

BIOLOGICAL RESOURCES ASSESSMENT REPORT

ARRIVE FAIRFIELD LUXURY TOWNHOMES PROJECT FAIRFIELD, CALIFORNIA

Project No. 2102-0373

Prepared for:

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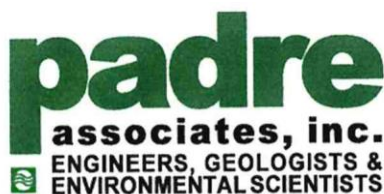
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JANUARY 2022



Authenticity and Signature Page



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Padre Associates, Inc. hereby certifies that all statements furnished in the following Biological Resources Assessment Report and all supporting information required for this biological evaluation are true and correct to the best of our knowledge and belief. Further, we certify that the field surveys associated with this report were performed by Padre using standards accepted by the City of Fairfield and accurately represent all information retained from the field visit to the Arrive Fairfield Luxury Townhomes Project Site, Fairfield, Solano County, California.

A handwritten signature in black ink, reading "Christina Santala", written over a horizontal line.

Christina Santala
Project Biologist

A handwritten signature in black ink, reading "Sarah Powell", written over a horizontal line.

Sarah Powell
Senior Biologist/Principal

A handwritten signature in black ink, reading "Crystahl Taylor", written over a horizontal line.

Crystahl Taylor
Senior Project Manager

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1.0 INTRODUCTION

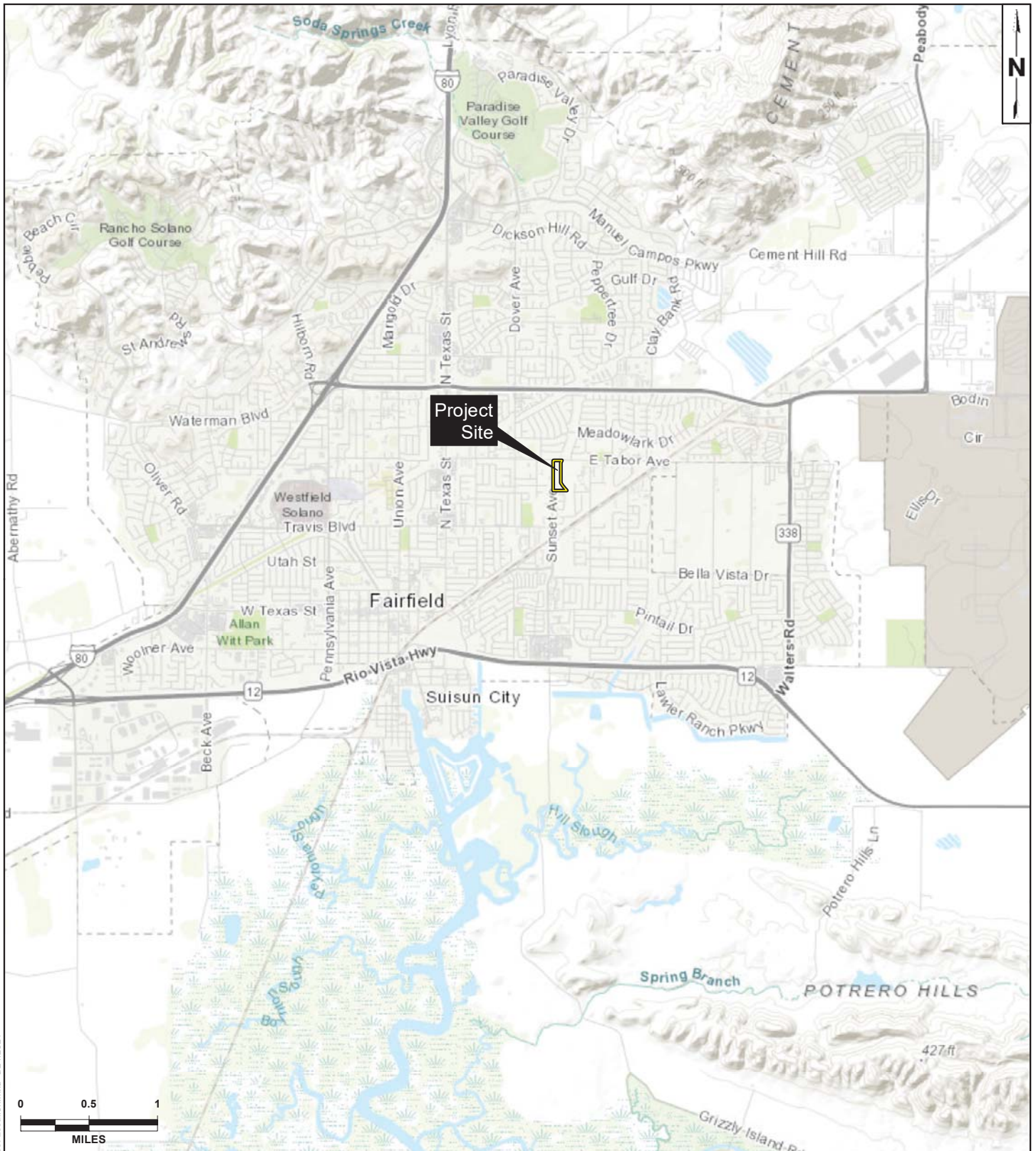
The following Biological Resources Assessment Report (Report) has been prepared by Padre Associates, Inc. (Padre) to document the results of a biological resources assessment survey conducted on behalf of Red Tail Multifamily Land Development, LLC (RTD) for the Arrive Fairfield Luxury Townhomes Project (Project) located at 1776 Sunset Avenue, Fairfield, Solano County California (Project Site). This Report documents the results of a desktop review and field survey completed on August 26, 2021, a discussion of existing biological resources, special-status biological resources that have the potential to occur within the proposed Project Site, the potential Project impacts to these resources, and recommended measures to avoid and/or minimize Project impacts. This Report is intended to support Project environmental permitting.

1.1 PROJECT SITE LOCATION

The Project Site is located at 1776 Sunset Avenue, Fairfield, California and consists of three separate parcels identified with Solano County Assessor's Parcel Numbers (APNs) APNs 0037-030-200, 0037-030-210, and 0037-060-480, and is within the Fairfield North 7.5-minute United States Geological Survey (USGS) quadrangle. The northern two parcels are currently undeveloped and the southern-most parcel contains a vacant single-family residence. The Project Site is bounded by East Tabor Avenue to the north, a flood control channel and Grange Middle School to the east, Brandon Way to the south, and Sunset Avenue to the west. See Figure 1-2 for the location of the Project Site.

