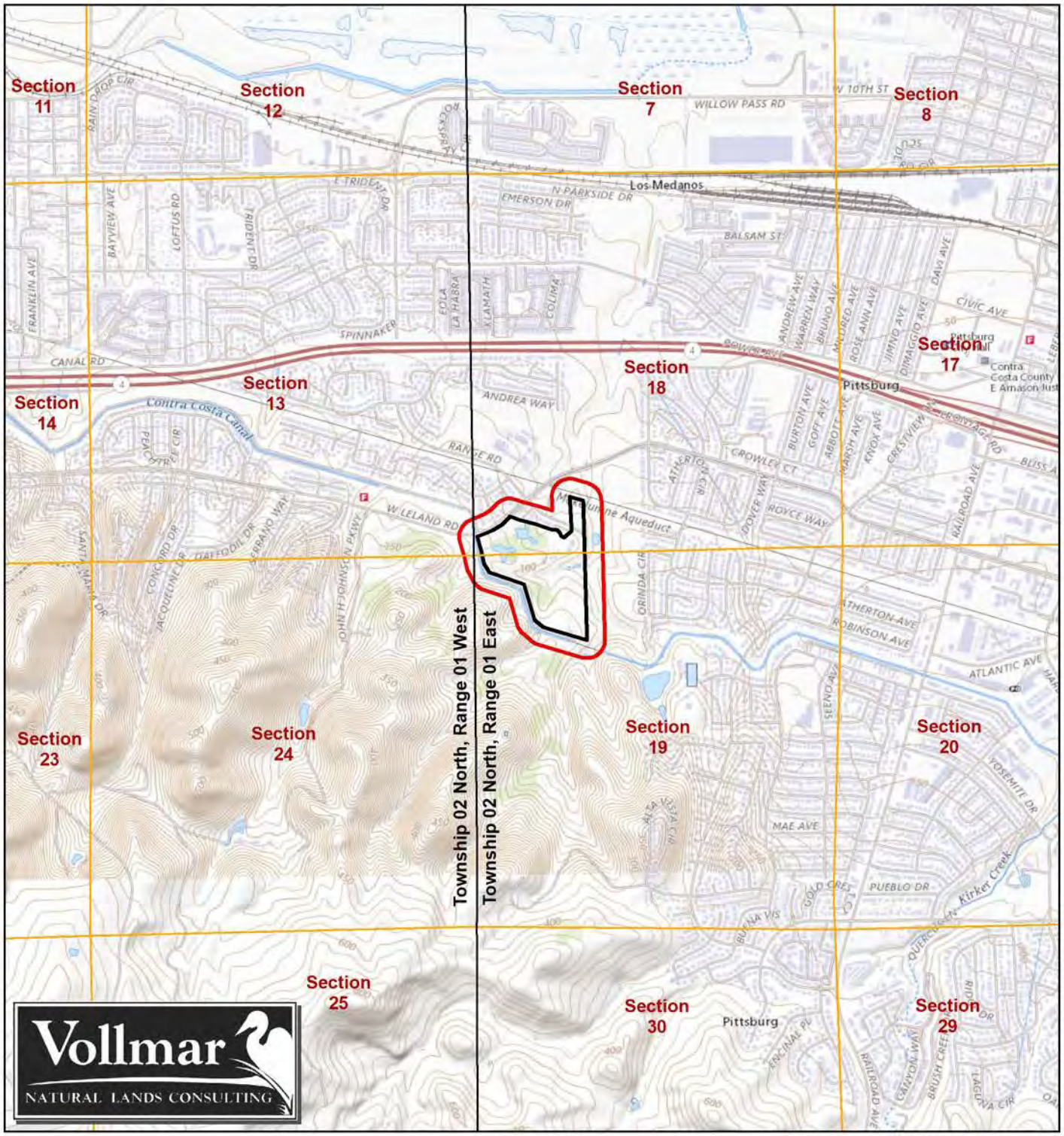
The Study Area consists of approximately 78.7 acres, which includes the approximately 38.0-acre Project Specific Area, as well as the 250-foot buffer, per the HCP standards. The Project Specific Area is comprised of a portion of the former Delta View Golf Club. The 250-foot buffer includes additional portions of the former golf club, the Contra Costa Canal, residential development to the north of the Project parcel, and undeveloped land containing a utility transmission corridor east of the parcel (**Figure 3**). The Study Area is located along the southern edge of the City of Pittsburg, California, and is mapped on the Honker Bay 7.5' United States Geological Survey (USGS) topographic quadrangle. The Study Area is within Sections 18 and 19 of Township 2 North, Range 1 East, and Sections 13 and 24 of Township 2 North, Range 1 West, of the Mount Diablo Base & Meridian (**Figure 3**).

Lands to the north of the Study Area are mostly comprised of suburban residential development. To the east of the Study Area lies a corridor of open land owned by Pacific Gas and Electric Company (PG&E). The property south and west of the Study Area includes more of the original golf course. The Study Area may be accessed from State Highway 4 heading east by exiting at Bailey Road, then turning right (south) on to Bailey Road, then turning left (east) on West Leland Road. Golf Club Road, which heads south from West Leland Road 1.7 miles east of Bailey Road, dead ends at the Delta View Golf Course. Some of the Study Area is accessible via golf cart trails, though many of these have become inaccessible due to an overgrowth of black mustard (*Brassica nigra*).

4.2 Current Conditions

The study area consists of rolling hills along the lower slopes of the eastern Los Medanos Hills, overlooking the City of Pittsburg. Elevation within the Study Area ranges from approximately 57 feet to 164 feet above sea level (USGS 1997), trending upward in elevation from the northeast to the southwest. The Study Area is dominated by silt and clay soils (see **Section 4.4**) that support annual grassland in undeveloped areas, though extensive areas have been partially leveled and native soils have been replaced by soils suited for golf course landscaping.

Following the closure of the golf course in 2018, previously managed areas have been colonized by dense and tall stands of invasive weeds and non-native annual grasses, including black mustard, yellow star-thistle (*Centaurea solstitialis*), Italian rye grass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), wall barley (*H. murinum*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). Additionally, a series of vegetation fires occurred



Vollmar NATURAL LANDS CONSULTING

Legend

- Project Specific Area
- 250-foot Buffer of Project Specific Area
- Public Land Survey Boundary

FIGURE 3
USGS Topographic Map

Pittsburg Data Center
City of Pittsburg, California

N
W E
S

1:24,000
1 inch = 2,000 feet

0 250 500 1,000 M
0 750 1,500 3,000 Ft

Data Sources: VNLC, 2023 | USGS, 2022 | WSP, 2023
City of Pittsburg, 2019 | ESRI/Maxar Aerial Imagery, 2023
GIS/Cartography by: R. Miller, Oct. 2023
Map File: 567_PSA_RP_Topo_A-P_2023_1024.mxd

during 2022-23, and the area that was burned is regrowing with the same non-native grasses and invasive weeds. Remnant landscaping trees, primarily stands of Bishop pine (*Pinus muricata*) and Peruvian pepper tree (*Schinus molle*), occur throughout the Study Area. The entire Study Area shows evidence of a complete lack of grazing, though some mowing occurred during 2023.

The remnant intact drainages that flow through most of the Study Area support a few riparian species, but these are widely scattered, and include many non-native trees and shrubs such as Peruvian pepper tree and Mexican fan palm (*Washingtonia robusta*). The drainage in the eastern portion of the 250-foot buffer is a more developed stream corridor, with more evidence of active streamflow, and a better-developed riparian community. The riparian corridor here includes riparian scrub dominated by Himalayan blackberry (*Rubus armeniacus*), as well as riparian trees forming a fairly open canopy. Common riparian tree species in the eastern drainage include Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia* var. *agrifolia*), Pacific willow (*Salix lasiandra* var. *lasiandra*), Siberian elm (*Ulmus pumila*), Mexican fan palm, northern California black walnut (*Juglans hindsii*), and olive trees (*Olea europaea*).

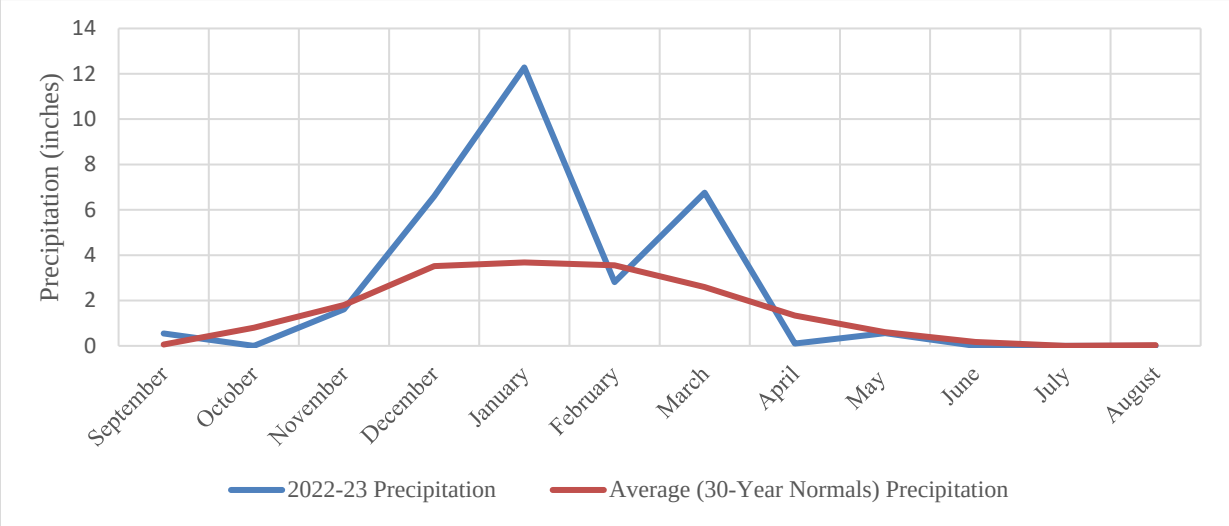
4.3 Climate

The Study Area is located within a Mediterranean climate, which is characterized by cool, wet winters and warm, mostly rainless summers as well as high intra- and inter-annual variability in precipitation.

The field surveys were conducted during and following a growing season which was wetter than normal, due to the influence of an El Nino-Southern Oscillation (ENSO) weather pattern during the 2022-23 wet season (October-April). According to the PRISM climate data model, the total precipitation for the wet season (October-April) preceding the 2023 field surveys was 30.17 inches, 180% of the normal precipitation for that period. However, most of that precipitation fell during December, January, and March. **Figure 4**, below, displays the total monthly precipitation for September 2022 through July 2023 as well as the average monthly precipitation for 1991-2020 in Contra Costa County.

The timing of the precipitation during 2022-23 wet season was generally conducive to plant germination and growth, in a manner that supported early, vigorous growth. Precipitation was generally earlier and much higher than normal, and field surveys were timed earlier than normal to accommodate for the early-season rainfall and subsequent early growth and blooming periods.

Figure 4. Monthly Precipitation Recorded in 2022-2023 in Contra Costa County, CA



Data Provided by PRISM (2023).

4.4 Soils and Geology

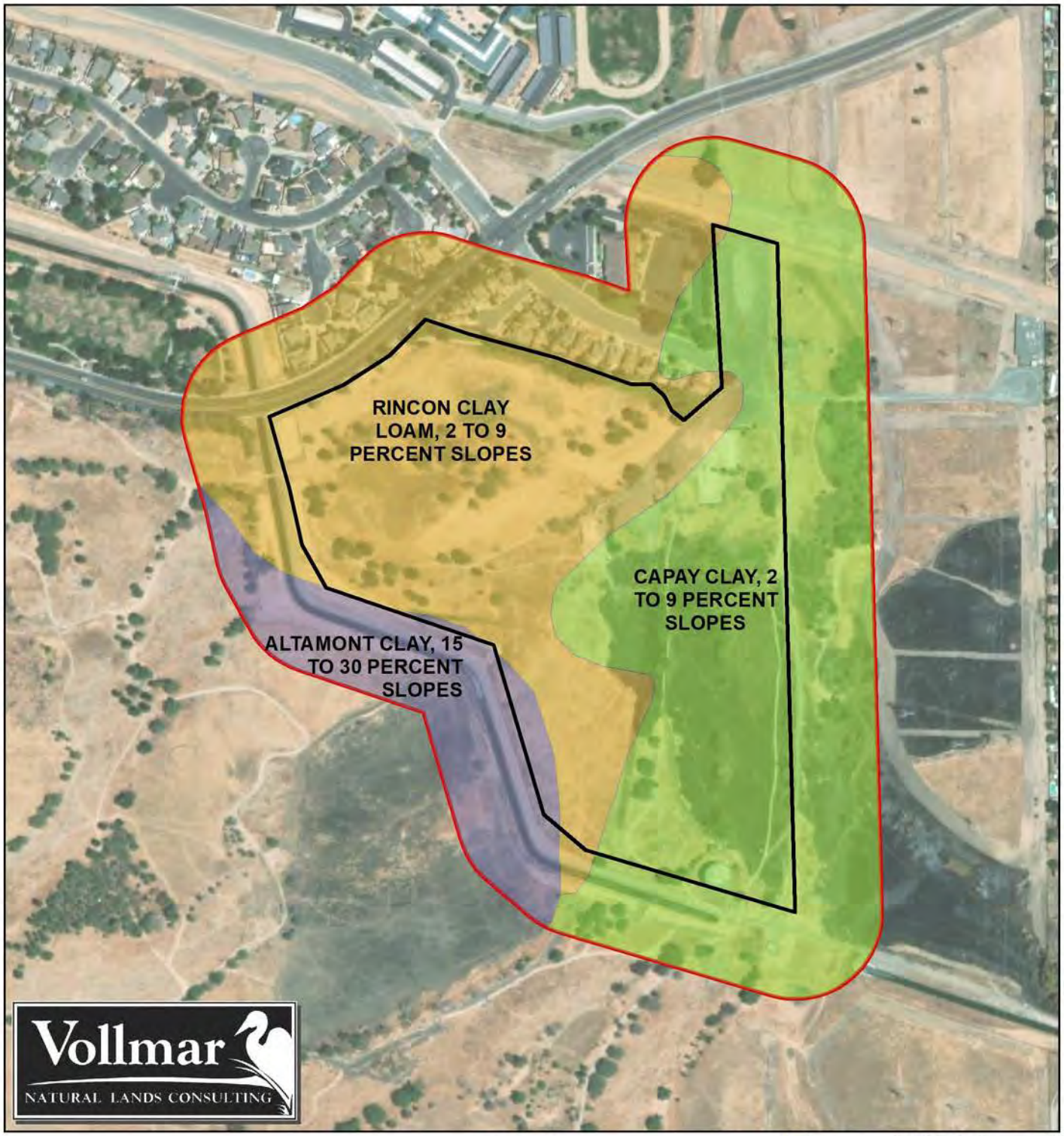
Prior to the site surveys, the U.S. Department of Agriculture (USDA) Soil Conservation Service (USDA-NRCS 2023) database was consulted to identify soil map units found within the Study Area. **Figure 5**, below, displays the soil map units found in the Study Area. The soil map units found within the Study Area are displayed in **Table 1** below.

Table 1. Soil Map Units Within Study Area

Soil Map Unit Name	Hydric Rating	Acres Within Study Area	Percent of Study Area
Altamont clay, 15 to 30 percent slopes	Not Hydric	8.9	11.3%
Capay clay, 2 to 9 percent slopes	Not Hydric	35.9	45.6%
Rincon clay loam, 2 to 9 percent slopes	Not Hydric	33.9	43.1%

Source: USDA Web Soil Survey (USDA-NRCS 2023).