1.2 PROJECT DESCRIPTION

The Project proposes development of the approximately 8.71-acre property consisting of construction of multi-family residential units and associated infrastructure including streets and driveways, and improvement of a storm water outfall system that drains into the adjacent flood control channel. The Project will eliminate a relict channel of Laurel Creek, which was hydrologically isolated and partially backfilled in conjunction with the construction of an adjacent flood control channel constructed in the mid-1980s by the U.S. Army Corps of Engineers (ACOE). A portion of the Project Site is currently developed with one vacant single-family residential building, a concrete pad, and asphalt paved area at the south end of the Project Site. The remainder of the Project Site is vacant land that has been previously disturbed and is routinely disked to reduce fire hazard. The Project is currently in the initial planning and permitting phase.



LEGEND:

 Project Boundary

MAP EXTENT:



Source: Esri Online Topo Basemap
 Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
 Notes: This map was created for informational and display purposes only.

padre
 associates, inc.
 ENGINEERS, GEOLOGISTS &
 ENVIRONMENTAL SCIENTISTS

PROJECT NAME: ARRIVE FAIRFIELD LUXURY TOWNHOMES FAIRFIELD, CA	
PROJECT NUMBER: 2102-0373	DATE: January 2022

PROJECT LOCATION

**FIGURE
1-1**

2.0 REGULATORY AUTHORITY

The regulatory authority section describes those policies and plans administered by resource agencies pertaining to those biological resources that are known to exist and/or have the potential to occur within the Project region.

2.1 FEDERAL REGULATIONS

2.1.1 Endangered Species Act of 1972.

The Federal Endangered Species Act (FESA), administered by the United States Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA), and the National Marine Fisheries Service (NMFS), provides protection to species listed as Threatened or Endangered, and critical habitat designated for the protection of such species. FESA prohibits “take” of Threatened and Endangered species (including plants) except under certain circumstances and only with authorization from the USFWS through a permit under sections 4(d), 7, or 10(a) of the FESA. Under FESA, take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Critical Habitat is defined in Section 3(5)(A) of FESA as: (1) specific areas within the geographical area occupied by the species at the time of listing, on which are found those physical or biological features that are essential to the conservation of the listed species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time of listing that are essential for the conservation of a listed species.

The FESA also provides protection to those species proposed to be listed under FESA or critical habitats proposed to be designated for such species. In addition to the listed species, the Federal government also maintains lists of species that are neither formally listed nor proposed but could potentially be listed in the future. These Federal candidate species include taxa for which substantial information on biological vulnerability and potential threats exist and are maintained in order to support the appropriateness of proposing to list the taxa as an Endangered or Threatened species.

2.1.2 Migratory Bird Treaty Act

The USFWS also administers the Federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). Under the MBTA, it is unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR 10, including feathers or other parts of birds, nests, eggs or products, except as allowed by implementing regulations (50 CFR 21). In 2017, Solicitor of the Department of the Interior issued a legal opinion (M-37050 or M-Opinion) stating that “The Migratory Bird Treaty Act Does Not Prohibit Incidental Take” which in effect revoked take protections under the MBTA. On January 5, 2021, the USFWS published a final rule that defined the scope of the MBTA stating that incidental take of birds resulting from an activity is not prohibited when the underlying purpose of that activity is not to take birds. On May 6, 2021, the USFWS announced a proposed rule to revoke the January 7 final regulation that limited the scope of the MBTA, in an effort to reinstate Federal MBTA protections. The proposed rule is pending as

of June 2021. In the interim, migratory birds are protected (for take) through AB 454 California Migratory Bird Protection Act (California Fish and Game Code Section 3513).

2.1.3 Waters of the United States

The ACOE is responsible for the issuance of permits for the placement of dredged or fill material into waters of the United States (U.S.) pursuant to Section 404 of the Clean Water Act (CWA) (33 USC 1344).

In non-tidal waters the lateral extent of Federal jurisdiction is determined by the ordinary high water mark (OHWM), which is defined as the: “...*line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*” (33 CFR 328[e]). Additional physical characteristics, including matted vegetation, sediment sorting, multiple observed flow events, water staining, and others, have also been used to determine the OHWM (U.S. Army Corps of Engineers, 2005).

Wetlands could also be regulated as waters of the U.S. if they were adjacent to jurisdictional waters (other than waters that are themselves wetlands). The ACOE regulation concerning wetlands adjacent to jurisdictional waters is defined at 33 CFR 328.4(c)(4):

Non-tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:

- *In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or*
- *When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands (emphasis added)*

The term adjacent is defined at 33 CFR 328.3(C) as:

The term adjacent means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are “adjacent wetlands”

In 2015, the ACOE and Environmental Protection Agency (EPA) issued new definitions for waters/wetlands (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency, 2015), known as the 2015 Clean Water Rule. Immediately subsequent to issuance, the new Rule was challenged in Federal courts, resulting in a nationwide hold on the new Rule, reverting to the 1986 regulations and subsequent guidance for Approved Jurisdictional Determinations. In 2017, the ACOE and EPA published their intent to “review and rescind or revise” the 2015 Clean Water Rule, and the EPA asked the courts to suspend the case while the Rule was under review. In 2018 the EPA delayed the effective date of the 2015 Clean Water Rule for two years, and the Sixth Circuit Court lifted its stay of the Rule. A Federal judge then issued a nationwide injunction on the administrative delay of the Clean Water Rule for failure to comply with the Administrative Procedure Act. Pursuant to the Court order, the 2015 Clean Water Rule became effective in 22 states, including California (U.S. Army Corps of Engineers, 2018).

In December 2018 the ACOE and EPA proposed a revised definition of waters of the U.S. that was published in the Federal Register in early 2019, and subsequently repealed the 2015 Clean Water Rule reverting regulation back to the 1986 regulations and subsequent guidance for Approved Jurisdictional Determinations. On January 23, 2020, the ACOE and EPA finalized the Navigable Waters Protection Rule (NWPR) to define Waters of the U.S. and streamline the definition so that it includes four categories of jurisdictional waters, provides clear exclusions for features not regulated, and defines terms in the regulatory text. The NWPR fulfilled Executive Order 13788 and became effective on June 23, 2020. As a result of a recent court case on August 20, 2021, that vacated and remanded the NWPR, the ACOE and EPA have halted implementation of the NWPR and are currently interpreting waters of the U.S. consistent with the pre-2015 regulations (USEPA, 2021).

2.1.4 Federal Wetlands

Wetlands are a special category of waters of the U.S., and are defined at 33 CFR 328.3(b) as: “...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

The ACOE utilizes the *Corps of Engineers Wetland Delineation Manual* (1987), herein referred to as *1987 ACOE Manual*, to identify wetlands subject to regulatory jurisdiction (jurisdictional wetlands) under the CWA. In central and southern California, Nevada, Arizona, and the other arid regions of the western U.S. the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* prepared by the ACOE’s Engineer Research and Development Center (2008) is used to delineate jurisdictional wetlands.

The ACOE identifies jurisdictional wetlands using a three-parameter definition using vegetation, soil, and hydrological characteristics. Excluding unusual conditions (atypical conditions or disturbed sites), all three parameters must be present for a site to be considered a jurisdictional wetland.

2.1.5 Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

The ACOE is also responsible for authorizing work affecting navigable waters of the U.S. Structures or work under or over a navigable water of the U.S. is considered to have an impact on the navigable capacity of the waterbody (33 CFR 322.3[a]).

2.1.6 Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408)

The secretary of the Army may, upon the recommendation of the Chief of Engineers, grant other entities permission for the permanent or temporary alteration or use of any ACOE Civil Works Project. An alteration refers to any action by any entity other than the ACOE that builds upon, alters, improves, moves, occupies, or otherwise affects the usefulness, or the structural or ecological integrity of a ACOE project. Section 408 permission requires a determination that the requested alteration is not injurious to the public interest and will not impair the usefulness of the project. This means that ACOE has the authority to review, evaluate, and approve all alterations to federally authorized civil works projects to make sure they are not harmful to the public and still meet the project’s intended purposes mandated by congressional authorization.

2.2 STATE REGULATIONS

2.2.1 California Department of Fish and Wildlife

2.2.1.1 Wildlife and Plant Protection

The California Department of Fish and Wildlife (CDFW) administers a number of laws and programs designed to protect fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code Section 2050) that regulates the listing and take of threatened and endangered species. Under Section 2081 of CESA, CDFW may authorize the take of an endangered and/or threatened species, or candidate species by a permit or Memorandum of Understanding for scientific, educational, or management purposes.

CDFW also maintains lists of “candidate species” which are species that CDFW has formally noticed as under review for addition to the threatened or endangered species lists. California candidate species are afforded the same level of protection as listed species. CDFW also designates “species of special concern” which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species but may be added to official lists in the future. The species of special concern list is intended by CDFW as a management tool to call attention to declining populations and focus efforts on decreasing threats to long-term viability.

CDFW also administers other State laws designed to protect wildlife and plants, including those laws stated within Fish and Game Code Sections 3511, 3503, 3503.5, and 3513. Under Section 3511 of the Fish and Game Code, CDFW designates species that are afforded “fully protected” status. Fish and Game Code 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of *any bird*. Section 3503.5 of the Fish and Game Code states that it is “*unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.*” Fish and Game Code Section 3513 states that Federal MBTA protections are afforded in California through Assembly Bill (AB) 454 California Migratory Bird Protection Act.

CDFW also manages the California Native Plant Protection Act of 1977 (Fish and Game Code Section 1900, et seq), which was enacted to identify, designate, and protect rare plants. In accordance with CDFG guidelines, California Native Plant Society (CNPS) Rare Plant Rank 1B plants are considered “rare” under the Act and are evaluated in California Environmental Quality Act (CEQA) reports.

2.2.1.2 Section 1602 Lake and Streambed Alteration Agreement

CDFW administers several laws and programs designed to protect fish and wildlife resources in the State of California, including Section 1602 of the California Fish and Game Code, which requires a Lake or Streambed Alteration Agreement between CDFW and any State or local governmental agency or public utility before the initiation of any construction project that will:

- Divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake;
- Use materials from a streambed; or

- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Therefore, CDFW claims jurisdiction over the bed, bank, and channel of drainage features with regard to activities regulated under Section 1602 of the California Fish and Game Code. CDFW has adopted the same wetland definition as USFWS, classified by the presence of only one parameter; however, CDFW does not specifically regulate wetlands.

2.2.2 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (CA Water Code §§ 13000-13999.10) mandates that waters of the State of California shall be protected. Current policy in California is that activities that may affect waters of the State shall be regulated to attain the highest quality. Waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the State. The Porter-Cologne Act establishes that the State assumes responsibility for implementing portions of the Federal CWA, rather than operating separate State and Federal water pollution control programs in California. Consequently, the State is involved in activities such as setting water quality standards, issuing discharge permits, and operating grant programs. Pursuant to Section 401 of the CWA, the ACOE cannot issue a Federal CWA permit until the State of California first issues a Water Quality Certification to ensure that a project will comply with State water quality standards. The CWA's 401 certification requirement applies to many types of permits and is an important tool for the State to control projects that might degrade State waters. In Solano County, the authority to issue water quality certifications is vested with the San Francisco Bay Regional Water Quality Control Board (RWQCB).

In 2019, the State Water Resources Control Board adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material (Procedures), for inclusion in the Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: 1) a wetland definition; 2) wetland delineation procedures; 3) a wetland jurisdictional framework; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. The Procedures took effect in May 2020.

2.2.2.1 Waters of the State

State Water Code defines Waters of the State broadly to include any surface water or groundwater including saline waters, within the boundaries of the State. These include:

- Natural wetlands
- Wetlands created by modification of a water of the State
- Wetlands that meet definition of waters of the U.S.
- Artificial wetlands that meet the following criteria:
 - Agency approved mitigation projects
 - Specifically identified in a water quality control plan as a wetland or other water of the State
 - Resulting from historic human activity, not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape

- Greater than or equal to one acre in size, unless constructed for one of a variety of industrial or land management purposes

2.2.2.2 State Wetland Policy

A State wetland is defined in the new Procedures as an aquatic feature that “...*under normal circumstances has continuous or recurrent saturation of the upper substrate caused by groundwater, shallow surface water, or both; duration of saturation sufficient to cause anaerobic conditions in the upper substrate; and, vegetation that is dominated by hydrophytes or lacks vegetation.*”

If an aquatic feature meets the definition of a State wetland it may be considered a water of the State.

2.3 LOCAL AUTHORITY

Solano County incorporates all USFWS, ACOE, CDFW, and RWQCB standards when assessing project impacts to vegetation, wildlife, and wetland habitats, as well as the California Environmental Quality Act (CEQA) evaluation process, when applicable. In addition, the County and the City of Fairfield have developed a framework of land use policies and recommendations intended to reduce impacts to sensitive biological resources. Relevant policies and recommendations are found in the planning documents listed below.

- Solano County Multiple-Species Habitat Conservation Plan (Solano County Water Agency [SCWA], 2012); and
- City of Fairfield Municipal Code; Chapter 7A – Environmental Quality; Section 25.36 Tree Conservation; Subsection 25.36.3 Protected Trees.

2.3.1 City of Fairfield General Plan

The Open Space, Conservation, and Recreation Element of the Fairfield General Plan contains goals, objectives, and policies to designate, preserve, and protect lands in the City of Fairfield (City of Fairfield, 2013). Objectives, policies, and programs relevant to biological resources are included in this section.

Objective OS 7: Identify and protect sensitive biological habitat and resources.

Policy OS 7.1. Establish policies to protect indigenous wildlife and their habitats. Support the Solano County Water Agency Habitat Conservation Plan (HCP) preparation effort and, if the HCP is approved and adopted, implement its requirements.