The Altamont clay and Capay clay soil units are characterized by surface texture of clay, while the Rincon clay loam has a surface texture of clay loam. None of these soil units are composed of hydric soil. Two geological formations occur within the Study Area: the northern portion of the Study Area occurs within Qpc: Nonmarine (continental) sedimentary rocks (Pleistocene-Holocene) and the southern portion by the Qrv: Volcanic rocks (Holocene) – Recent (Holocene) volcanic flow rocks (CGS 2013). These geologic formations and soil map units are not associated with particular special-status plant species.



Legend

- Project Specific
- 250-foot Buffer of Project Specific
- Altamont Clay, 15-30% Slopes
- Capay Clay, 2-9% Slopes
- Rincon Clay Loam, 2-9% Slopes

Data Sources: VNLC, 2023 | City of Pittsburg, 2019
WSP, 2023 | ESRI/Maxar Aerial Imagery, 2023
USDA-NRCS, 2005
GIS/Cartography by: R. Miller, September 2023
Map File: 567_PSA_RP_Soils_A-P_2023_1024.mxd

FIGURE 5
Soil Unit Map

Pittsburg Data Center
City of Pittsburg, California

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1:5,000
1 inch = 417 feet

0 50 100 200 M
0 250 500 1,000 Ft

5.0 RESULTS

5.1 Summary of Results

No special-status plant species were observed during the 2023 field surveys. **Figure 6**, below, displays the natural communities identified within the Study Area and separately-delineated aquatic resources within the Study Area. **Appendix A** provides representative photographs of the Study Area. **Appendix B** provides a table of special-status plant species documented in the vicinity of the Study Area, along with information on the preferred habitat, microhabitat, elevation range, blooming period of each species, and an assessment of their potential to occur in the Study Area. **Appendix C** provides a list of all plant taxa identified within the Study Area.

5.2 Plant Species Observed

A total of 131 plant taxa were identified within the Study Area, none of which are special-status taxa. A summary of the plant taxa observed within the Study Area during the 2023 field surveys appears below in **Table 2**. A complete list of all plant taxa observed during the 2023 surveys is provided in **Appendix C**.

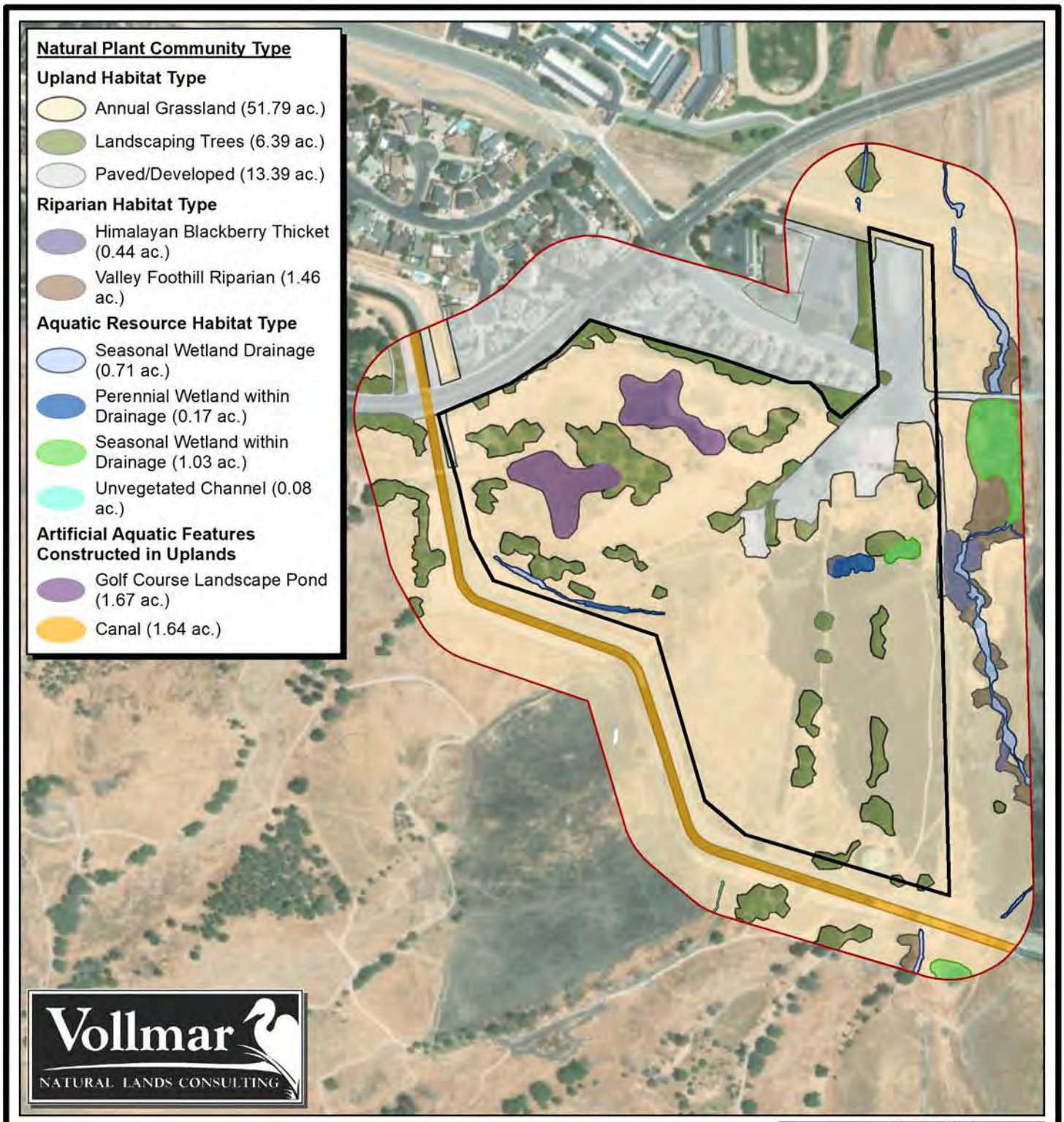
Table 2. Summary of Species Observed Within the Study Area

Species Status	Number of Species Observed in Study Area
Native Species	47
Non-native Species	84
Cal-IPC High Invasive	5
Cal-IPC Moderate Invasive	18
Cal-IPC Limited Invasive	18
Special-Status Species	0
Total Species Observed Within Study Area	131

Of the 131 plant taxa identified, 36% (47 species) were classified as native species, and 64% (84 species) were non-native species. Twenty-three of the non-native species (18% of all observed species) are rated by the California Invasive Plant Council as “moderate” or “high”.

5.2 Natural Communities

Natural communities documented within the Study Area are mapped in **Figure 6** below and described in **Sections 5.2.1-5.2.7**. Natural communities documented within the Study Area are listed in **Table 3**, also below.



Legend

- Project Specific Area
- 250-foot Buffer of Project Specific Area

FIGURE 6
Natural Communities Map

Pittsburg Data Center
City of Pittsburg, California

N
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1:5,000
1 inch = 417 feet

0 50 100 200 M
0 250 500 1,000 Ft

Data Sources: VNLC, 2023 | City of Pittsburg, 2019
WSP 2023 | ESRI/HERE Aerial Imagery, 2023
GIS/Cartography by R. Miller, October 2023
Map File: 567_PSA_RP_Habitats_A-P_2023_1024.mxd

Table 3. Summary of Natural Communities Within Study Area

Natural Community	Acres Within Study Area	Percent of Study Area
Upland Habitat Type		
Annual Grassland	51.79	66%
Landscaping Trees	6.39	8%
Paved/Developed	13.39	17%
Riparian Habitat Type		
Himalayan Blackberry Thicket	0.44	1%
Valley Foothill Riparian	1.46	2%
Aquatic Resource Habitat Type		
Seasonal Wetland Drainage	0.71	1%
Perennial Wetland within Drainage	0.17	<1%
Seasonal Wetland within Drainage	1.03	1%
Unvegetated Channel	0.08	<1%
Artificial Aquatic Features Constructed in Uplands		
Golf Course Landscape Pond	1.67	2%
Canal	1.64	2%

Sensitive natural communities are described at the alliance level and include alliances designated as such by CDFW in the List of California Sensitive Natural Communities (2023) or as MCV alliances with a state rank of S1-S3 or global rank of G1-G3. Wetland and riparian habitats are also classified as sensitive and are regulated by environmental regulatory agencies. Other natural communities are classified using the CWHR system used by the CDFW for the VegCAMP program, unless noted otherwise.

5.2.1 Annual Grassland (Upland Habitat)

Annual grasslands are open habitats composed primarily of annual plant species, and are typically dominated by introduced, annual grass species (Mayer and Laudenslayer 1998). Shrubs and trees are absent in this natural habitat type. Annual grassland is not classified as sensitive.

Within the Study Area, annual grassland covers 51.79 acres. This natural community occurred as a mixture of two alliances: the wild oats and brome grasslands (*Avena* spp. – *Bromus* spp. herbaceous semi-natural alliance) intermixed with thick stands of upland mustards or star-thistle fields (*Brassica nigra* – *Centaurea* [*solstitialis*, *melitensis*] herbaceous semi-natural alliance) (CNPS 2023a). Both of these alliances have a state rank of SNA and global rank of GNA and are not considered sensitive.

Wild oats and brome grasslands are defined by their herbaceous layer, which is open to continuous as well as by having over 30% relative cover of wild oat, false brome (*Brachypodium*), quaking grass (*Briza*), brome, filaree (*Erodium*) and/or cat's ear (*Hypochaeris*) species. Within the Study Area, this alliance was dominated by non-native annual grasses and herbs, including Italian rye

grass, ripgut brome, and soft chess. Wild oat (*Avena barbata*), Mediterranean barley, wall barley, horseweed (*Erigeron canadensis*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), and bristly ox-tongue (*Helminthotheca echioides*) were also common.

The upland mustards or star-thistle fields alliance is defined by the dominance of mustard species (*Brassica* spp., *Raphanus* spp., and/or *Hirschfeldia incana*), star-thistle (*Centaurea* spp.), and/or other non-native forbs at over 80% relative cover. Within the Study Area, the upland mustard fields were characterized by the dominance of black mustard with some cheeseweed (*Malva parviflora*). Additionally, stands of yellow star-thistle occurred along the eastern portion of the Study Area. The MCV notes that black mustard is common in dense stands in coastal to inland grassland with mild winter climates, especially in areas that have been left fallow, as the closed golf course has been (CNPS 2023a).

Higher diversity annual grasslands were present outside of the former golf course, along the previously undeveloped eastern and western edges of the Study Area. Several species of wildflowers were observed in these border areas during the April 2023 survey, including several species of lupine (*Lupinus affinis*, *L. bicolor*, *L. formosus* var. *formosus*, *L. nanus*), California poppy (*Eschscholzia californica*), purple owl's clover (*Castilleja exserta* ssp. *exserta*), and common fiddleneck (*Amsinckia menziesii*).

5.2.2. Landscaping Trees (Upland Habitat)

Stands of remnant, planted landscaping trees occur throughout the study area, covering a total of 6.39 acres. These trees were originally planted as part of the golf course landscaping and have persisted after its closure. This community aligns with the pepper tree or myoporum groves alliance (*Schinus* [*molle*, *terbinthifolius*] – *Myoporum laetum* forest and woodland semi-natural alliance) (CNPS 2023a). This alliance is defined by having trees less than 18 meters tall with an open to continuous canopy dominated by pepper tree (60%-80% relative cover). This alliance has a state rank of SNA and a global rank of GNA, and it is not classified as sensitive.

Within the Study Area, the landscaping trees are dominated by Peruvian pepper tree, with Bishop pine and some lodgepole pines (*Pinus contorta* ssp. *murrayana*) and ponderosa pine (*P. ponderosa*). Peruvian pepper tree is ranked as a limited invasive species by Cal-IPC (2023).

5.2.3 Paved Areas (Upland Habitat)

A total of 13.39 acres of paved areas occur within the Study Area, concentrated in the northern parcel. Paved areas include the defunct golf course parking lot, large sidewalks and concrete slabs adjacent to the parking lot and developed areas within the 250-foot buffer. Narrow concrete golf cart paths throughout the previous golf course are not mapped as paved areas in this report, as most of these have been overgrown with thick stands of black mustard (**Section 5.2.1**).

The paved areas are largely unvegetated, other than weedy species growing through cracks in the asphalt (approximately 5% absolute cover). Common invasive species in the paved areas include

black mustard (Cal-IPC Moderate), rough cat's-ear (*Hypochaeris radicata*, Cal-IPC Moderate), slender wild oat (Cal-IPC Moderate), cheeseweed (*Malva parviflora*), yellow star-thistle (Cal-IPC High), Mediterranean barley (Cal-IPC Moderate), and ripgut brome (Cal-IPC Moderate). This collection of weeds is not classified as sensitive.

5.2.4 Himalayan Blackberry Thicket (Riparian Habitat)

A total of 0.44 acre of the Study Area is covered with Himalayan blackberry thickets. This is a riparian scrub habitat composed of Himalayan blackberry at over 75% absolute cover. Himalayan blackberry thickets are located in the northeast portion of the Study Area, adjacent to a seasonal wetland drainage and a perennial wetland within a drainage (**Figure 6**).

Himalayan blackberry is an invasive species ranked highly invasive by Cal-IPC (2023). Natural communities dominated by invasive species are not typically considered sensitive; however, this is a riparian habitat adjacent to seasonal and perennial wetlands. Riparian habitats are classified as sensitive and are regulated by environmental regulatory agencies.

5.2.5 Valley Foothill Riparian (Riparian Habitat)

A total of 1.46 acres of Valley Foothill Riparian habitat occur within the Study Area. This habitat is described in the CWHR as having a canopy cover of 20-80%, composed of winter-deciduous trees (Mayer and Laudenslayer 1998). This habitat is described as having cottonwood (*Populus* sp.), California sycamore (*Platanus racemosa*), and valley oak (*Quercus lobata*) as common dominant species.

Within the Study Area, Valley Foothill Riparian habitat was composed of riparian trees along the seasonal wetlands and seasonal wetland drainages. This habitat is concentrated in the eastern portion of the Study Area (**Figure 7**). Dominant species included Fremont cottonwood, Siberian elm, Mexican fan palm, northern California black walnut, olive, and occasional Bishop pine. These trees occur at fairly low cover (approximately 30% absolute cover) and form an intermittent canopy. In the southern parcel of the Study Area, the Valley Foothill Riparian habitat is dominated by Peruvian pepper trees which are remnant landscaping trees. These trees are included in the Valley Foothill Riparian habitat because they are adjacent to the seasonal wetland drainage and contribute allochthonous material to the stream.

As a riparian habitat, the Valley Foothill Riparian areas are classified as a sensitive natural community.

5.2.6 Aquatic Resource Habitat Types

Several types of aquatic resource habitats were separately delineated by VNLC within the Study Area. Aquatic resources are all classified as sensitive and are regulated by environmental regulatory agencies. Summaries of the vegetation communities within aquatic resource habitats are provided below.

Seasonal Wetland Drainage. Several seasonal wetland drainages totaling 0.71 acres are located in the eastern portion of the Study Area. Dominant species in this habitat include Italian rye grass, prickly lettuce (*Lactuca serriola*), tall annual willowherb (*Epilobium brachycarpum*), annual beard grass (*Polypogon monspeliensis*), knotweed (*Polygonum aviculare*), curly dock (*Rumex crispus*), and spiny cocklebur (*Xanthium spinosum*).

Perennial Wetland Within Drainage. Two perennial wetlands (a total of 0.17 acres) are located in the northern parcel of the Study Area. Dominant species include broad-leaved cattail (*Typha latifolia*), curly dock, dallis grass (*Paspalum dilatatum*), alkali mallow (*Malvella leprosa*), and rescue grass (*Bromus catharticus* var. *catharticus*).