Programs developed for this policy require project proponents to conduct surveys prior to development to identify potential sensitive biological resources including California red-legged frog, foothill yellow-legged frog, western pond turtle, California tiger salamander, California horned lizard, special-status raptors nests, Swainson's hawks, burrowing owl, tricolored blackbird, and jurisdictional waters of the United States.

Policy: OS 7.5. Identify and protect vernal pools located in the entire General Plan Area.

Programs developed for this policy focus on identification, protection, and avoidance of vernal pool and other seasonal wetland and aquatic habitats that could potentially support special-status invertebrate species.

Policy OS 7.7. Continue promoting the preservation of existing mature trees and encourage the planting of appropriate shade trees in new developments.

The program developed for this policy requires the project proponent to implement Zoning Ordinance requirements for street trees and parking lot shade trees in new residential and commercial developments.

Policy OS 7.9. Preserve and protect special status plant populations.

The programs developed for this policy focus on identification, avoidance and/or mitigation for impacts of special-status plant species within proposed development project sites.

Policy OS 7.10. Prevent the spread of noxious weeds.

The program developed for this policy requires the project proponent to identify, map, and avoid noxious weed areas prior to construction, if feasible.

Objective OS 9. Maintain existing waterways in their natural state if possible.

Policy OS 9.1. Promote restoration and establish permanent mechanisms to protect wetlands and riparian corridors.

Policy OS 9.2. Manage all seasonal creeks and other drainage courses so as to protect and enhance the Suisun Marsh.

The programs developed for this policy focus on identification, delineation, and jurisdictional determination of freshwater marsh, salt marsh, vernal pool, and seasonal wetland, and riparian biological communities within a development site. If avoidance is not feasible, the project proponent must obtain necessary permits and implement mitigation measures to compensate for impacts to aquatic habitats.

Policy OS 9.10. Avoid or reduce the loss of riparian habitat to the extent feasible for each development site.

The programs developed for this policy require the project proponent to identify and map riparian habitats within a development site. If avoidance is not feasible, necessary permits must be obtained, and mitigation measures must be implemented to compensate for impacts to riparian habitat.

3.0 METHODS

Methods to collect biological resources information included a desktop review and field survey of the Biological Study Area (BSA). The BSA encompassed the entire approximately 8.71-acre property and an approximately 100-foot buffer extending into the adjacent landscape and hardscape areas. A preliminary aquatic resources delineation survey was completed in conjunction with the biological resources assessment to identify and document existing aquatic features within the BSA. Detailed information on resources utilized for the desktop review and field survey methods are provided in the following sections.

3.1 DESKTOP REVIEW

The desktop review included a query of the CDFW California Natural Diversity Database (CNDDDB) (CDFW, 2021) to identify reported occurrences of special-status plant and wildlife species and sensitive habitats within the BSA and surrounding area. The Project Site is located within the Fairfield North 7.5-minute United States Geological Survey (USGS) quadrangle, and the CNDDDB search was focused on this and portions of adjacent quadrangles including Denverton, Fairfield South, Cordelia, Mt. George, Capell Valley, Mt. Vaca, Allendale, and Elmira. Within this Report, the term “region” refers to the approximate five-mile radius surrounding the BSA. The CNDDDB is a statewide digital database utilized to locate the nearest occurrences of rare, Threatened, Endangered, and special-status species and natural communities in California. All wildlife taxa listed with the CNDDDB are considered “special animals” in which the CDFW is interested in tracking, regardless of their legal protection status.

USFWS Information for Planning and Consultation (IPaC) platform was queried as part of the desktop review (USFWS, 2021a). An official species list was generated (Sacramento Fish and Wildlife Office Consultation No. 08ESMF00-2021-SLI-2491) that documents USFWS Federal special-status plant and wildlife species occurring within the Project region.

The USFWS Critical Habitat Portal (USFWS, 2020b) was reviewed to determine location of Critical Habitat for federally protected species that may potentially occur in the region. The USFWS Critical Habitat Portal is an online database that provides most recent datasets for federally defined Critical Habitat areas.

The USFWS National Wetland Inventory (NWI) is an online resource that provides detailed information on the abundance, characteristics, and distribution of USFWS-defined wetlands, and NWI data are used to promote the understanding, conservation and restoration of wetlands throughout the United States. A query of the NWI database was conducted to identify potential wetlands and waters in the BSA and the Project region (USFWS, 2020c).

The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (Inventory) (CNPS, 2021) is an online resource that provides the current conservation status of California’s rare, threatened, and endangered plants. A query of the CNPS Inventory was queried as a supplement to the CNDDDB search to identify any additional special-status plant species occurrences within five miles of the BSA.

A review of site records from other environmental documents and range maps from literature, including Zeiner et al, (1998, 1990a, 1990b) and Sibley (2014), were utilized to determine what species the Project Site has the potential to support.

In addition, the desktop review examined the *Biological Resource Constraints Analysis, East Tabor Avenue and Sunset Avenue, City of Fairfield* (LSA 2020), and *Solano Multi-Species Habitat Conservation Plan* (SCWA, 2012) to gather additional Project Site background information and findings.

3.2 BIOLOGICAL RESOURCES ASSESSMENT SURVEY

On August 26, 2021, Padre Biologists Sarah Powell and Christina Santala conducted a field survey within the BSA focused on the existing biological resources (wildlife, plants, plant communities), presence/absence of special-status plant and wildlife species and habitats, the suitability of habitat to support special-status species, aquatic resources, and a tree inventory of all trees including native, non-native, and cultivated species.

Biological field survey methods consisted of walking systematic transects throughout the BSA and recording wildlife species observed by visual observation using binoculars, indirect signs (e.g., tracks, scat, skeletal remains, and burrows), and/or auditory cues (i.e., calls and songs). Field notes on botanical resources and plant communities were also recorded. The initial biological field survey was conducted in August 2021, which was relatively late in the growing season of annual grass and herbaceous plant species and was outside the typical blooming for some potentially occurring special-status species known to occur in the Project region.

A summary of field surveys conducted within the Project Site completed to date by Padre is provided in Table 3-1. Biological Resources Survey Summary.

Table 3-1. Field Survey Summary

Date	Survey Type	Padre Staff
April 2021	Phase I ESA	Eric Snelling
August 26, 2021	Biological resources	Sarah Powell, Christina Santala
August 26, 2021	Aquatic resources delineation	Sarah Powell, Christina Santala
August 26, 2021	Tree inventory survey	Sarah Powell, Christina Santala

3.3 TREE INVENTORY SURVEY

On August 26, 2021, in conjunction with the biological resources assessment survey, Padre completed surveys that meet the City of Fairfield's requirements for completion of a tree survey to ensure conformance with their Tree Protection Ordinance. The Fairfield Tree Protection Ordinance requires protection of specific native trees including oaks (*Quercus* sp.), madrone (*Arbutus menziesii*) and other species. In accordance with this requirement, Padre completed a tree survey to collect data on oak trees (and all other tree species) within, or overlapping, the Project footprint to quantify Project impacts to oak trees and oak woodland canopy. Field methods consisted of walking through the BSA and recording the location and relevant data for trees within,

or overlapping, the proposed Project Site. Tree data collected includes the location using a Global Positioning System (GPS), species, diameter at breast height (DBH), and mortality status (living / dead) of each tree. This Report provides a summary of the results and proposed mitigation. See Appendix E – Tree Inventory Survey Report for detailed information regarding the tree inventory.