Seasonal Wetland Within Drainage. Seasonal wetlands within drainages cover 1.03 acres of the Study Area (**Figure 7**). Dominant herbaceous species included lamb's quarters (*Chenopodium album*), curly dock, cocklebur (*Xanthium strumarium*), tall annual willowherb, horseweed, dallis grass, tall flatsedge (*Cyperus eragrostis*), and barnyard grass (*Echinochloa crus-galli*).

Unvegetated Channel. A 0.08-acre unvegetated channel occurs south of the canal. This habitat is unvegetated.

5.2.7 Artificial Aquatic Features Constructed in Uplands

Several aquatic features are present in the Study Area which were constructed entirely within uplands. Because these features do not impound the flow of natural wetlands or Waters of the US (Waters), and do not replace the original channel of natural wetlands or Waters, these artificial features likely do not meet the criteria for jurisdictional Waters. These artificial habitats were separately delineated by VNLC within the Study Area. Summaries of the vegetation communities within artificial features are provided below.

Contra Costa Canal. The Contra Costa Canal is an aqueduct constructed in the 1930s and 1940s as part of the Bureau of Reclamation's Central Valley Project. The Bureau of Reclamation uses it to deliver Central Valley Project water from the Sacramento-San Joaquin Delta near Knightsen to the Contra Costa Water District, which delivers the water to customers in the east bay. This feature covers 1.64 acres of the Study Area, and it is unvegetated.

Golf Course Landscape Ponds. Two golf course landscape ponds (totaling 1.67 acres) were excavated within uplands in the study area. Following the closure of the course, these ponds appear to have transitioned into seasonal, rain-fed features. Dominant species within the basins included dotted smartweed (*Persicaria punctata*), Mediterranean barley, knotweed, Italian rye gras. Other common species within the ponds included rattail sixweeks grass (*Festuca myuros*), stinkwort (*Dittrichia graveolens*), and lamb's quarters. The margins of the golf course ponds had been invaded with species common in the annual grassland (**Section 5.2.1**). Dominant margin species included wall barley, short-pod mustard, ripgut brome, Italian rye grass, and rattail sixweeks grass.

5.3 Potential for Special-Status Plant Species Occurrences

The majority of the Study Area is composed of moderately- to highly-disturbed habitat. The former golf course is an area of higher disturbance, while the undeveloped grasslands surrounding the golf course are areas of lower disturbance. In total, there are three special-status plant taxa that may be considered to have at least a moderate potential to occur in the Study Area: big tarplant (*Blepharizonia plumosa*, CRPR 1B.1), Mt. Diablo fairy-lantern (*Calochortus pulchellus*, CRPR 1B.2), and Diablo helianthella (*Helianthella castanea*, CRPR 1B.2). These species are shaded in **Appendix B**.

Species listed in **Appendix B** are deemed to have a low potential to occur or not expected based on one or more of the following:

- Absence of suitable habitat within the Study Area.
- Absence of documented occurrences within the Project vicinity (approximately 5 miles).
- All of the documented occurrences in the Project vicinity are historical and/or are presumed extirpated.
- Suitable microhabitats (such as rocky outcroppings, gabbroic soils, serpentine soils, etc.) to support the species are absent or very minimal within the Study Area.
- The Study Area is well outside of the known elevation range for the plant taxa.

The natural community associated with the largest number of special-status plant species with potential to occur in the Study Area is annual grassland, which is known to support 15 target taxa listed in **Appendix B**. However, much of the annual grassland within the Study Area occurs within the former golf course. This disturbed / previously-developed area is unlikely to support special-status plant taxa. The undeveloped annual grasslands outside of the former golf course display a higher diversity of native species – these areas are more likely to support special-status plant taxa.

After thorough, protocol-level surveys, no special status plant species were observed within the Study Area. A total of 1.90 acres of riparian habitats occur within the Study Area, including Himalayan blackberry thicket (0.44 acre) and Valley Foothill Riparian habitats (1.46 acres). Separately delineated aquatic resources cover 1.99 acres of the Study Area. Aquatic resource habitat types include seasonal wetland drainages (0.71 acres), perennial wetlands within a drainage (0.17 acre), seasonal wetlands within a drainage (1.03 acres), and unvegetated channel (0.71 acre).

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APPENDIX A

Representative Photographs of the Study Area

Photo 1. Representative photo of Study Area, annual grassland dominated by non-native annual grasses and large patches of black mustard (*Brassica nigra*). (4/12/2023)

Photo 2. Remnant golf cart path covered by overgrown black mustard. (4/12/2023)

Photo 3. Representative view of landscaping trees, dominated by Peruvian pepper tree (*Schinus molle*) and Bishop pine (*Pinus muricata*). (5/31/2023)

Photo 4. Representative view of the paved areas with weedy species growing in asphalt cracks. (5/19/2023)

Photo 5. Valley foothill riparian habitat with Pacific willow (*Salix lasiandra* var. *lasiandra*), Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia* var. *agrifolia*), and cocklebur (*Xanthium strumarium*). (7/12/2023)

Photo 6. Perennial wetland dominated by broad-leaved cattail (*Typha latifolia*), with Himalayan blackberry (*Rubus armeniacus*) thickets behind. (4/12/2023)

Photo 7. Remnant golf pond with margins dominated by upland species including wall barley (*Hordeum murinum*) and short pod mustard (*Hirschfeldia incana*). (7/12/2023)

APPENDIX B

Special-Status Plant Taxa Documented in the Study Area Vicinity

Table B-1. Special-Status Plant Taxa Documented in the Study Area Vicinity

Scientific Name **Common Name (Family)**	**FESA/CESA/ CRPR[1]**	**Habitat; Microhabitat: Microhabitat Details, Microhabitat; Elevation (feet); Blooming Period[2]**	**Potential to Occur Within the Study Area**
Amsinckia grandiflora Large-flowered fiddleneck (Boraginaceae)	FE/CE/1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: none; 855-1,805 feet; (March) April-May	**Not Expected.** The Study Area is outside the elevation range of this species.
Arctostaphylos auriculata Mt. Diablo manzanita (Ericaceae)	--/--/1B.3	Chaparral (sandstone), Cismontane woodland; Microhabitat: none; 445-2,135 feet; January-March	**Not Expected.** The Study Area does not contain suitable habitat for this species. The nearest documented CNDDB occurrence is approximately 3.6 miles from the Study Area.
Arctostaphylos manzanita ssp. *laevigata* Contra Costa manzanita (Ericaceae)	--/--/1B.2	Chaparral (rocky); Microhabitat: none; 1,410-3,610 feet; January-March (April)	**Not Expected.** The Study Area is outside the elevation range of this species.
Astragalus tener var. *tener* Alkali milk-vetch (Fabaceae)	--/--/1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools; Microhabitat: Alkaline; 5-195 feet; March-June	**Low Potential.** Valley and foothill grassland and moderately alkaline soils occur within the Study Area. The nearest documented CNDDB occurrence is approximately 5.7 miles from the study area in 2013.
Blepharizonia plumosa Big tarplant (Asteraceae)	--/--/1B.1	Valley and foothill grassland; Microhabitat: Clay (usually); 100-1,655 feet; July-October	**Moderate Potential.** Extensive but moderately disturbed valley and foothill grasslands and clay soils occur within the Study Area. The nearest documented CNDDB occurrence is approximately 1.1 mile from the Study Area. After a careful protocol-level search, this species was not observed within the Study Area.

Scientific Name **Common Name (Family)**	**FESA/CESA/ CRPR[1]**	**Habitat; Microhabitat: Microhabitat Details, Microhabitat; Elevation (feet); Blooming Period[2]**	**Potential to Occur Within the Study Area**
Calochortus pulchellus Mt. Diablo fairy-lantern (Liliaceae)	--/--/1B.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland; Microhabitat: none; 100-2,755 feet; April-June	**Moderate Potential.** Valley and foothill grassland occurs within the Study Area. The nearest documented CNDDB occurrence is approximately 3.6 miles from the Study Area, from 2003. After a careful protocol-level search, this species was not observed within the Study Area.
Chloropyron molle ssp. *molle* Soft salty bird's-beak (Orobanchaceae)	FE/CR/1B.2	Marshes and swamps (coastal salt); Microhabitat: none; 0-10 feet; June-November	**Not Expected.** The Study Area is outside the elevation range of this species.
Cicuta maculata var. *bolanderi* Bolander's water-hemlock (Apiaceae)	--/--/2B.1	Marshes and swamps (brackish, coastal, freshwater); Microhabitat: none; 0-655 feet; July-September	**Not Expected.** No suitable marsh habitat occurs within the Study Area. The nearest documented CNDDB occurrence is approximately 2.9 miles from the Study Area.
Delphinium californicum ssp. *interius* Hospital Canyon larkspur (Ranunculaceae)	--/--/1B.2	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub; Microhabitat: none; 640-3,595 feet; April-June	**Not Expected.** The Study Area does not contain suitable habitat for this species, and there are no documented CNDDB occurrences within 5 miles.
Downingia pusilla Dwarf downingia (Campanulaceae)	--/--/2B.2	Valley and foothill grassland (mesic), Vernal pools; Microhabitat: none; 5-1,460 feet; March-May	**Not Expected.** Valley and foothill grassland occurs within the Study Area; however, there is no suitable vernal pool microhabitat within the Study Area and there are no documented CNDDB occurrences within 5 miles.
Eriastrum ertterae Lime Ridge eriastrum (Polemoniaceae)	--/CC/1B.1	Chaparral (edges, openings); Microhabitat: sometimes semi-alkaline, Alkaline (sometimes), Sandy; 655-950 feet; June-July	**Not Expected.** The Study Area does not contain suitable habitat for this species, and there are no documented CNDDB occurrences within 5 miles.

Scientific Name **Common Name (Family)**	**FESA/CESA/ CRPR[1]**	**Habitat; Microhabitat: Microhabitat Details, Microhabitat; Elevation (feet); Blooming Period[2]**	**Potential to Occur Within the Study Area**
Eriogonum truncatum Mt. Diablo buckwheat (Polygonaceae)	--/--/1B.1	Chaparral, Coastal scrub, Valley and foothill grassland; Microhabitat: Sandy; 10-1,150 feet; April-September (November-December)	**Low Potential.** The nearest documented CNDDB occurrence of this species is approximately 5.6 miles away, from 2016. Valley and foothill grassland and limited sandy soils occur within the Study Area; however, there are no documented CNDDB occurrences within 5 miles.
Eryngium jepsonii Jepson's coyote-thistle (Apiaceae)	--/--/1B.2	Valley and foothill grassland, Vernal pools; Microhabitat: Clay; 10-985 feet; April-August	**Not Expected.** Valley and foothill grassland and clay soils occur within the Study Area, however, there is no suitable vernal pool microhabitat within the Study Area. The nearest documented CNDDB occurrence is approximately 3.2 miles from the Study Area from 1998.
Erysimum capitatum var. *angustatum* Contra Costa wallflower (Brassicaceae)	FE/CE/1B.1	Inland dunes; Microhabitat: none; 10-65 feet; March-July	**Not Expected.** The Study Area does not contain suitable habitat for this species and almost all of the Study Area is outside the elevation range of this species.
Extriplex joaquinana San Joaquin spearscale (Chenopodiaceae)	--/--/1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland; Microhabitat: Alkaline; 5-2,740 feet; April-October	**Not Expected.** Valley and foothill grassland as well as sandy soils and moderately alkaline soils occur within the Study Area; however, there are no documented CNDDB occurrences within 5 miles. The nearest occurrence is a historical occurrence 6.4 miles from the Study Area, from 1946.
Fritillaria liliacea Fragrant fritillary (Liliaceae)	--/--/1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland; Microhabitat: Serpentinite (often); 10-1,345 feet; February-April	**Not Expected.** Valley and foothill grassland occurs within the Study Area; however, there are no documented CNDDB occurrences within 5 miles. The nearest occurrence is a historical occurrence 6.7 miles from the Study Area, from 1993.

Scientific Name **Common Name (Family)**	**FESA/CESA/ CRPR[1]**	**Habitat; Microhabitat: Microhabitat Details, Microhabitat; Elevation (feet); Blooming Period[2]**	**Potential to Occur Within the Study Area**
Helianthella castanea Diablo helianthella (Asteraceae)	--/--/1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; Microhabitat: Rocky (usually); 195-4,265 feet; March-June	**Moderate Potential.** The nearest documented CNDDB occurrence is approximately 2.0 miles from the Study Area, from 2012. Disturbed valley and foothill grassland and riparian woodland habitats occur within the Study Area. However, suitable rocky microhabitats do not occur within the Study Area. After a careful search protocol-level search, this species was not observed within the Study Area.
Hesperolinon breweri Brewer's western flax (Linaceae)	--/--/1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland; Microhabitat: Serpentine (usually); 100-3,100 feet; May-July	**Low Potential.** The nearest documented CNDDB occurrence is approximately 4.0 miles from the Study Area from 2009. Valley and foothill grassland occurs within the Study Area; however, serpentine microhabitat does not occur within the Study Area.
Lasthenia conjugens Contra Costa goldfields (Asteraceae)	FE/--/1B.1	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools; Microhabitat: Mesic; 0-1,540 feet; March-June	**Low Potential.** Valley and foothill grassland and mesic areas occur within the Study Area; however, there are no documented CNDDB occurrences within 5 miles. The nearest occurrence is a historical occurrence 5.8 miles away, from 1895.
Lathyrus jepsonii var. *jepsonii* Delta tule pea (Fabaceae)	--/--/1B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-15 feet; May-July (August-September)	**Not Expected.** The Study Area is outside the elevation range of this species.
Lilaeopsis masonii Mason's lilaeopsis (Apiaceae)	--/CR/1B.1	Marshes and swamps (brackish, freshwater), Riparian scrub; Microhabitat: none; 0-35 feet; April-November	**Not Expected.** The Study Area is outside the elevation range of this species.

Scientific Name **Common Name (Family)**	**FESA/CESA/ CRPR[1]**	**Habitat; Microhabitat: Microhabitat Details, Microhabitat; Elevation (feet); Blooming Period[2]**	**Potential to Occur Within the Study Area**
Lilium rubescens Redwood lily (Liliaceae)	--/--/4.2	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest; Microhabitat: Roadsides (sometimes), Serpentinite (sometimes); 100-6,265 feet; (March) April-August (September)	**Not Expected.** The Study Area does not contain suitable habitat for this species. There are no documented CNDDB occurrences of this species within 5 miles.
Limosella australis Delta mudwort (Scrophulariaceae)	--/--/2B.1	Marshes and swamps (brackish, freshwater), Riparian scrub; Microhabitat: Usually mud banks, Streambanks (usually); 0-10 feet; May-August	**Not Expected.** The Study Area is outside the elevation range of this species.
Madia radiata Showy golden madia (Asteraceae)	--/--/1B.1	Cismontane woodland, Valley and foothill grassland; Microhabitat: none; 80-3,985 feet; March-May	**Low Potential.** The only documented CNDDB occurrence within 5 miles is a historical occurrence approximately 3.4 miles from the Study Area, from 1938. Valley and foothill grassland occurs within the Study Area. After a careful search protocol-level search, this species was not observed within the Study Area.
Malacothamnus hallii Hall's bush-mallow (Malvaceae)	--/--/1B.2	Chaparral, Coastal scrub; Microhabitat: none; 35-2,495 feet; (April) May-September (October)	**Not Expected.** The Study Area does not contain suitable habitat for this species. The only documented CNDDB occurrence within 5 miles is a historical occurrence approximately 3.4 miles from the Study Area, from 1931.
Navarretia gowenii Lime Ridge navarretia (Polemoniaceae)	--/--/1B.1	Chaparral; Microhabitat: none; 590-1,000 feet; May-June	**Not Expected.** The Study Area does not contain suitable habitat for this species and the Study Area is outside the elevation range of this species.

Scientific Name **Common Name (Family)**	**FESA/CESA/ CRPR[1]**	**Habitat; Microhabitat: Microhabitat Details, Microhabitat; Elevation (feet); Blooming Period[2]**	**Potential to Occur Within the Study Area**
Navarretia nigelliformis ssp. *radians* Shining navarretia (Polemoniaceae)	--/--/1B.2	Cismontane woodland, Valley and foothill grassland, Vernal pools; Microhabitat: Clay (sometimes); 215-3,280 feet; (March) April-June	**Low Potential.** The nearest CNDDB occurrence is approximately 5.5 miles from the Study Area, from 2008. Disturbed valley and foothill grassland and mesic areas occur within the Study Area.
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose (Onagraceae)	FE/CE/1B.1	Inland dunes; Microhabitat: none; 0-100 feet; March-September	**Not Expected.** The Study Area does not contain suitable habitat for this species. The nearest documented CNDDB occurrence is approximately 2.4 miles from the Study Area, recorded in 2001.
Senecio aphanactis chaparral ragwort (Asteraceae)	--/--/2B.2	Chaparral, Cismontane woodland, Coastal scrub; Microhabitat: Alkaline (sometimes); 50-2,625 feet; January-April (May)	**Not Expected.** The only documented CNDDB occurrence within 5 miles is a historical occurrence approximately 3.4 miles from the Study Area, from 1933. The Study Area does not contain suitable habitat for this species.
Symphyotrichum lentum Suisun Marsh aster (Asteraceae)	--/--/1B.2	Marshes and swamps (brackish, freshwater); Microhabitat: none; 0-10 feet; (April) May-November	**Not Expected.** The Study Area is outside the elevation range of this species.
Tropidocarpum capparideum Caper-fruited tropidocarpum (Brassicaceae)	--/--/1B.1	Valley and foothill grassland (alkaline hills); Microhabitat: none; 5-1,495 feet; March-April	**Not Expected.** Valley and foothill grassland and moderately alkaline soils occur within the Study Area. The only documented CNDDB occurrence within 10 miles of the Study Area is a historical collection from 1896, approximately 4.1 miles away.

Footnotes:

1 Rankings from CNDDB (September 2023) and CNPS (2023). See Column Header Categories and Abbreviations Below.

2 Habitat information from CNPS Rare Plan Program (CNPS 2023), Calflora (Calflora 2023) and the Jepson eFlora Project (Jepson 2023).

Column Header Categories and Abbreviations:

FESA: Listing status under the federal Endangered Species Act (ESA)

FE = Federal Endangered; FT = Federal Threatened; FC = Federal Candidate; FD = Federally Delisted

CESA: Listing status under the California state Endangered Species Act (CESA)

SE = State Endangered; SD = State Delisted; ST = State Threatened.

CRPR: CNPS rankings for rare plants (CNPS 2023) –

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)

4 = Plants of limited distribution (a watch list); n/a = not applicable

CRPR Threat Code extensions and their meanings:

1 - Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

2 – Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat)

3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)" (CNPS 2022).

Potential to Occur:

Not Expected: Habitat in and adjacent to the Study Area is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

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

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

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

Present: Detected or documented on-site.

APPENDIX C

List of All Vascular Plant Taxa Identified Within the Study Area

Table C-1. List of All Vascular Plant Taxa Identified Within the Study Area

Scientific Name	Common Name	Family	Native Or Naturalized	Cal-IPC Rank	CRPR	State Status	Federal Status
Amaranthus albus	Tumbleweed	Amaranthaceae	Naturalized	N/A	N/A	N/A	N/A
Amaranthus blitoides	Procumbent pigweed	Amaranthaceae	Native	N/A	N/A	N/A	N/A
Schinus molle	Peruvian pepper tree	Anacardiaceae	Naturalized	Limited	N/A	N/A	N/A
Foeniculum vulgare	Fennel	Apiaceae	Naturalized	High	N/A	N/A	N/A
Torilis arvensis	Tall sock-destroyer	Apiaceae	Naturalized	Moderate	N/A	N/A	N/A
Asclepias fascicularis	Narrow-leaf milkweed	Apocynaceae	Native	N/A	N/A	N/A	N/A
Hedera canariensis	Canary Islands ivy	Araliaceae	Naturalized	High	N/A	N/A	N/A
Phoenix canariensis	Canary Island palm	Arecaceae	Naturalized	Limited	N/A	N/A	N/A
Aloe sp.	Aloe	Asphodelaceae	Naturalized	N/A	N/A	N/A	N/A
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	Asteraceae	Naturalized	Moderate	N/A	N/A	N/A
Centaurea solstitialis	Yellow star-thistle	Asteraceae	Naturalized	High	N/A	N/A	N/A
Cynara cardunculus	Artichoke	Asteraceae	Naturalized	N/A	N/A	N/A	N/A
Dittrichia graveolens	Stinkwort	Asteraceae	Naturalized	Moderate	N/A	N/A	N/A
Erigeron canadensis	Horseweed	Asteraceae	Native	N/A	N/A	N/A	N/A
Grindelia camporum	Great Valley gumweed	Asteraceae	Native	N/A	N/A	N/A	N/A
Helminthotheca echioides	Bristly ox-tongue	Asteraceae	Naturalized	Limited	N/A	N/A	N/A
Hypochaeris glabra	Smooth cat's-ear	Asteraceae	Naturalized	Limited	N/A	N/A	N/A
Hypochaeris radicata	Rough cat's-ear	Asteraceae	Naturalized	Moderate	N/A	N/A	N/A
Lactuca serriola	Prickly lettuce	Asteraceae	Naturalized	N/A	N/A	N/A	N/A
Pseudognaphalium californicum	Ladies' tobacco	Asteraceae	Native	N/A	N/A	N/A	N/A
Senecio vulgaris	Common groundsel	Asteraceae	Naturalized	N/A	N/A	N/A	N/A
Silybum marianum	Milk thistle	Asteraceae	Naturalized	Limited	N/A	N/A	N/A
Sonchus asper ssp. *asper*	Prickly sow thistle	Asteraceae	Naturalized	N/A	N/A	N/A	N/A
Sonchus oleraceus	Common sow thistle	Asteraceae	Naturalized	N/A	N/A	N/A	N/A
Xanthium spinosum	Spiny cocklebur	Asteraceae	Naturalized	N/A	N/A	N/A	N/A

Scientific Name	Common Name	Family	Native Or Naturalized	Cal-IPC Rank	CRPR	State Status	Federal Status
Xanthium strumarium	Cocklebur	Asteraceae	Native	N/A	N/A	N/A	N/A
Amsinckia menziesii	Common fiddleneck	Boraginaceae	Native	N/A	N/A	N/A	N/A
Brassica nigra	Black mustard	Brassicaceae	Naturalized	Moderate	N/A	N/A	N/A
Capsella bursa-pastoris	Shepherd's purse	Brassicaceae	Naturalized	N/A	N/A	N/A	N/A
Hirschfeldia incana	Short-pod mustard	Brassicaceae	Naturalized	Moderate	N/A	N/A	N/A
Lepidium didymum	Lesser swine cress	Brassicaceae	Naturalized	N/A	N/A	N/A	N/A
Sinapis arvensis	Charlock	Brassicaceae	Naturalized	Limited	N/A	N/A	N/A
Spergularia marina	Saltmarsh sand-spurrey	Caryophyllaceae	Native	N/A	N/A	N/A	N/A
Spergularia rubra	Red sand-spurrey	Caryophyllaceae	Naturalized	N/A	N/A	N/A	N/A
Stellaria media	Common chickweed	Caryophyllaceae	Naturalized	N/A	N/A	N/A	N/A
Chenopodium album	Lamb's quarters	Chenopodiaceae	Naturalized	N/A	N/A	N/A	N/A
Convolvulus arvensis	Bindweed	Convolvulaceae	Naturalized	N/A	N/A	N/A	N/A
Cuscuta campestris	Field dodder	Convolvulaceae	Native	N/A	N/A	N/A	N/A
Marah fabacea	California man-root	Cucurbitaceae	Native	N/A	N/A	N/A	N/A
Sequoia sempervirens	Coast redwood	Cupressaceae	Native	N/A	N/A	N/A	N/A
Bolboschoenus maritimus ssp. *paludosus*	Alkali bulrush	Cyperaceae	Native	N/A	N/A	N/A	N/A
Cyperus eragrostis	Tall flatsedge	Cyperaceae	Native	N/A	N/A	N/A	N/A
Croton setigerus	Turkey-mullein	Euphorbiaceae	Native	N/A	N/A	N/A	N/A
Acmispon americanus var. *americanus*	Spanish lotus	Fabaceae	Native	N/A	N/A	N/A	N/A
Lupinus affinis	Fleshy lupine	Fabaceae	Native	N/A	N/A	N/A	N/A
Lupinus bicolor	Miniature lupine	Fabaceae	Native	N/A	N/A	N/A	N/A
Lupinus formosus var. *formosus*	Summer lupine	Fabaceae	Native	N/A	N/A	N/A	N/A
Lupinus microcarpus var. *microcarpus*	Chick lupine	Fabaceae	Native	N/A	N/A	N/A	N/A
Lupinus nanus	Sky lupine	Fabaceae	Native	N/A	N/A	N/A	N/A

Scientific Name	Common Name	Family	Native Or Naturalized	Cal-IPC Rank	CRPR	State Status	Federal Status
Medicago polymorpha	Burclover	Fabaceae	Naturalized	Limited	N/A	N/A	N/A
Melilotus albus	White sweetclover	Fabaceae	Naturalized	N/A	N/A	N/A	N/A
Melilotus indicus	Sourclover	Fabaceae	Naturalized	N/A	N/A	N/A	N/A
Trifolium hirtum	Rose clover	Fabaceae	Naturalized	Limited	N/A	N/A	N/A
Vicia sativa ssp. *sativa*	Spring vetch	Fabaceae	Naturalized	N/A	N/A	N/A	N/A
Quercus agrifolia var. *agrifolia*	Coast live oak	Fagaceae	Native	N/A	N/A	N/A	N/A
Quercus ilex (cultivated)	Holly oak	Fagaceae	Naturalized	N/A	N/A	N/A	N/A
Quercus lobata	Valley oak	Fagaceae	Native	N/A	N/A	N/A	N/A
Erodium cicutarium	Redstem filaree	Geraniaceae	Naturalized	Limited	N/A	N/A	N/A
Erodium moschatum	Greenstem filaree	Geraniaceae	Naturalized	N/A	N/A	N/A	N/A
Geranium dissectum	Cutleaf geranium	Geraniaceae	Naturalized	Limited	N/A	N/A	N/A
Juglans hindsii	Northern California black walnut	Juglandaceae	Native	N/A	N/A	N/A	N/A
Juncus bufonius var. *bufonius*	Toad rush	Juncaceae	Native	N/A	N/A	N/A	N/A
Juncus bufonius var. *congestus*	Clustered toad rush	Juncaceae	Naturalized	N/A	N/A	N/A	N/A
Lythrum hyssopifolia	Hyssop loosestrife	Lythraceae	Naturalized	Limited	N/A	N/A	N/A
Malva parviflora	Cheeseweed	Malvaceae	Naturalized	N/A	N/A	N/A	N/A
Malvella leprosa	Alkali mallow	Malvaceae	Native	N/A	N/A	N/A	N/A
Claytonia perfoliata ssp. *perfoliata*	Miner's lettuce	Montiaceae	Native	N/A	N/A	N/A	N/A
Ficus carica	Edible fig	Moraceae	Naturalized	Moderate	N/A	N/A	N/A
Lysimachia arvensis	Scarlet pimpernel	Myrsinaceae	Naturalized	N/A	N/A	N/A	N/A
Eucalyptus camaldulensis	Red gum	Myrtaceae	Naturalized	Limited	N/A	N/A	N/A
Eucalyptus globulus	Blue gum	Myrtaceae	Naturalized	Moderate	N/A	N/A	N/A
Fraxinus uhdei	Shamel ash	Oleaceae	Naturalized	N/A	N/A	N/A	N/A
Olea europaea	Olive	Oleaceae	Naturalized	Limited	N/A	N/A	N/A

Scientific Name	Common Name	Family	Native Or Naturalized	Cal-IPC Rank	CRPR	State Status	Federal Status
Epilobium brachycarpum	Tall annual willowherb	Onagraceae	Native	N/A	N/A	N/A	N/A
Bellardia trixago	Mediterranean linseed	Orobanchaceae	Naturalized	Limited	N/A	N/A	N/A
Castilleja exserta ssp. exserta	Purple owl's clover	Orobanchaceae	Native	N/A	N/A	N/A	N/A
Eschscholzia californica	California poppy	Papaveraceae	Native	N/A	N/A	N/A	N/A
Abies sp. (horticultural variety)	Fir	Pinaceae	Naturalized	N/A	N/A	N/A	N/A
Cedrus deodara (cultivated)	Deodar cedar	Pinaceae	Naturalized	N/A	N/A	N/A	N/A
Pinus contorta ssp. *murrayana*	Lodgepole pine	Pinaceae	Native	N/A	N/A	N/A	N/A
Pinus muricata	Bishop pine	Pinaceae	Native	N/A	N/A	N/A	N/A
Pinus ponderosa	Ponderosa pine	Pinaceae	Native	N/A	N/A	N/A	N/A
Pseudotsuga menziesii var. *menziesii* (cone only)	Douglas-fir	Pinaceae	Native	N/A	N/A	N/A	N/A
Pittosporum tobira	Mock orange	Pittosporaceae	Naturalized	N/A	N/A	N/A	N/A
Kickxia elatine	Sharpleaf cancerwort	Plantaginaceae	Naturalized	N/A	N/A	N/A	N/A
Plantago major	Common plantain	Plantaginaceae	Naturalized	N/A	N/A	N/A	N/A
Avena barbata	Slender wild oat	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Brachypodium distachyon	False brome	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Bromus catharticus var. *catharticus*	Rescue grass	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Bromus diandrus	Ripgut brome	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Bromus hordeaceus	Soft chess	Poaceae	Naturalized	Limited	N/A	N/A	N/A
Bromus madritensis	Compact brome	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Crypsis schoenoides	Swamp prickle grass	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Cynodon dactylon	Bermudagrass	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Distichlis spicata	Salgrass	Poaceae	Native	N/A	N/A	N/A	N/A
Echinochloa crus-galli	Barnyardgrass	Poaceae	Naturalized	N/A	N/A	N/A	N/A

Scientific Name	Common Name	Family	Native Or Naturalized	Cal-IPC Rank	CRPR	State Status	Federal Status
Elymus triticoides	Beardless wild rye	Poaceae	Native	N/A	N/A	N/A	N/A
Festuca bromoides	Brome fescue	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Festuca myuros	Rattail sixweeks grass	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Festuca perennis	Italian rye grass	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Hordeum murinum	Wall barley	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Melica californica	California melic	Poaceae	Native	N/A	N/A	N/A	N/A
Paspalum dilatatum	Dallis grass	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Phalaris aquatica	Harding grass	Poaceae	Naturalized	Moderate	N/A	N/A	N/A
Poa annua	Annual blue grass	Poaceae	Naturalized	N/A	N/A	N/A	N/A
Poa secunda	Nevada blue grass	Poaceae	Native	N/A	N/A	N/A	N/A
Polypogon monspeliensis	Annual beard grass	Poaceae	Naturalized	Limited	N/A	N/A	N/A
Persicaria lapathifolia	Willow weed	Polygonaceae	Native	N/A	N/A	N/A	N/A
Persicaria maculosa	Lady's thumb	Polygonaceae	Naturalized	N/A	N/A	N/A	N/A
Persicaria punctata	Doted smartweed	Polygonaceae	Native	N/A	N/A	N/A	N/A
Polygonum aviculare	Knotweed	Polygonaceae	Naturalized	N/A	N/A	N/A	N/A
Rumex crispus	Curly dock	Polygonaceae	Naturalized	Limited	N/A	N/A	N/A
Portulaca oleracea	Purslane	Portulacaceae	Naturalized	N/A	N/A	N/A	N/A
Prunus caroliniana	Carolina laurelcherry	Rosaceae	Naturalized	N/A	N/A	N/A	N/A
Prunus cerasifera	Cherry plum	Rosaceae	Naturalized	Limited	N/A	N/A	N/A
Prunus domestica	European plum	Rosaceae	Naturalized	N/A	N/A	N/A	N/A
Prunus emarginata	Bitter cherry	Rosaceae	Native	N/A	N/A	N/A	N/A
Rubus armeniacus	Himalayan blackberry	Rosaceae	Naturalized	High	N/A	N/A	N/A
Galium aparine	Goose grass	Rubiaceae	Native	N/A	N/A	N/A	N/A
Populus fremontii ssp. *fremontii*	Fremont cottonwood	Salicaceae	Native	N/A	N/A	N/A	N/A