3.4 AQUATIC RESOURCES DELINEATION SURVEY

On August 26, 2021, in conjunction with the biological resources assessment survey, Padre completed surveys to identify, document, and determine regulatory jurisdiction for aquatic resources observed within the BSA. A summary of the aquatic resources delineation survey and determination results are provided within this Report in Section 4.6 Aquatic Resources. The complete aquatic resources delineation report is attached as Appendix F - Preliminary Aquatic Resources Delineation Report.

Potential wetlands were evaluated for the presence of hydrophytic vegetation, hydric soils, and hydrology. Wetland delineation methods followed guidelines from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (Environmental Laboratory, 2008). All data was recorded on ACOE Wetland Determination Data Forms – Arid West Region (Version 2.0). A handheld GPS unit was used to record the location of the samples and the wetland boundary (upon determination).

Non-wetland waters were evaluated based on desktop and field verification of presence of bed and bank and field indicators for the OHWM following the guidelines of *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley, 2008). A GPS unit was used to record representative points at the top of the bank of representative features. Desktop mapping of the feature limits were completed following the field survey.

4.0 FINDINGS

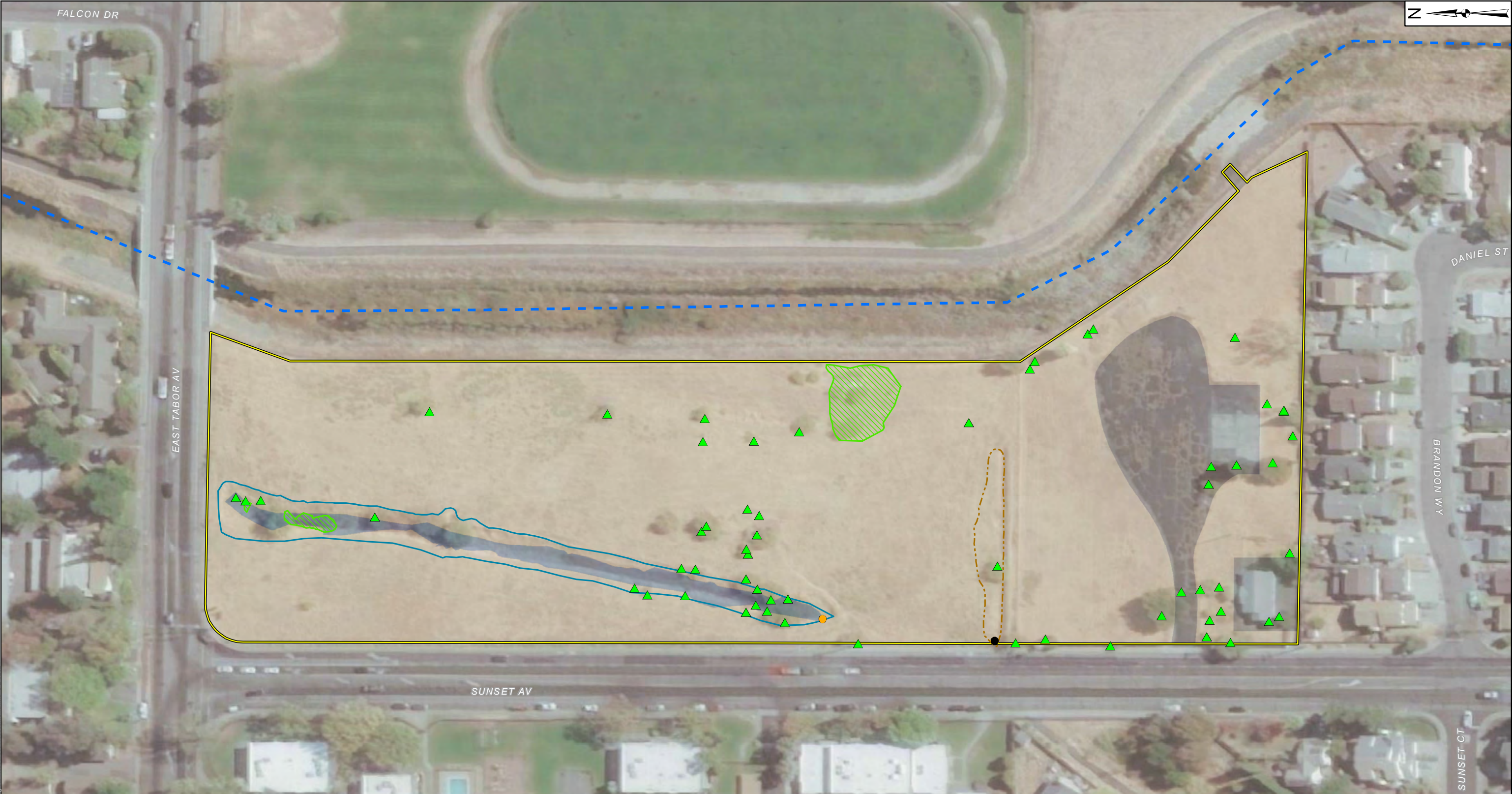
The following discussion of biological resources includes those that were identified in the desktop review, those observed during the August 2021 field survey within the BSA, and resources that have the potential to occur based on the presence of suitable habitat. Supporting documentation includes Figure 4-1 – Biological Resources Assessment Results Map, Figure 4-2 – Regional Special-Status Biological Resources, Appendix A – Site Photographs, Appendix B – Vascular Plant List, Appendix C – Wildlife List, Appendix D – CNDDB and USFWS Species Lists, and Appendix E – Tree Inventory Survey Report.

4.1 REGIONAL SETTING

The Project Site is located in the City of Fairfield, population 115,000, situated approximately 40 feet above sea level and approximately three miles north of the Suisun Marsh, an estuary within the Sacramento-San Joaquin River Delta northeast of San Francisco Bay. The Project Site is currently a vacant lot with an abandoned single-family residential building at the south end of the Project Site. Surrounding residential, commercial, and transportation land uses include single and multi-family housing, Grange Middle School, and roads. There is a relict creek channel running in a northeast to southwest direction on the western portion of the property. The relict channel was created when the Corps constructed the Fairfield Vicinity Streams Flood Control Project and rerouted Laurel Creek to the east side of the property. The flood control project in this portion of Laurel Creek was constructed in the mid- to late 1980s (LSA, 2020). Based on a review of historic aerial imagery, the flood control channel was constructed between 1984 and 1993 (EDR, 2021).