Scientific Name	Common Name	Family	Native Or Naturalized	Cal-IPC Rank	CRPR	State Status	Federal Status
Salix gooddingii	Goodding's black willow	Salicaceae	Native	N/A	N/A	N/A	N/A
Salix lasiandra var. *lasiandra*	Pacific willow	Salicaceae	Native	N/A	N/A	N/A	N/A
Myoporum laetum	Myoporum	Scrophulariaceae	Naturalized	Moderate	N/A	N/A	N/A
Nicotiana glauca	Tree tobacco	Solanaceae	Naturalized	Moderate	N/A	N/A	N/A
Solanum nigrum	Black nightshade	Solanaceae	Naturalized	N/A	N/A	N/A	N/A
Tamarix parviflora	Smallflower tamarisk	Tamaricaceae	Naturalized	High	N/A	N/A	N/A
Dipterostemon capitatus	Bluedicks	Themidaceae	Native	N/A	N/A	N/A	N/A
Triteleia laxa	Ithuriel's spear	Themidaceae	Native	N/A	N/A	N/A	N/A
Typha latifolia	Broad-leaved cattail	Typhaceae	Native	N/A	N/A	N/A	N/A
Ulmus pumila	Siberian elm	Ulmaceae	Naturalized	N/A	N/A	N/A	N/A

APPENDIX D

ANIMALS SPECIES IDENTIFIED WITHIN THE STUDY AREA

Appendix D. Wildlife Species Documented within the Delta View Golf Course Project Specific Area. Raptor and other Surveys Conducted by VNLC, April 2022 to July 2023

Scientific Name	Common Name	Notes
Birds		
Accipiter cooperii	Cooper's Hawk	
Agelaius phoeniecus	Red-winged Blackbird	Territorial display
Anas platyrynchos	Mallard	
Aphelocoma californica	California Scrub-Jay	
Bubo virgianus	Great Horned Owl	2 fledglings and adults
Buteo jamaicensis	Red-tailed Hawk	Possible nest
Calypte anna	Anna's Hummingbird	
Cathartes aura	Turkey Vulture	
Charadrius vociferus	Killdeer	
Columba livia	Rock Pigeon	
Corvus brachyrhynchos	American Crow	Nesting
Corvus corax	Common Raven	
Elanus leucurus	White-tailed Kite	
Falco sparverius	American Kestrel	Possible nest
Haemorhos mexicanus	House Finch	
haemorhous purpureus	Purple Finch	
Icterus bullockii	Bullock's Oriole	
Meleagris gallopavo	Wild Turkey	
Melozone crissalis	California Towhee	
Mimus polyglottos	Northern Mockingbird	
Molothrus ater	Brown-headed Cowbird	
myiarchus cinerascens	Ash-throated Flycatcher	
Patagionas fasciata	Band-tailed Pigeon	
Pipilo maculatus	Spotted Towhee	
Psaltriparus minimus	Bushtit	
Sayornis nigricans	Black Phoebe	
Sayornis saya	Say's Phoebe	
Setophaga coronata	Yellow-rumped Warbler	
Sialia mexicana	Western bluebird	Possible nest
Streptopelia decaocto	Eurasian-collared Dove	
Sturnella neglecta	Western Meadowlark	
Sturnus vulgaris	European Starling	
Tachycineta bicolor	Tree Swallow	
Turdus migratorius	American Robin	
Tyrannus verticalis	Western Kingbird	
Zenaida macroura	Mourning Dove	
Zonotrichia atricapilla	Golden-crowned Sparrow	
Zonotrichia leucophrys	White-crowned Sparrow	

*Listed animal species may have been seen or heard outside of the Project Specific Area, but within 1 mile.

APPENDIX E

USFWS INFORMATION FOR PLANNING AND CONSULTATION LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: 09/28/2024 01:43:54 UTC
Project Code: 2024-0150743
Project Name: Pittsburg Data Hub

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2024-0150743
Project Name: Pittsburg Data Hub
Project Type: Commercial Development
Project Description: Redevelopment of 35.7 acres of a closed golf course as a data center.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.011624,-121.91152427962939,14z

Counties: Contra Costa County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 13 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered

BIRDS

NAME	STATUS
California Least Tern *Sternula antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
California Ridgway"s Rail *Rallus obsoletus obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered

REPTILES

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened
Foothill Yellow-legged Frog *Rana boylii* Population: Central Coast Distinct Population Segment (Central Coast DPS) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5133	Threatened
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRUSTACEANS

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
Soft Bird's-beak *Cordylanthus mollis ssp. mollis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8541	Endangered

CRITICAL HABITATS

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* For information on why this critical habitat appears for your project, even though Delta Smelt is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/321#crithab	Final

IPAC USER CONTACT INFORMATION

Agency:	Private Entity
Name:	Eric Smith
Address:	2401 Capitol Avenue
Address Line 2:	Ste 301
City:	Sacramento
State:	CA
Zip:	95816
Email	esmith@vollmarconsulting.com
Phone:	5302202835

APPENDIX F

STAFF RESUMES

BAY AREA OFFICE
1720 Solano Avenue
Berkeley, CA 94707
Phone: 510/559-9603
Fax: 510/559-9605
www.vollmarconsulting.com

JAKE H. SCHWEITZER, Senior Ecologist/GIS Specialist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting (VNLC)	Senior Ecologist/GIS Specialist	2003 - present
Wetlands and Water Resources	Wetland Ecologist/GIS Specialist Consultant	2001 - 2005
U.C. Berkeley College of Natural Resources, CAMFER Lab	Ecologist/GIS Specialist Research Assistant	2000 - 2001
Applied Geographics	GIS Technical Manager	1997 - 2000
City of Oakland, Measure I Emergency Response System	GIS Technician	1996 - 1997
U.C. Berkeley Map Library	Assistant Librarian	1993 - 1996

PROFESSIONAL SUMMARY

Mr. Schweitzer combines 20 years of experience as a professional vegetation and wetland ecologist with nearly 24 years of experience in cartography and geographic information science (GIS, remote sensing/image analysis, and GPS technology). His ecological focus has been in botanical and wetland sciences. He holds federal and state permits to survey for listed fairy shrimp, California red-legged frog, and California tiger salamander and is certified in the vegetation mapping techniques developed by the California Native Plant Society and California Department of Fish and Wildlife. He is also trained to conduct California Rapid Assessment Method (CRAM) surveys as well as wetland delineation surveys. Mr. Schweitzer has been a docent for the past 15 years at the East Bay Regional Park Botanic Garden, teaching native California plant ecology to the public.

Mr. Schweitzer has applied his skills to a wide array of projects, from surveying and modeling threats posed by Sudden Oak Death Syndrome, to performing large-scale botanical and aquatic wildlife surveys, to designing habitat restoration projects. He has served as the lead ecologist and GIS specialist for many of VNLC's regional conservation and land use projects from the Bay Area to the San Joaquin Valley and surrounding foothill regions. He recently completed a federally-funded project involving the propagation and reintroduction of the critically endangered large-flowered fiddleneck (*Amsinckia grandiflora*) into its historical range and is currently overseeing a similar project to reintroduce the endangered Contra Costa goldfields (*Lasthenia conjugens*) into its namesake county. He is also leading a vegetation sampling project that encompasses the entire Cascade Mountain Range of northern California.

EDUCATION

B.A. Physical Geography (concentration in ecology and geographic information science), University of California, Berkeley, 1995. Recipient of Lucille McClish Oberlander Award "for Outstanding Achievement in Physical Geography."

PERMITS

Federal Recovery Permit No. TE-035336-7 (Vernal Pool Branchiopods and Adult/Larval California Tiger Salamander)
Scientific Collecting Permit No. S-183230001-18334-001 (Amphibians and Vernal Pool/Terrestrial Invertebrates)
Plant Voucher Collecting Permit No. 2081 (a)-21-013-V

REPRESENTATIVE PROJECT EXPERIENCE

Restoration of Wildcat Creek at Tilden Botanic Garden (Contra Costa County, CA)
Senior Ecologist and Project Manager (2022 – Present)

Overseeing a habitat evaluation and protocol-level botanical surveys in support of the restoration of Wildcat Creek within and just downstream of the East Bay Regional Park District's native Botanic Garden in Tilden Regional Park. Results so far include the documentation of two locally rare plant species as well as California newt (*Taricha torosa*).

Military Ocean Terminal Concord (MOTCO) (Contra Costa County, CA)
Senior Ecologist and Project Manager (2020 – Present)

After completing a two-year contract to provide environmental services to this approximately 6,000-acre army base, our team was awarded a new four-year contract to continue the services. Services include, but are not limited to, botanical surveys (rare plant surveys and floristic inventories), invasive plant management, herptile surveys, and wetland delineations. Mr. Schweitzer has documented three special-status plants previously unknown from the study area.

East Bay Regional Park District Oak Woodland Restoration Project (Alameda County, CA)
Senior Botanist and Project Manager (2022 - 2023)

Conducting a habitat study of areas within East Bay Park District lands that are currently occupied by invasive trees (primarily eucalyptus and pine species), with the purpose of identifying optimal sites for oak woodland habitat restoration. Involves compiling and analyzing remote habitat data, conducting field surveys to assess current habitat conditions as well as restoration opportunities and constraints. The final product will be a detailed report, including maps, to elucidate optimal oak restoration areas.

Longhorn Fairy Shrimp Rock Outcrop Habitat Modeling and Reintroduction Project (Alameda and Contra Costa Counties, CA)
Senior Ecologist, GIS Specialist, and VNLC Project Manager (2017 - Present)

Mr. Schweitzer is serving as a lead researcher in a project that involves analysis of habitat requirements and conducting reintroduction of the federally endangered longhorn fairy shrimp (*Branchinecta longiantenna*), which inhabits rock outcrop vernal pools in Contra Costa County and Alameda County. The project is being managed by Dr. Doug Bell of the East Bay Regional Park District. The first phase of the project involved conducting multiple years of wet season and dry season surveys for the species, and documented biotic and abiotic conditions of occupied vernal pools. The second phase involves identifying suitable reintroduction habitat and then carrying out reintroduction of the species to unoccupied pools.

John Muir Land Trust Open Services Contract (Contra Costa County, CA)
Senior Ecologist and Computer Mapping Specialist (2015 – Present)

Providing a wide variety of services to this land trust, which owns and manages a large number of properties throughout Contra Costa County. Services include rare plant and wildlife surveys, habitat assessments, providing habitat management recommendations, and preparing digital maps and online resource content. Projects have included the documentation of multiple special-status plants and animals throughout Contra Costa County.

Cull Creek Habitat Restoration and Monitoring Plan (Alameda County, CA)
Senior Ecology and Restoration Designer (2014)

Delineated wetlands and designed riparian restoration plan to enhance habitat, reduce seismic instability of a reservoir, and address sedimentation concerns. Worked with Alameda County engineers to plan stream channel alignment and riparian plantings in order to offset project impacts, increase riparian woodland vegetation, and enhance wildlife habitat.

Midpeninsula Regional Open Space District On-call Biological Services (San Mateo and Santa Clara Counties, CA)
Senior Ecologist (2019 - Present)

VNLC has an on-call services contract with Midpeninsula Regional Open Space District (MROSD) to provide biological services on an as-needed bases. Services include biological monitoring, wetland delineation, rare plant and animal surveys, habitat assessments, and analysis and fulfillment of mitigation requirements. More recently, VNLC was awarded a second, separate contract with MROSD as the biological consultant to a CEQA firm for a CEQA open services contract.

Redwood Creek Restoration Project (Marin County, CA)
Senior Ecologist and Project Manager (2018 – Present)

Overseeing the vegetation component of a stream restoration project along 1.5 miles of Redwood Creek, adjacent to Muir Woods National Monument. Tasks include analysis of historical vegetation throughout the watershed, analysis of vegetation with respect to hydrology, mapping of current vegetation, rare plant and invasive weed surveys, and development of a planting palette and overall habitat restoration plans.

Black Diamond Mines Regional Preserve EIR Support (Contra Costa County, CA)
Senior Ecologist and Project Manager (2017 – 2018)

Worked with Leann Taagepera Environmental Planning and Josh Phillips of Pacific Biology to prepare the Draft Program Environmental Impact Report in support of the Black Diamond Mines Regional Preserve Landuse Plan. Conducted site surveys and wrote environmental sections of the draft EIR, including climate, soils and geology, botanical resources, and sensitive species sections.

Alameda County Public Works Agency Open Services (Alameda County, CA)
Senior Ecologist and Project Manager (2009 – 2018)

For over nine years, Mr. Schweitzer oversaw VNLC's biological services contract with the ACPWA. A total of 37 projects located throughout Alameda County were completed during this timeframe. Services included wetland delineations, habitat mapping, rare plant surveys, tree surveys, wildlife habitat assessments, and the preparation of mitigation/monitoring restoration plans.

Loma Fire Habitat Monitoring (Santa Clara County, CA)
Senior Ecologist and Project Manager (2017 – 2019)

Conducted post-fire habitat monitoring on 2,000 acres of preserve land that is owned and managed by the Santa Clara Valley Open Space Authority. Conducted three consecutive years of vegetation monitoring (relevé plot sampling) as well as assessment of rare and invasive plants, soil erosion, and plant community type conversion. Developed recommendations for land management. Documented six special-status plants previously unknown from the study area.

SELECTED PUBLICATIONS

Schweitzer, J. 2021. Captive Propagation and Reintroduction of Large-flowered Fiddleneck (*Amsinckia grandiflora*) in Contra Costa, Alameda, and San Joaquin Counties. Technical report prepared for the USFWS CVPIA Habitat Restoration Program, Grant No. R16AP00008.

John Vollmar, Todd Keeler-Wolf, Jake Schweitzer, and Jennifer Buck. 2017. Vegetation Classification and Mapping for Wildlife Conservation in the Kwa Kuchinja Wildlife Corridor. Technical report prepared for the Tanzania Wildlife Research Institute.

Bell, Douglas A., Jamie Kneitel, Jake Schweitzer, John Vollmar, and Brent Helm. In Preparation. Longhorn Fairy Shrimp (*Branchinecta longiantenna*) Habitat Research in Contra Costa and Alameda Counties, California. Technical report prepared for the USFWS CVPIA Habitat Restoration Program, Grant No. R16AP00031.

Vollmar, J.E., R.F. Holland, C.W. Witham, J.H. Schweitzer, and E.T. Smith. 2013. Predictive Habitat Analysis of Four Rare Vernal Pool Species in Merced, Sacramento and Placer Counties, CA. Technical report prepared for the USFWS CVPIA Habitat Restoration Program, Grant No. 80270-A-G509.