4.2 VEGETATION COMMUNITIES

Based on species composition, life form, and community membership rules, the vegetation within the BSA was classified into a vegetation type based on treatments described in *A Manual of California Vegetation Second Edition* (MCV2) (Sawyer et al., 2009), and site-specific classifications. All identifiable plant species observed within the BSA were documented. Plant specimens that were not positively identified in the field were further examined using appropriate botanical keys, including *The Jepson Manual Vascular Plants of California* (Baldwin et. al., 2012). A list of plant species identified in the BSA during the August 2021 field survey is provided in Appendix B. The two vegetation types observed included Wild oats and annual brome grasslands, and Mixed Riparian, with an anthropogenic land cover type described as Developed. Approximate acreages and regulatory status of each of each type is listed in Table 4-1 – Summary of Habitats and Vegetation within the BSA and are described below.



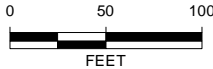
LEGEND:

- ▲ Tree
- Culvert
- - - Basin
- Relict Channel Top of Bank
- - - Laurel Creek Flood Control Channel
- ▨ Tree/Sapling Clumps
- ▭ Biological Study Area (BSA)

Vegetation Communities

- Wild oats and annual brome grassland (7.67 ac)
- Developed (0.81 ac)
- Mixed wetland riparian (0.24 ac)

MAP EXTENT:



Source: Sources, Esri Online Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME: ARRIVE FAIRFIELD LUXURY TOWNHOMES FAIRFIELD, CA	
PROJECT NUMBER: 2102-0373	DATE: January 2022

**BIOLOGICAL RESOURCES
ASSESSMENT RESULTS MAP**

**FIGURE
4-1**

Table 4-1. Summary of Habitats and Vegetation within the BSA

Vegetation/Habitat Classification	Acres within the BSA	Percentage of the Project Site
Wild oats and annual brome grassland	7.67	87.9%
Mixed Wetland Riparian ¹	0.24	2.8%
Developed	0.81	9.3%
Totals:	8.72	100%
Notes: ¹ Mixed Wetland Riparian is a site-specific classification based on observed species composition; there is no corresponding CDFW Natural Community for this assemblage of species; therefore, there is no State regulatory status rank. However, CDFW typically affords protection to riparian vegetation through California Fish and Game Code section 1600 notification process.		

4.2.1 Wild oats and annual brome grasslands

Wild oats and annual brome grasslands (*Avena* spp. – *Bromus* spp. Semi-Natural Herbaceous Alliance) occur in waste places, rangelands, and openings in woodlands. This alliance is characterized by wild oats or brome species as dominant or co-dominant in the herbaceous layer; cover is open to continuous, and emergent trees and shrubs may be present at low cover (Sawyer et al., 2009). As observed during the August 2021 survey, this alliance occurred on upland areas throughout the Project Site. The dominant to co-dominant species were wild oats (*Avena fatua*) and ripgut grass (*Bromus diandrus*), with component to intermittent species including species including barley (*Hordeum murinum* ssp. *leporinum*), black mustard (*Brassica nigra*), alkali mallow (*Malvella leprosa*), bindweed (*Convolvulus arvensis*), and scattered occurrences of coyote brush (*Baccharis pilularis*), northern California black walnut (*Juglans hindsii*), oak trees, and ornamental trees. This alliance is not considered sensitive by the CDFW and is not protected under CEQA.

4.2.2 Mixed Wetland Riparian

Mixed Wetland Riparian is a site-specific classification consisting of an assemblage of hydrophytic and riparian tree, shrub, and herbaceous species that occurred in the relict channel within the BSA. The vegetation was intermittent and exhibited variable density throughout the feature. The relict channel had been used as a homeless encampment and the northern portion had been recently burned as evidenced by charred vegetation, ground, and remnant debris. The dominant species were perennial pepperweed (*Lepidium latifolium*), hardstem bulrush (*Schoenoplectus acutus*), salt grass (*Distichlis spicata*), creeping wildrye (*Elymus triticoides*), and intermittent occurrences of Northern California black walnut, and Pacific willow (*Salix lasiandra*), and ornamental palm trees (*Washingtonia robusta* and *Phoenix* sp.). This alliance is considered sensitive when associated with drainages and wetlands.

4.2.3 Developed

Within this Report, Developed is a term that describes areas where the land surface has been modified for infrastructure such as paved and unpaved roads and building pads. Developed lands typically do not support vegetative cover due to the presence of impervious surfaces; however, disturbed areas that are not paved can support sparse vegetative cover. As observed during the August 2021 survey, Developed areas included asphalt driveway, linear fence corridors, abandoned asphalt and concrete pads, and a vacant single-family home.

4.3 TREES

Padre completed a tree inventory in conjunction with the August 2021 biological resources assessment field survey to document all trees located within the BSA. Trees occurred intermittently as individuals and small clumps scattered throughout the BSA. The most common species was the native northern California black walnut with other native, non-native, and cultivated species including English walnut (*Juglans regia*), cultivated walnut (*Juglans* sp.), valley oak (*Quercus lobata*), interior live oak (*Quercus wislizeni*), common fig (*Ficus carica*), cultivated apple (*Malus* sp.), date palm (*Phoenix* sp.), Mexican fan palm (*Washingtonia robusta*), pepper tree (*Schinus molle*), cottonwood (*Populus fremontii*), and redwood (*Sequoia sempervirens*).

The black walnut trees within the BSA appeared to be remnants of agricultural history of this area and not naturally occurring. Many of the black walnuts were sprouted rootstock from grafted trees that had been cut above the graft and others appear to be escaped from a previous walnut orchards in the surrounding area. Historical imagery (Padre, 2021) shows an orchard on the property east of the Project Site dating back to the 1930s to 1950s. The other trees within the BSA appeared to be mature remnant planted ornamentals associated with the past residence land use and a few scattered oaks. Trees within the relict channel primarily consisted of Northern California black walnut saplings with several Mexican fan palms. Many of trees in the northern portion of the relict channel were dead or charred due to a recent fire within the channel feature.

The City of Fairfield's Tree Protection Ordinance (Fairfield Municipal Code Section 25.36) is intended to conserve tree resources by protecting significant trees from unnecessary destruction or removal, and encourages the replacement of trees lost to disease, natural hazards, or human intervention. The ordinance states that the following trees are designated as protected trees:

- A. All trees on public property.
- B. Trees planted or preserved on private property or within the public right of way which were:
 - Required by the City as a condition of approval for the project; or
 - Shown on a landscape drawing or plan for a project approved by the City.
- C. The following species of trees located on undeveloped private properties which exceed 6 inches in caliper or diameter at breast height. Breast height is measured at a point located 4-1/2 feet above the existing ground level of the tree:
 - Native Oaks (*Quercus* sp.);
 - Bay Laurel (*Umbellularia californica*);

- Madrone (*Arbutus menziesi*); and
 - Buckeye (*Aesculus californica*).
- D. Trees or groups of trees having one or more of the following characteristics, as determined by the City during project review or through special studies:
- Demonstrated habitat value;
 - Historical or cultural value, as documented by published sources;
 - Important aesthetic value;
 - Uniqueness or rarity; and
 - Unusual size or age.

There were 60 native and non-native trees ranging in size from sapling (less than one inch diameter at breast height [DBH]) to large mature trees. Of these trees, there were a total of four protected oak trees as defined by the Tree Protection Ordinance consisting of valley oak and interior live oak. Refer to Appendix E – Tree Inventory Report for details on survey methodology, results, and recommended mitigation measures.

4.4 WILDLIFE

Wildlife was identified during the August 2021 field survey through indirect sign and direct observations of individuals. Species observed and detected included several bird species such as turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), brewer's blackbird (*Euphagus cyanocephalus*) Canada goose (*Branta canadensis*) and rock pigeon (*Columba livia*). Other wildlife observed during the survey included western fence lizard, and indirect sign of ground squirrel (*Otospermophilus beecheyi*). No nests or nesting bird activity were observed. A complete list of observed wildlife species can be found in Appendix C.

4.5 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are considered an important ecological resource by various agencies (CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging, breeding, refuge sites, and/or seasonal migrations to preferred habitat. Movement corridors are essential for wildlife to maintain space for dispersal and to mitigate potential habitat fragmentation which can adversely affect wildlife population by reducing genetic and species diversity.

Wildlife migration corridors are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Migration corridors may be local, such as those between foraging and nesting/denning areas, or they may be regional in nature. Migration corridors are not unidirectional access routes; however, reference is usually made to source and receiver areas in discussions of wildlife movement networks. "Habitat linkages" are migration corridors that contain contiguous strips of native vegetation between source and receiver areas. These natural linkages provide cover and forage sufficient for temporary inhabitation by a variety of ground-dwelling animal species. Wildlife migration corridors are essential to the regional fitness of an area as they provide avenues of

genetic exchange and allow animals to access alternative territories as fluctuating dispersal pressures dictate.

The Project region consists of highly developed lands with minimal and fragmented open spaces. Vegetated Drainages and creeks within the region such as the adjacent flood control channel and remaining portions of Laurel Creek may provide a suitable movement corridor within the vicinity of the Project Site for common wildlife such as coyote (*Canis latrans*) and mule deer (*Odocoileus hemionus*). However, the major roadways, dense residential development, and lack of adjacent undeveloped open space, and lack of suitable cover vegetation act as substantial barriers for wildlife movement through the Project Site.

4.6 AQUATIC RESOURCES

Based on the results of the desktop review, there was one Riverine USFWS NWI feature identified within the BSA (USFWS, 2021c). During the August 2021 field survey, this feature was identified and confirmed to be the relict channel of Laurel Creek discussed in Section 1.2 Project Description of this Report. The relict channel supported Mixed Wetland Riparian vegetation.

The other aquatic resource identified during the field survey was the flood control channel located adjacent to the eastern boundary of the Project Site. The flood control channel was constructed during the 1980's as part of the Fairfield Vicinity Streams Flood Control Project (LSA, 2020). The proposed Project includes construction of an outfall structure that extends onto the flood control channel bank and is situated at the southeastern side of the Project Site. The bed and banks at this location were armored with impermeable substrate intended to stabilize the banks to prevent erosion damage. The dimensions of the armored area were approximately 130 feet long (upstream and downstream in the vicinity of the proposed outfall), ten feet deep, and 95 feet wide. No obvious OHWM indicators were visible on the solid material, and no vegetation was growing on the banks. There was shallow, minimal water flow and ponding in eroded and/or areas of sediment buildup that supported sparse to dense hydrophytic vegetation in the channel bed; however, the channel bottom is outside of the proposed Project footprint.

A preliminary aquatic resources delineation survey was conducted to evaluate the preliminary jurisdictional limits of the aquatic resources identified within the Project Site. Based on the field delineation and analysis, the Project Site supports approximately 0.247 acres of potentially Federal jurisdictional waters of the U.S. (under ACOE jurisdiction) within the relict channel and the Flood Control Channel adjacent to the Project Site, approximately 0.247 acres of potentially state jurisdictional aquatic resources under RWQCB jurisdiction, and 0.547 acres under CDFW jurisdiction. These preliminary jurisdictional findings are subject to the verification and approval of the ACOE, RWQCB, and/or CDFW. Refer to the Preliminary Aquatic Resources Delineation Report (Appendix F) for further details regarding the delineation survey methods, findings, and preliminary jurisdictional determinations and limits within the Project Site.

4.7 SPECIAL-STATUS BIOLOGICAL RESOURCES

This section discusses special-status communities and habitats, and special-status plants and wildlife and their potential for occurrence within the BSA. See Figure 4-2 - Regional Special-Status Biological Resources for CNDDDB occurrences and USFWS Critical Habitat within five miles of the Project Site. This Report focuses on the special-status plants and wildlife biological

resources within five miles of the BSA that have a greater potential to occur within the Project Site based on proximity of documented occurrences.

4.7.1 Sensitive Plant Communities and USFWS Critical Habitat

Sensitive natural communities (this term refers to the description for sensitive plant communities used in CNDDDB based on *Preliminary Descriptions of the Terrestrial Natural Communities of California* [Holland, 1986]) were not identified on CNDDDB within the Project region (CDFW, 2021a). Critical Habitat as defined by the USFWS was not documented within the BSA. The nearest USFWS-designated Critical Habitat were for Contra Costa goldfields (*Lasthenia conjugens*) approximately 1.5 miles to the east, Suisun thistle (*Cirsium hydrophyllum*) approximately 1.4 miles to the southwest, and Delta smelt (*Hypomesus transpacificus*) approximately 1.3 miles to the south of the BSA and suitable habitat for these species does not occur onsite.