J.E. Vollmar, J. Stebbins, and J.H. Schweitzer. 2010. *Pseudobahia bahiifolia* and *Pseudobahia peirsonii* 2010 Status Survey Report. Technical report prepared for the U.S. Fish and Wildlife Service CVPIA Habitat Recovery Program, Grant No. 802709G515. Vollmar Natural Lands Consulting, Berkeley, California.

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ERIC T. SMITH, Senior Ecologist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting	Senior Ecologist/GIS Analyst	2011 - present

PROFESSIONAL SUMMARY

Mr. Smith's education and professional focus are on terrestrial and wetland ecology, and the use of spatial and statistical analytic techniques to interpret ecological data. His primary study systems are the biology of reptiles and amphibians and of vernal pools and seasonal wetlands. He uses these skills to design and participate in numerous successful surveys for special-status species; to map habitats both on the ground, with remote data, and predictively through statistical analysis; and to design, implement, and monitor habitat restoration plans. He is proficient in the field with professional survey-grade drones, RTK and handheld GPS units, and data collection software such as FieldMaps and Survey123. In the office, he uses ArcGIS, ENVI, R, SQL, python, and MS Office for data processing, analysis, and presentation.

Mr. Smith is comfortable working independently, managing others, or working in interdisciplinary teams. He has collaborated with private companies, non-profit corporations, government entities, and academic researchers to accomplish a wide variety of projects. His project experience includes designing and conducting species and habitat surveys, analyzing project impacts, designing mitigation, and obtaining environmental permits, as well as creating management plans for preserves and analyzing funding needs.

Mr. Smith's representative project experience includes biological surveys on more than 100 large and small properties, remote analysis and re-design of linear projects through sensitive habitat to minimize environmental damage, establishing mitigation preserves for three large-scale developments, managing biological surveys and monitoring for preserves totaling over 10,000 acres, and serving as the lead designer for multiple vernal pool restoration projects.

EDUCATION

B.S. Biology, University of California, Davis, 2006
GIS Certificate, San José State University, 2009

PERMITS

TE-035336-7 Federal Recovery Permit (Vernal Pool Branchiopods, California Tiger Salamander, and California Red-legged Frog);
S-183230001-18334-001 Scientific Collecting Permit (Amphibians and Vernal Pool/Terrestrial Invertebrates);
2081(a)-22-045-V Plant Voucher Collecting Permit
FAA Part 107 Remote Pilot 3911541 (Drone)

REPRESENTATIVE PROJECT EXPERIENCE

Lazy K Ranch Vernal Pool Restoration Design (Madera County, CA)
Lead Designer (2014 - 2017)

Created detailed grading plans to re-establish 28 acres of vernal pools on a 185-acre leveled site. Lead team to dig and study over 250 soil pits to inform design. Used soils data, LiDAR and GIS to design complete restoration of vernal pool/mound topography.

Montezuma Wetlands Project Weed and Vegetation Mapping (Solano County, CA)
Senior Ecologist/GIS Analyst (2016 - 2018)

Conducted field mapping and aerial photo interpretation to create maps of wetlands, habitat types, and invasive species at varying scales for approximately 1,100 acres of the Montezuma Wetlands tidal marsh restoration project.

La Purisima Conservation Bank Baseline Biological Monitoring (Santa Barbara County, CA)
Project Manager (2012 - Present)

Conducting biological monitoring including stock pond hydrology monitoring, stock pond amphibian larvae surveys, night spotlight surveys for California red-legged frog, and upland special status species surveys (reptile cover board monitoring and bird monitoring), as required by the La Purisima Conservation Bank Enabling Instrument (BEI). Liaising with UCLA researchers to support CTS recovery research on the site.

Santa Clara Valley Open Space Preserve Amphibian Surveys and Management Recommendations (Santa Clara County, CA).
Project Manager (2015 - 2016)

Designed and led surveys detecting presence and breeding of California tiger salamander and California red-legged frog. Project covered more than 50 ponds and several stream reaches on six preserves owned and managed by the Santa Clara Valley Open Space Authority. Worked closely with Authority staff to provide training in habitat assessment and species survey techniques. Analyzed preserve habitats and created management recommendations to enhance special-status species habitat.

California Tiger Salamander/Western Spadefoot Breeding Study (Eastern San Joaquin Valley, CA).
Project Manager (2011 - 2016)

This is an ongoing research study looking at factors controlling California tiger salamander (CTS) habitat use by documenting and mapping breeding ponds throughout the San Joaquin Valley. The project involves CTS larval seine surveys in approximately 120 ponds at six different sites. Through this research we have gained insightful information on adult breeding, larvae size and condition, larvae metamorphosis and emergence from ponds, and an understanding of site access negotiation.

CVPIA Created Vernal Pool Study (Butte, Placer, Sacramento, and Shasta Counties, CA)
Lead GIS analyst and Database Manager (2011)

Created a relational database to manage tens of thousands of individual survey records from a large-scale study of created and natural vernal pools in the Sacramento Valley. Analyzed physical characteristics, hydrology, water quality, botany, and invertebrate communities of 457 vernal pools to detect patterns of differences between created and natural vernal pools.

Millerton New Town Biological Permitting (Fresno/Madera Counties, CA)
Project Manager (2012 – Present)

Organized and led protocol special-status species surveys (detecting vernal pool fairy shrimp and California tiger salamander) and wetland delineation on a 1,300-acre development site. Used GIS to analyze project impacts. Surveyed off-site mitigation lands for special-status species. Worked with land trust staff and property owner to develop management plan and PAR analysis for off-site mitigation preserve. Prepared biological permitting documents for project (CDFW ITP application and USFWS BA) and supported 404 permit applications.

Great Valley Vernal Pool Habitat Study (Great Valley, CA)
Senior Ecologist (2014 - 2017)

This multi-scale, multi-parameter study analyzes the status and patterns of vernal pool habitat conservation and management within the Great Valley, and was funded by an Environmental Protection Agency (EPA) grant. Developed and conducted analyses on a master database in ArcGIS containing information pertaining to landowner type, conservation instrument, easement holder, funding source, etc., on all known public lands and private preserves supporting vernal pool habitat within the Great Valley.

Madera Ranch Vernal Pool Creation (Madera County, CA)
Project Manager (2011 - 2017)

Designed and oversaw construction of 7.5 acres of created vernal pools. Implemented pre-construction surveys and avoidance measures for special-status species. Monitored created pools for success based on hydrology, floristics, and invertebrate communities.

Sears Point Pond Creation (Sonoma County, CA)
Lead Designer (2012)

Designed and oversaw construction of three naturalistic oxbow ponds in a creek floodplain. Analyzed groundwater monitoring data and soils to create seasonal hydrology to enhance California red-legged frog breeding potential while excluding invasive species.

Calabazas Creek Preserve (Sonoma County, CA)
Staff Biologist (2014)

Designed and led surveys documenting multiple special-status amphibian species. Analyzed habitat and wrote amphibian habitat management recommendations for the preserve Management Plan.

Yokohl Ranch California Tiger Salamander and Vernal Pool Branchiopod Surveys (Tulare County, CA)
Staff Biologist (2011 - 2013)

Performed protocol sampling for California tiger salamander and vernal pool branchiopods on an approximately 10,000-acre portion of Yokohl Ranch in the Sierra Foothills of Tulare County. Analyzed soil and geology data to create geomorphic map of property to display habitat zones for special-status species.

PUBLICATIONS

Renz, Wendy; John Vollmar, Brent Helm, and Eric Smith. 2014. Constructing Vernal Pools For Ecological Function: An Historical Study Of Ten Vernal Pool Construction Sites In The Northern Central Valley, California. United States Department Of The Interior Bureau Of Reclamation Agreement/Study NO. R09AP20017.

Smith, Eric and John Vollmar. 2018. Whole-Landscape Restoration of a Leveled California Vernal Pool Terrain. Presentation given at Society for Ecological Restoration Conference 2018. Conference Proceedings in preparation.

Vollmar, John; Jake Schweitzer, Robert Holland, Carol Witham, Cassie Pinnell, Eric Smith, Roxanne Hulme, and Katie Young. 2013. Predictive Habitat Analysis and Mapping of Four Rare Vernal Pool Species in Merced, Sacramento, and Placer Counties, Great Valley, California, USA. Prepared for CVPIA Habitat Restoration Program, U.S. Fish and Wildlife Service Pacific Southwest Region. Grant Agreement No. 80270-A-G509.

Vollmar, John; Eric Smith, and Linnea Neuhaus. 2017. Multi-Scale Assessment of Past Achievements and Future Directions for Vernal Pool Conservation and Mitigation. Prepared for U.S. Environmental Protection Agency, Region 9. Wetland Program Development Grant Agreement No. 99T06001.

Vollmar, John; Kristen Chinn, Eric Smith, Henry Hwang, and Anton Bokisch. 2024. Conservation of California's Great Valley Vernal Pool Landscapes. Vollmar Natural Lands Consulting, Inc. Berkeley, CA.

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ROXANNE HULME FOSS, Senior Ecologist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting (VNLC)	Senior Ecologist	2018 - present
Point Reyes National Seashore	Range Management Specialist	2016 - 2018
University of California, Berkeley	Graduate Student Researcher	2014 – 2016
East Bay Regional Park District	Wildland Vegetation Intern	2014, 2015
Condor Country Consulting, Inc.	Staff Biologist	2013 - 2014
Yosemite National Park	Backcountry Botany Technician	2011, 2012
Vollmar Natural Lands Consulting	Staff Ecologist and GIS Analyst	2009 – 2013

PROFESSIONAL SUMMARY

Ms. Foss has served as the project manager, lead ecologist, and certified rangeland manager on numerous complex ecological projects in Central and Northern California. She uses her experience working both as a land manager and consultant to create realistic, useful land management and monitoring documents that capture baseline ecological and anthropogenic conditions; identify goals, opportunities and constraints of a given property; address key management priorities; analyze complex datasets; produce spatial models; and provide tailored monitoring and adaptive management recommendations. She uses her academic background to apply scientific approaches to answer site-specific land management questions. Ms. Foss is known for her ability to tailor documents to management needs and available funds.

Ms. Foss has led many vegetation and spatial analysis projects while working in consulting, academia, and public agencies. While working at Point Reyes National Seashore, she designed a model to predict grasslands with high native grass and forb diversity based on rapid assessment field data and associated environmental parameters. As a graduate student, she developed population models to understand population change over time for multiple rare coastal prairie species. In consulting, she has produced many baseline condition reports and monitoring and management plans for conservation lands throughout California. She has also led field efforts, including plant community monitoring, rare plant surveys, wetland delineations, sensitive species habitat assessments, residual dry matter monitoring, vegetation classification and mapping, and invasive plant population mapping.

EDUCATION

M.S. Range Management (with Graduate Certificate in Geospatial Information, Science, and Technology), University of California, Berkeley, 2016.
B.S. Conservation and Resource Studies, University of California, Berkeley, 2010.

PERMITS and CERTIFICATIONS

California Certified Rangeland Manager, M-128
Federal Recovery Permit No. TE-035336-7 (Larval California Tiger Salamander)
Plant Voucher Collecting Permit No. 2081(a)-22-038-V

REPRESENTATIVE PROJECT EXPERIENCE

EBRPD Rare Plant Inventory and Condition Assessment (Alameda/Contra Costa Counties, CA)
Project Manager (2023)

Led the analysis of all East Bay Regional Park District (EBRPD) rare plant data for 37 federal, state and California Rare Plant Rank 1 listed plants on EBRPD property. Provided summaries of the status, monitoring and management of each selected taxa individually and as a whole. Worked with EBRPD to develop key questions and goals to address within the first phase of the Rare Plant Inventory and Condition Assessment (RPICA). The RPICA outlines a prioritized decision matrix for monitoring and surveying, workplan, and detailed next steps.

Modelled Wildland Vegetation Conservation Values (Alameda/Contra Costa Counties, CA)
Project Manager (2023 - 2024)

Worked with EBRPD to develop a spatial model ranking conservation areas within EBRPD lands using Wildland Vegetation program spatial data and complementary regional datasets. Model output was designed to inform a District-wide decision support tool that will aid land management and decision-making. VNLC produced a report outlining the suitability of available vegetation datasets for the model; developed a model process with assigned ranks and weights reflecting conservation priorities; and created a composite layer with final priority ranks.

Ecological Health Assessment: Grasslands Indicator Chapter (Alameda/Contra Costa Counties, CA)
Lead Author (2020 - 2024)

Worked with EBRPD and Ecological Stewardship Network partners to assess the condition and trend of grasslands throughout network lands. Participated in multiple meetings with topic experts to develop definitions and indicators to assess grassland health. Conducted a literature review and analyzed spatial data to assess each of the selected indicators.

Sonoma County Parks Open Services (Sonoma County, CA)
Project Manager (2022 - Present)

Worked with Sonoma County Parks to develop grazing management plans (GMPs) for inland and coastal properties that address ecological, infrastructure, and communication goals identified by the Parks staff, grazing operators, easement holder and partners. The GMPs provide detailed summaries of baseline conditions, identify goals and objectives, provide monitoring and management recommendations and outline contingency measures.

Large-Flowered Fiddleneck Habitat Management Plan (Contra Costa County, CA)
Project Manager (2022 - 2023)

Developed a habitat management plan to address the landscape-level and site-specific management of the federally listed taxon. Recommendations include grazing specifications, invasive plant management, and infrastructure development projects. Also developed a truncated Operational Summary to highlight key components of the larger plan and outline specific tasks for annual planning. Provides informal adaptive management recommendations as management of the populations continues.

Effects of Biomass Manipulations on Fire Behavior Study (Various Counties, CA)
Primary Author (2019 – 2022)

Conceived of a study to understand how mimicking grazing with manipulating grass biomass could impact fire behavior metrics. Received funding through the Rustici Rangeland endowment

to implement a randomized complete block design of biomass manipulations across 9 sites within prescribed burns throughout California. Led data analysis using R to identify key biomass thresholds that may be incorporated into management plans. Presented preliminary results at multiple conferences and is in the process of formally publishing the work.

Grazing Management Plans for John Muir Land Trust Properties (Contra Costa County, CA)
Primary Author and Lead Ecologist (2021 - Present)

Wrote multiple grazing management plans for the John Muir Land Trust at sites that are typically characterized by oak woodlands, grasslands, riparian corridors, and wetlands. She provides goal-oriented framework for adaptive management decision making. Recommendations and plans reflect the client's need for cost-effective, easy monitoring and prioritized management actions to reduce costs.

Freestone Flat Riparian Mitigation and Monitoring Plan (Sonoma County, CA)
Project Manager (2022 - 2023)

Assessed a bridge replacement project to identify suitable restoration options for on-site mitigation credit. She tailored the planting plan to have multiple options to give the client flexibility in restoration sites. Recommendations reflected ongoing management, edaphic potential, and site conditions.

Hollister Ranch Baseline Conditions Report, Wetland Delineation, and Biological Monitoring (San Benito County, CA)
Project Manager (2020 - Present)

Coordinates and leads field work for baseline conditions survey, wetland delineation and annual biological monitoring as required by a mitigation monitoring and management plan. She provides summaries of field results and recommendations for plant management, infrastructure development, erosion control and riparian corridor protection.

Placer Land Trust Ecological Health Audit (Placer County, CA)
Project Manager (2021)

Worked collaboratively with Placer Land Trust staff to develop a rapid assessment of ecological health of existing and planned properties. Reviewed various monitoring methods and provided recommendations for rapid approach that was then field tested and finalized.

California Rangeland Trust Baseline Conditions Reports (Various Counties, CA)
Project Manager (2018 - Present)

Produced multiple baseline condition reports in Sacramento, Placer, El Dorado, San Joaquin, Alameda, Napa and San Benito Counties. Led background review of spatial data, field surveys for biological and infrastructure resources, and document preparation. Informed standard document organization to ensure critical information is included in an organized framework.

McArthur Swamp Management Plan (Shasta County, CA)
Project Manager (2018 - 2020)

Developed a Comprehensive Management Plan with additional supporting documents for local Resource Conservation District. Plan development included stakeholder and board involvement. Thorough site surveys characterized the site's biological, hydrological, and edaphic features to inform potential land use changes and general site management.

City of Newman Inland Seasonal Wetlands Restoration (Merced County, CA)
Senior Ecologist (2022)

Developed a grazing plan to be compatible with multiple stages of restoring wetland, native grassland, and native trees on a previously-degraded agricultural site owned by the City of Newman. Restored habitats will include alkali rain-fed vernal pools, seasonal marsh enhancement, and planting of 50 native trees.

EBMUD Solar Voltaic Project Oak Restoration Plan (Contra Costa County, CA)
Senior Ecologist (2021)

Surveyed planned solar site on water district lands to identify most suitable on-site oak planting areas to meet mitigation requirements and local ordinance. Characterized selected locations by soil type, hydrology, topography, and natural oak recruitment levels. Developed a plan that included planting plans, monitoring guidelines, success criteria, and ongoing management recommendations.

319(h) Water Quality Improvement Grant (Marin County, CA)
Range Specialist (2016 – 2018)

Managed $760,000 319(h) grant funded by State Water Resources Control Board to implement water quality improvement practices on park lands. Led field work, contracting, budget, timeline, and report preparation according to grant requirements. Created progress reports, monitoring reports, invoices and all final reporting to funding agency within deadlines. Managed contractors for design and construction of required conservation practices. Complete all field surveys and documentation for CEQA and NEPA compliance. Coordinated with partners, including NRCS, local RCD, contractors, ranchers, volunteers and in-house experts, to design, implement and maintain projects. Monitored all projects using photo-points and site assessments. Managed all related digital and hard-copy data and documents. Presented projects to review committees and Marin RCD board for approval.

Grassland Mapping and Monitoring (Marin County, CA)
Range Specialist (2016 – 2018)

Botanist and spatial data analyst coordinating field surveys, analyzing data and creating documentation to support related management actions. Collaborated with UC Berkeley Range Ecology lab to develop a rapid assessment grassland mapping protocol then implemented the revised protocol on pilot study sites. Using the initial data, create a spatially-explicit multivariate model to use as a predictive tool for understanding native and invasive plant distribution over the landscape. (2016-2018)

Tomales Bay Watershed Riparian Restoration and Nursery Operation (Marin County, CA)
Range Specialist (2016 – 2018)

Ecologist managing nursery operations to grow out thousands of locally-sourced propagules for restoration efforts in local watershed. Planned out restoration events by creating site-specific plant list for propagation, led seed collection efforts, and coordinated propagation of plants to fit restoration needs. Developed and implemented disease-prevention protocols. Coordinated with partners to offer native plant propagation workshops. Led multiple riparian restoration volunteer programs for multiple years. (2016-2018)

Tejon Ranch Ecological Site Description Development (Los Angeles and Kern Counties, CA)
Botanist (2014 - 2017)

Surveyed long-term plots to characterize unique soil-geomorphic regions within large ranch property for improved natural resource and livestock management. Surveys included point line intercept and full relevé plots. Led data collection and plant identification for relevé plots

Concord Naval Weapons Station Biological Surveys (Contra Costa County, CA)
Staff Biologist (2013 - 2014)

Conducted pre-construction surveys for California tiger salamander, California red-legged frog, golden eagle, migratory birds and rare plants according to established protocols. Surveys included drift fence trapping and relocation for CTS, nesting bird surveys, and golden eagle monitoring during fence construction.

Contra Costa County Public Works Environmental Compliance (Contra Costa County, CA)
Project Manager (2013 - 2014)

Created CEQA, NEPA and local regulatory documents for Contra Costa Public Works needed to comply with applicable state, local and federal laws, statutes and legislation on public infrastructure improvements or modifications. Worked within East Contra Costa Habitat Conservancy guidelines to create sound scientific conclusions about potential project impacts. Developed, planned and managed all GIS mapping efforts, data analysis, and field surveys.

Grassland Mapping and Monitoring (Marin County, CA)
Botanist and Spatial Data Analyst (2016 – 2018)

Coordinated field surveys, analyzed data and created documentation to support related management actions. Collaborated with UC Berkeley Range Ecology lab to develop a rapid assessment grassland mapping protocol then implemented the revised protocol on pilot study sites. Using the initial data, create a spatially-explicit multivariate model to use as a predictive tool for understanding native and invasive plant distribution over the landscape.

Montezuma Wetland Mitigation Preserve Project (Solano County, CA)
Staff Ecologist (2009 - 2013)

On-going monitoring project within a 600-acre mitigation preserve supporting Conservancy fairy shrimp, vernal pool tadpole shrimp, vernal pool fairy shrimp, and several rare plant species. Conducted rare plant, invasive species and dip net surveys for large branchiopods and identified other aquatic invertebrate taxa. Also conducted range management surveys to understand ideal grazing management for site.

Curry Canyon Riparian Monitoring (Contra Costa County, CA)
Ecologist (2015)

Collaborated with a local non-profit land trust and rancher to develop, plan, and analyze vegetation and health indicator data within a newly-constructed riparian pasture to inform restoration work.

PROFESSIONAL DEVELOPMENT COURSEWORK

Mastering the Second Edition of the Jepson Manual Workshop (Jepson Herbarium). 2013.
California Vegetation Rapid Assessment Workshop (California Native Plant Society). 2013.
Rare Plants of the Bay Area (East Bay Regional Parks District). 2013.
Poaceae (Jepson Herbarium). 2012.
Rare Plants of the Central Valley (California Native Plant Society). 2012.
California 50 Plant Families (Jepson Herbarium). 2011.
Birding by Ear (Audubon Society). 2012.
California Red-Legged Frog (Elkhorn Slough Training Program). 2012.
Targeted Grazing (Society for Range Management). 2015.
Remote Sensing (Geospatial Innovation Facility). 2014.

HONORS AND AWARDS

California Native Grassland Society, Nominated for Director (2021)
Society for Range Management, Director (2018-2020)
California Weed Science Society graduate scholarship (2015)
Mary Bowerman Science Scholarship Save Mount Diablo (2015)
Society of Range Management Regional Meeting Scholarship (2014)
Russel L. Rustici Chair fund awardee (2014, 2015)
Marin Environmental Youth of the Year Marin Conservation League (2006)

PRESENTATIONS

California Climate Agriculture Network. Effects of Grazing on Fire (2022)
Central Coast Rangeland Coalition. Effects of Manipulating Biomass on Fire Behavior in the Central Coast (2023)
Range Management Advisory Committee. Developing Goals-Driven Monitoring and Adaptive Management Plans (2023)
National Society for Range Management. Effects of Grazing on Fire in California (2024)

SELECTED PUBLICATIONS

Foss, Roxanne. 2016. A Review of Ecological Grazing Management Approaches Applicable to EBRPD Rangelands. Available online at: https://www.ebparks.org/sites/default/files/foss_roxanne_hulme_a_review_of_ecological_grazing_2016.pdf

Foss, Roxanne. 2016. Rare Plant Chapter. Point Reyes National Seashore Natural Resources Condition Assessment.

Foss, Roxanne. 2016. Rare Plant Chapter. Golden Gate National Recreation Area Natural Resources Condition Assessment.

Vollmar, John, Jake Schweitzer, Robert Holland, Carol Witham, Cassie Pinnell, Eric Smith, Roxanne Hulme, and Katie Young. 2013. Predictive Habitat Analysis and Mapping of Four Rare Vernal Pool Species in Merced, Sacramento, and Placer Counties, Great Valley, California, USA. Prepared for CVPIA Habitat Restoration Program, U.S. Fish and Wildlife Service Pacific Southwest Region. Grant Agreement No. 80270-A-G509.

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ANTON BOKISCH, Staff Ecologist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting (VNLC)	Staff Ecologist	2022-present
Petralogix Engineering, Inc	Staff Scientist	2021-2022
U.S. Fish and Wildlife Service (USFWS)	Biological Science Technician	April-October 2021
Redwoods Rising	Watershed Rehabilitation Apprentice	May-September 2019

PROFESSIONAL SUMMARY

Mr. Bokisch's undergraduate work focused on plant taxonomy, ecology, conservation, restoration of native habitats, and GIS. He has experience with survey methods such as trawling, seining, dipnetting, and night spotlighting. He is proficient in ArcGIS, Microsoft Office, and data collection using Trimble GPS units. Mr. Bokisch has experience surveying for several sensitive species including amphibian larval surveys (including California red-legged frog and California tiger salamander), western pond turtle surveys, snowy plover surveys, and vernal pool aquatic invertebrate surveys, botanical and rare plant surveys, amphibian visual encounter and spotlight surveys. Mr. Bokisch spent a summer working in Redwood National and State Parks where he evaluated sedimentation issues within the watershed of Mill Creek, a tributary to the Smith River. During this time, he became familiar with the floristics of the site and learned how to perform routine data collection of restoration resource metrics such as sediment volumes and culvert conditions of abandoned stream crossings. Mr. Bokisch has also worked for the U.S. Fish and Wildlife Service as a part of the Delta Juvenile Fish Monitoring Program. Here he learned how to perform mark/recapture studies, fish and habitat assessments, monitor restored habitat, and conduct Kodiak and Mid-water trawls in the California Delta.

Mr. Bokisch has applied his skills to many projects in Northern California and the Central Valley with VNLC. His field experience includes biological inspections, rare plant surveys and monitoring, wetland and upland vegetation monitoring, wetland delineations, and wetland design.

EDUCATION

B.S. Environmental Science & Management, California Polytechnic State University, Humboldt, 2020

Minor, Geospatial Analysis, California Polytechnic State University, Humboldt, 2020

REPRESENTATIVE PROJECT EXPERIENCE

Lazy K Vernal Mitigation Preserve (Madera County, CA)
Staff Ecologist (2022)

Assisted with the monitoring of mitigation riparian plantings for the Lazy K Mitigation Preserve located along the Chowchilla River in Madera County.

City of Healdsburg Biological Monitoring Projects (Sonoma County, CA)
Staff Ecologist (2022)

Conducted monitoring of mitigation riparian plantings for the City of Healdsburg along Dry Creek. Aided in reporting the success of the riparian plantings and provided active management recommendations to improve the condition of plantings.

Connolly Ranch Preserve Monitoring (San Joaquin County, CA)
Staff Ecologist (2022)

Conducted biological monitoring of California tiger salamander and California red-legged frog, including larval seine surveys and visual encounter surveys.

Coal Creek Erosion Control Plan (San Mateo County, CA)
Staff Ecologist (2022)

Provided an Erosion Control Plan for the Midpeninsula Regional Open Space District for their Coal Creek Preserve located in San Mateo County. Plan includes assessment of the site for existing botanical inventory and detailed recommendations of planting plan with selected native plant pallet. Conducted GIS mapping for the project.

Duffle Wetland Mitigation Project (Contra Costa County, CA)
Staff Ecologist (2022)

Conducted botanical and topographic surveying as well as GIS analysis for the creation of a 7,000 square foot wetland as mitigation for the installation of a solar field located in Contra Costa County.

Cloverdale Ranch Vegetation Management Project (San Mateo County, CA)
Staff Ecologist (2022)

Assisted with the surveying of rare plants, invasive weed mapping, and plant community mapping on the 6,000-acre Cloverdale Ranch located on the San Mateo Coast in support of long-term management of the site.

Hollister Ranch Conservation Easement Monitoring (San Benito County, CA)
Staff Ecologist, (2022)

Assisted with surveys for rare and threatened amphibians throughout a working cattle ranch. Conducted visual encounter surveys for California red-legged frog and western pond turtle and protocol level larval California tiger salamander surveys. Visual encounter surveys resulted in the documentation of a previously undocumented breeding population at the site.

Montezuma Wetlands Project (Solano County, CA)
Staff Ecologist (2022 - Present)

This project involves using approved dredged sediment to restore approximately 1,880 acres of diked and subsided former Baylands to a tidal wetland ecosystem including some seasonal wetland features, and approximately 480 acres of upland transition zone and vernal pool habitat. Monitoring involves wildlife and botanical surveys, including bird, mammal, fish, amphibian, invertebrate, botanical, and vegetation surveys.

Environmental Stewardship Foundation Preserve Monitoring (Placer, El Dorado, & Sacramento Counties)
Staff Ecologist (2022 – Present)

Assisted in the monitoring of 13 preserves managed by Environmental Stewardship Foundation. Habitat types include vernal pool grasslands, oak woodland, and riparian corridors. Conducted surveys include biological and general inspections, floristics, and wildlife monitoring.

City of Roseville Open Space Preserves Long-term Monitoring (Placer County, CA)
Staff Ecologist (2022 – Present)

Assisted in the monitoring of 25 preserves owned and managed by the City of Roseville. Habitat types include vernal pool grasslands, oak woodland, and riparian corridors. Survey categories include nesting bird, aquatic invertebrate, vernal pool floristics, vernal pool hydrology monitoring, upland vegetation, invasive weed species monitoring, and biological inspections. Survey results are compiled in an annual monitoring report discussing the efficacy of existing management practices, and recommendations are made to improve future management actions.

Fenston Ranch Preserve Monitoring (Madera County, CA)
Staff Ecologist (2022 – Present)

Conducted biological monitoring and inspections at Fenston Ranch Preserve, located in Madera County. Surveys include invasive species inventory and botanical surveys for the endangered species San Joaquin Valley Orcutt Grass (*Orcuttia inaequalis*).

Elsie Gridley Mitigation Bank Monitoring (Solano County, CA)
Staff Ecologist (2022 – Present)

Assisted with biological monitoring and inspections at the Elsie Gridley Mitigation Bank, located in Solano County. Monitoring includes protocol level dipnet and seine surveys for amphibian larval California tiger salamanders.

Marine Corps Logistics Base Barstow (San Bernardino, CA)
Staff Ecologist (2022)

Assisted with the delineation of wetland boundaries of the Mojave River along the USMC logistics base Barstow located in San Bernardino County. Surveys include performing wetland delineations and recording floristic inventory of delineated locations.

Prior Work Experience

Delta Juvenile Fish Monitoring Program for United States Fish and Wildlife Service (Lodi, CA)

Biological Science Technician (2021)

Conducted fieldwork for complex long-term fisheries monitoring programs in the San Francisco Bay-Delta. These programs include Delta Juvenile Fish Monitoring Program (DJFMP), and Enhanced Delta Smelt Monitoring Program (EDSM). Collected long-term monitoring data in support of resource management at the local, regional, and national levels. Contributed to data used by multiple agencies. Performed data summation, analysis, and data development to compile and analyze data. These methods include data entry, QA/QC, and digital data archive. Performed fish identification to species in the field and lab using dichotomous keys; including listed species i.e. Chinook Salmon, Delta Smelt, Longfin Smelt, and Steelhead. Performed sampling during the COVID-19 pandemic as protocols frequently changed. Constantly evaluated potential safety and environmental hazards.

Rehabilitation of the Mill Creek watershed within Redwood National & State Parks for Redwoods Rising (Arcata, CA)

Watershed Rehabilitation Apprentice (2019)

Performed routine data collection and mapping of resource restoration metrics such as: sediment volumes, culvert conditions and provided assessment of the information. Performed geological and hydrological investigations to develop plans and specifications for site-specific slope stability and reducing sedimentation problems. Conducted evaluations on abandoned stream crossings. Took inventory of abandoned logging roads using Garmin GPS units. Scouted for secondary roads and skid roads using LIDAR data.

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KRISTEN J. CHINN, Staff Ecologist/GIS Support Staff

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting (VNLC)	Staff Ecologist/GIS Support Staff	2018 - present
Soil and Environmental Biogeophysics Lab, UC Berkeley	Research Assistant	2016

PROFESSIONAL SUMMARY

Ms. Chinn has applied her cartographic and detailed report editing skills to a variety of projects in Northern California and the Central Valley with VNLC. She is trained in spatial analysis and aerial imagery interpretation and has assisted on multiple mapping projects. She produces high quality map products that accurately portray important information tailored to the audience and client's needs. She was the main GIS analyst and cartographer for an Environmental Protection Agency and California Wildlife Conservation Board grant-funded project to write a conservation guide for the Great Valley's vernal pool landscapes, which included predicted habitat modeling for 41 vernal pool species and creating over 150 individual maps for the guide.

Ms. Chinn is adept at report formatting, proofreading, assessing data, and developing visually pleasing tables. She has provided critical report support to numerous VNLC documents and is acknowledged as a highly detail-oriented reviewer. Her field survey technique experience includes botanical and vegetation surveys, rare plant monitoring and surveys, and special-status species habitat and monitoring surveys. She is proficient in ArcGIS, Microsoft Office, and Adobe Creative Suite software, and data collection using Trimble GPS units. Ms. Chinn currently maintains and applies for all of VNLC's federal and state permits.

EDUCATION

B.S. Conservation and Resource Studies, University of California, Berkeley, 2016
B.A. Geography, University of California, Berkeley, 2016

PERMITS

Federal Recovery Permit No. TE-035336-7 (Vernal Pool Branchiopods and Larval California Tiger Salamander)

REPRESENTATIVE PROJECT EXPERIENCE

EBRPD Rare Plant Inventory and Condition Assessment (Alameda/Contra Costa Counties, CA)
Staff Ecologist (2023)

Developed and produced over 80 maps for 35 plant taxa for the Rare Plant Inventory and Condition Assessment. Maps were tailored to fit EBRPD needs, optimize the information portrayed, and provide additional details for readers as a standalone map. Proofread and formatted the entire report and associated plant taxon summaries, including over 20 complex data tables.

Large-Flowered Fiddleneck Habitat Management Plan (Contra Costa County, CA)
Staff Ecologist (2023)

Assisted with the development of a habitat management plan to address the landscape-level and site-specific management of the federally listed large-flowered fiddleneck (*Amsinckia grandiflora*). Recommendations include grazing specifications, invasive plant management, and infrastructure development projects. Provided map and document support.

Conservation of California's Great Valley Vernal Pool Landscapes (Great Valley, CA)
Lead GIS Analyst/Cartographer and Author (2019 - 2023)

Conservation of California's Great Valley Vernal Pool Landscapes: User's Guide and Reference Manual is a comprehensive resource to guide vernal pool conservation in the Great Valley, funded by grants from the Environmental Protection Agency and California Wildlife Conservation Board. The guide includes in-depth information covering vernal pool habitat characteristics, vernal pools in the context of the Great Valley, evolution of rare vernal pool species, and guides for conservation in each of the Great Valley's eight Vernal Pool Regions. Conducted GIS analysis for the project including compiling and vetting special-status species occurrences, creating vernal pool habitat blocks, and predicted habitat mapping for 44 rare vernal pool large branchiopod and plant species. Created over 150 individual maps for the guide displaying complex data layers. Maintained all data for the project and organized the data into numerous tables.

California Rangeland Trust Grant Mapping Support (Various Counties, CA)
Staff Ecologist/Cartographer (2021 - Present)

Provide grant mapping support for the California Rangeland Trust's grant applications. Map types include vicinity, vegetation, parcel, zoning, watershed, building envelope, agriculture, land use, special-status species, preserved land, climate change resilience, soil unit, etc.

City of Roseville Open Space Preserves Long-term Monitoring (Placer County, CA)
Staff Ecologist (2018 - Present)

Assist in the monitoring of 25 preserves owned and managed by the City of Roseville. Habitat types include vernal pool grasslands, oak woodland, and riparian corridors. Conducted surveys including aquatic invertebrate surveys, vernal pool floristics, vernal pool hydrology monitoring, upland vegetation monitoring, invasive weed species monitoring, residual dry matter monitoring, RMA surveys, biological inspections, and nesting bird surveys.

Environmental Stewardship Foundation Preserves (Placer, El Dorado, & Sacramento Counties)
Staff Biologist (2018 – 2023)

Assisted in the monitoring of 13 preserves managed by Environmental Stewardship Foundation. Habitat types include vernal pool grasslands, oak woodland, and riparian corridors. Conducted surveys including biological inspections and general inspections. Prepared monitoring reports.

Flying M Ranch Wetland Preserve Project (Merced County, CA)
Staff Ecologist (2019 – 2023)

Conducted remote mapping of almost 400 acres of wetland and vernal pool grassland habitat, and assisting in the wetland delineation. Field surveys involved using Trimble GPS units for ground truthing and data collection after remotely mapping through aerial imagery interpretation. Also conducted special-status large branchiopod and amphibian surveys.

Great Valley Vernal Pool Habitat Study (Great Valley, CA)
Staff Ecologist (2019 – 2020)

This multi-scale, multi-parameter study analyzes the status and patterns of vernal pool habitat conservation and management within the Great Valley, and was funded by an Environmental Protection Agency grant. Assisted with mapping based on a master database in ArcGIS containing information pertaining to landowner type, conservation instrument, easement holder, funding source, etc., on all known public lands and private preserves supporting vernal pool habitat within the Great Valley.

Jamison Ranch Preserve Monitoring (Madera County, CA)
Staff Biologist (2018 – Present)

Conducted biological surveys and monitoring including California tiger salamander (*Ambystoma californiense*), large vernal pool branchiopod, and general conditions monitoring. Assist with annual monitoring reports for Upper Jamison, Lower Jamison, and Fenston Ranch Preserves.

McArthur Swamp Planning Unit Management Plan (Shasta County, CA)
Staff Ecologist (2019 – 2021)

Remotely mapped 4,500 acres of vernal pool, alkali pool, and seasonal wetland habitat on the McArthur Swamp Planning Unit. Conducted ground truthing and aquatic invertebrate surveys. Assisted with the production of the Management Plan document including map work and proofreading.

Midpeninsula Regional Open Space District Preserve Botanical Surveys (San Mateo and Santa Clara Counties, CA)
Staff Ecologist (2019 – 2020)

Assisted on wetland delineation field surveys across multiple Midpeninsula Regional Open Space District open space preserves. Assisted with production of wetland delineation and botanical survey reports.

Montezuma Wetlands Project (Solano County, CA)
Staff Biologist (2018 – 2023)

Conducted biological monitoring including fish surveys and general site management of invasive weed populations. Provided various mapping support including digitizing vegetation types based on aerial drone photography.

Propagation and Reintroduction of *Amsinckia grandiflora* (San Joaquin County, CA)
Staff Ecologist (2018 – 2020)

Assisted surveys monitoring the survival rates and quality of reintroduced and extremely rare large-flowered fiddleneck (*Amsinckia grandiflora*).

SELECTED PUBLICATIONS

Vollmar, J., K. Chinn, E. Smith, H. Hwang, and A. Bokisch. 2023. Conservation of California's Great Valley Vernal Pool Landscapes. Vollmar Natural Lands Consulting, Inc. Berkeley, CA.

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RACHEL MILLER, Staff Ecologist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting	Staff Ecologist	2020-present
Heinrich Property Management	Maintenance Technician & Leasing Agent	2016-2020
Academic Impact	Math and Science Tutor	2016-2018
Seaside High School	High School Science Teacher	2011-2015

PROFESSIONAL SUMMARY

Ms. Miller combines professional experience conducting botanical surveys and biological monitoring with her background as a science educator. Her experience with broad range of fieldwork includes planning and implementing botanical and floristic surveys, conducing wetland delineations, conducing quadrat and transect vegetation sampling, participating in vegetation monitoring and mapping, and managing general biological inspections. She has led vernal pool floristic surveys, participated in protocol-level and focused rare plant surveys, and conducted residual dry matter (RDM) assessments in open space preserves. She has also conducted habitat mapping surveys in urban open space preserves. Her survey experience extends through California's diverse habitats in the Sacramento and San Joaquin Valleys, the Sierra Nevada foothills, and the San Francisco Bay Area. Her primary areas of interest are California's native plants and the preservation and restoration of native botanical communities.

She has completed training for protocol rare plant surveys, and training for the California Rapid Assessment Method (CRAM) for Riverine, Depressional, and Estuarine wetlands. Her undergraduate and professional development work has focused on botany, ecology, and evolution, as well as GIS and cartography. Ms. Miller's background in science education developed her skills in effective oral and written communication of technical and scientific concepts. She has a history of producing clear, concise, and comprehensive reports, and brings strong organizational skills to her projects. She has experience with remote mapping, ArcGIS Pro, ArcMap, Avenza, and Trimble GPS data collection.

EDUCATION

M.A. Education and Teaching Credential. UC Davis, 2011
B.S. Ecology and Evolution. UC Santa Cruz, 2006
California Rapid Assessment Method (CRAM) for Wetlands, General Training, 2021
Poaceae Workshop, Jepson Herbarium, 2021
Rare Plant Survey Protocols, California Native Plant Society (CNPS), 2022

PERMITS

2081(a)-17-109-V Plant Voucher

REPRESENTATIVE PROJECT EXPERIENCE

Lazy K Ranch Vernal Pool and Floristic Monitoring (Madera County, CA) Staff Ecologist, Project Management (2021-present). Ms. Miller manages the post-construction biological monitoring for this project. Work includes vernal pool floristic surveys, hydrology surveys, large branchiopod monitoring, and general biological inspections for the site. She manages the project survey schedule, oversees data collection and analysis, and prepares the annual reports and mapping for the project.

City of Jackson Sutter Street Extension Project (Amador County, CA) Staff Ecologist (2021-2022). This project included protocol-level rare plant survey and wetland delineation prior to a street extension project by the City of Jackson through a previously undeveloped site. Ms. Miller assisted with the wetland delineation field survey, produced the wetland mapping, and wrote the delineation report. Working with VNLC's senior botanist, Ms. Miller conducted the protocol-level rare plant surveys, assisted with the floristic survey of the Study Area, mapped the sensitive and natural plant communities within the Study Area, and produced the rare plant survey report.

Large-Flowered Fiddleneck Reintroduction (Contra Costa, Alameda, and San Joaquin Counties, CA) Staff Ecologist (2021). VNLC oversaw a federally funded project to propagate and reintroduce the federally endangered large-flowered fiddleneck (*Amsinckia grandiflora*) into its historical range, and conducted the study design, analysis, and implementation. Ms. Miller participated in annual monitoring surveys of the reintroduced populations.

Cloverdale Ranch Botanical Resource Surveys Project (San Mateo County, CA) Staff Ecologist (2021). VNLC conducted a two-year study of this approximately 6,000-acre property located on the San Mateo Coast. Ms. Miller assisted with rare plant surveys, plant community mapping, and floristic inventory development for this project. Additional work by VNLC included invasive weed mapping, assessing rangeland conditions, and recommending habitat and vegetation management actions.

Walker Creek Ranch Distaff Thistle Control Project - Botanical Resources Survey (Marin County, CA) Staff Ecologist (2021). Ms. Miller assisted with botanical resource surveys for special-status plant species and sensitive natural communities, vegetation mapping, and invasive species mapping in support of a woolly distaff thistle (*Carthamus lanatus*) control project. She also contributed to floristic inventory development and assisted with data analysis and mapping for the project.

Elsie Gridley Mitigation Bank Wetland Delineation (Solano County, CA) Staff Ecologist (2021). Elsie Gridley is a biological mitigation bank managed by RES, Inc. to provide mitigation credits for vernal pool grassland and riparian habitats and several associated special-status species in the Sacramento River Delta region. VNLC was contracted to conduct a wetland delineation of 200 constructed vernal pools within approximately 275 acres of the bank. Ms. Miller led the delineation surveys; analyzed survey botanical, hydrology, and soils data; mapped the delineated vernal pools, and produced the delineation report.

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Samantha Maners, Staff Ecologist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting (VNLC)	Staff Ecologist	2023 - present

PROFESSIONAL SUMMARY

Ms. Maners had experience in native plant monitoring and restoration before joining VNLC. Her educational background focuses on ecology, field biology and natural resource management, particularly in the Central Coast of California.

Ms. Maners has worked on a variety of projects. With VNLC, Ms. Maners has worked on a wetland delineation on the Elsie Gridley Mitigation Bank in Solano County, CA, where she delineated vernal pools on the property through soil, vegetation and hydrology of the pools. Ms. Maners has also conducted vernal pool botany surveys on multiple properties spanning from Coarsegold, CA up to Rocklin and Roseville CA, where Ms. Maners has identified vernal pool vegetation and composition of the pools. Ms. Maners has also conducted rare vernal pool plant surveys in the Friant CA area, looking for San Joaquin Orcutt Grass (*Orcuttia inaequalis*) and Succulent Owl's Clover (*Castilleja campestris* subsp. *succulenta*) and identified the Orcutt grass in the survey area. Ms. Maners has also conducted Western Burrowing Owl surveys in Tracy CA, Swainson's Hawk surveys in Tulare CA, along with overall nesting bird surveys throughout The Central Valley. During her education Ms. Maners worked in tandem with the Bureau of Land Management to conduct mapping of Purple Needlegrass (*Stipa pulchra*) at The Fort Ord National Monument along with rapid habitat assessments across the grasslands on the national monument.

EDUCATION

B.S. Biology, Concentration in Ecology, Evolution and Organismal Biology, California State University: Monterey Bay, 2023

REPRESENTATIVE PROJECT EXPERIENCE

Fort Ord National Monument Native Grass Mapping (Monterey County, CA)
Student at California State University: Monterey Bay (2023)
Worked with the Bureau of Land Management and peers to conduct modified point intercept surveys of grassland vegetation. Data collected was then used in Arc GIS Pro to make raster models of the vegetation composition between native and nonnative plants. Conducted rapid habitat assessments of the grasslands on the monument along with frequency of Purple Needlegrass in quarter hectare parcels.

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Trevor G. Hurd, Staff Ecologist

EMPLOYMENT HISTORY

Vollmar Natural Lands Consulting (VNLC)	Staff Ecologist	2023 - present
Palouse Clearwater Environmental Institute	AmeriCorps Restoration Technician	2022-2023
Maricopa County Parks and Recreation	Desert Defender/Eco-Database Intern	2022

PROFESSIONAL SUMMARY

Mr. Hurd worked in invasive species monitoring and restoration before joining VNLC. His educational and volunteer background focuses on herpetology and botany, particularly in the desert southwest.

Mr. Hurd has worked on a variety of projects. As an AmeriCorps Restoration Technician, he coordinated with landowners and a University of Idaho project planning class to draft a Clean Water Act 319 grant proposal on behalf of his host organization; and finalized the designs with the restoration coordinator. He also worked on 6 restoration projects implementing various restoration measures, most notably on a Stage 0 wetland restoration project, the first of its kind in Idaho, that saw the successful installation of over 7000 plants in the spring planting season. While working as an intern for Maricopa County Parks and Recreation, Mr. Hurd was responsible for mapping out the presence of invasive species in 3 county level parks.

EDUCATION

B.S. Conservation Biology and Ecology, Arizona State University, 2022
GIS Certificate, Arizona State University, 2022
Masters of Natural Resources: Restoration Ecology and Habitat Management, University of Idaho, In progress

REPRESENTATIVE PROJECT EXPERIENCE

Magee Rd. Restoration Project (Latah County, ID)
AmeriCorps Restoration Technician (2023)
Coordinated with landowners and a University of Idaho project planning class to design a restoration plan and draft a Clean Water Act 319 non-point source agriculture grant on behalf of the Palouse Clearwater Environmental Institute. Worked with the Restoration Coordinator to finalize the grant application and associated restoration designs before submittal to the Idaho Department of Environmental Quality.