4.7.2 Special-Status Plants

Special-status plants are either listed as Endangered or Threatened under FESA or CESA, considered Rare under the California Native Plant Protection Act, or considered rare (but not legally listed) by resources agencies, professional organizations, and the scientific community under the following categories. Special-status plants include:

1. Plants listed or proposed for listing as Threatened or Endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants and various notices in the Federal Register for proposed species,).
2. Plants that are candidates for possible future listing as Threatened or Endangered under the Federal Endangered Species Act (Federal Register October 10, 2019).
3. Plants that meet the definitions of rare or endangered species under the CEQA (State CEQA Guidelines, Section 15380).
4. Plants considered by the CNPS to be "Rare, Threatened, or Endangered" in California (Ranks 1B and 2 in CNPS, 2020).
5. Plants listed by CNPS as plants about which we need more information and plants of limited distribution (Ranks 3 and 4 in CNPS, 2020).
6. Plants listed or proposed for listing by the State of California as Threatened or Endangered under the California Endangered Species Act (14 CCR 670.5).
7. Plants listed under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
8. Plants considered sensitive by other Federal agencies (i.e., U.S. Forest Service, Bureau of Land Management), State and local agencies or jurisdictions including those listed on the CDFW Special Plants List.
9. Plants considered sensitive or unique by the scientific community or occurring at the limits of their natural range. For example, some botanical gardens will consider species in their region as sensitive based on local occurrences

The CNDDDB and CNPS queries conducted during the desktop review documented 46 special-status plant species within approximately five miles surrounding the BSA. The CNPS rare plant inventory was queried as a cross reference to the CNDDDB to capture lower ranking plant species that may not be documented in the CNDDDB. The USFWS IPaC species list indicated that there were two plant species with the potential to occur within the Project region, both of which were also documented in CNDDDB and CNPS databases. Padre evaluated these species to identify the probability of occurrence for each species within the Project Site. This evaluation compared the habitat preferences of the documented species (CDFW, 2021) to the existing habitats and conditions of the BSA. Table 4-2 – Regional Special-Status Plant Species summarizes the regulatory status, habitat requirements, blooming period, and probability of occurrence of special-status plant species documented within five miles of the BSA.

No special-status plant species were observed during the August 2021 field survey, which was conducted outside of the typical blooming period for most of the regionally occurring special-status plant species. Although the survey was conducted outside the typical blooming period, it is highly unlikely that these species would occur within Project Site due to lack of suitable habitat, routine landscape maintenance activities (mowing and disking), and substantial disturbance onsite including use of the property as a homeless encampment. Based on a thorough analysis, Padre determined that there is no probability of occurrence for any of the regional special-status plant species listed in Table 4-2 below.

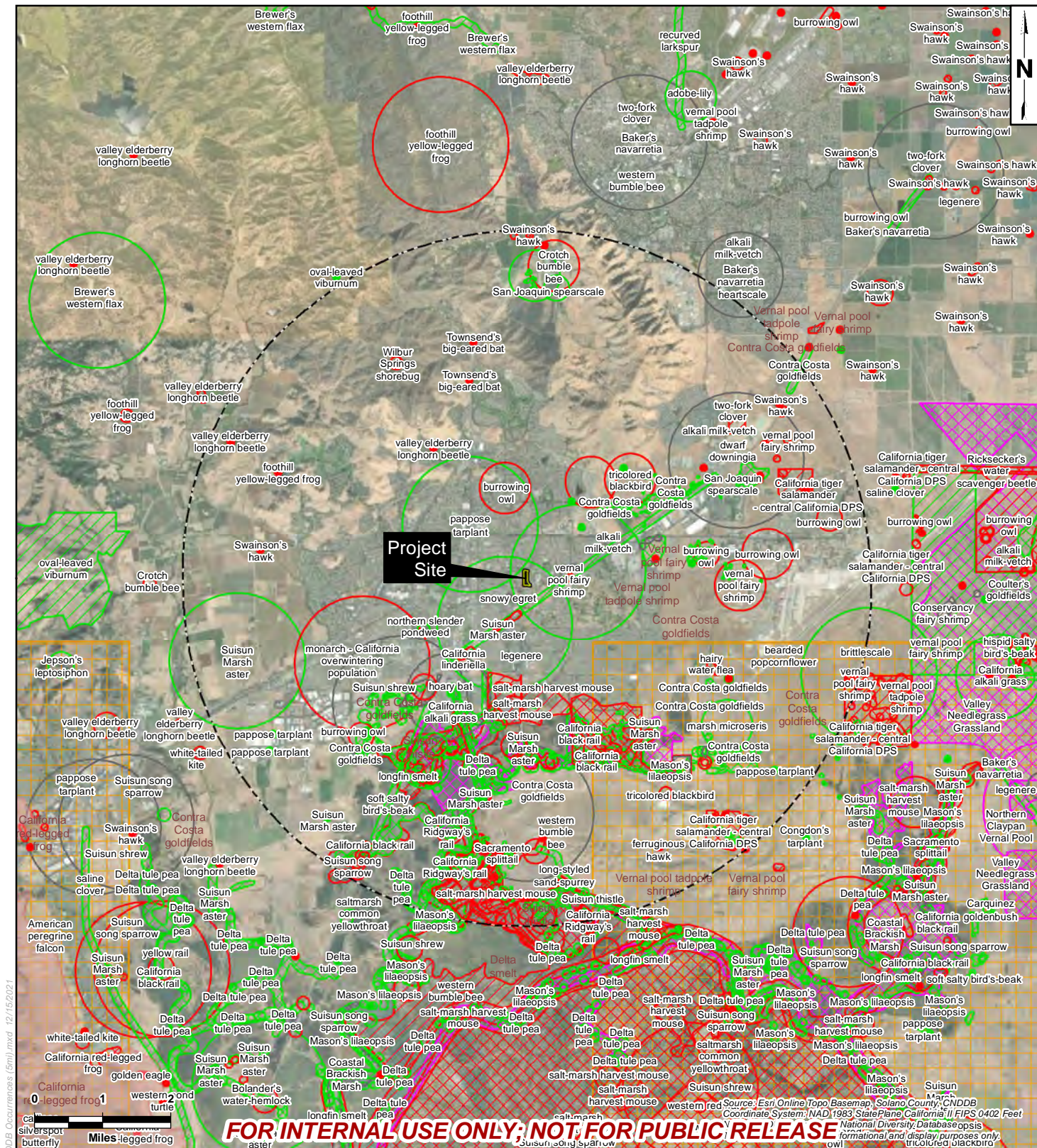


Table 4-2. Regional Special-Status Plant Species

Species Name		Status	Habitat Requirements	Blooming Period	Probability of Occurrence
Scientific	Common				
Plants					
<i>Astragalus tener</i> var. <i>tener</i>	Alkali milk-vetch	CRPR 1B.2	Playas, Valley and foothill grassland, Vernal pools.	Mar-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Atriplex cordulata</i> var. <i>cordulata</i>	Heartscale	CRPR 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland.	Apr-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Atriplex coronata</i> var. <i>coronata</i>	Crownscale	CRPR 4.2	Chenopod scrub, Valley and foothill grassland, Vernal pools.	Mar-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Atriplex depressa</i>	Brittlescale	CRPR 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools.	Apr-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Atriplex persistens</i>	Vernal pool smallscale	CRPR 1B.2	Vernal pools.	Jun-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Carex lyngbyei</i>	Lyngbye's sedge	CRPR 2B.2	Marshes and swamps.	Apr-Aug	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Congdon's tarplant	CRPR 1B.1	Valley and foothill grassland.	May-Oct(Nov)	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	Pappose tarplant	CRPR 1B.2	Chaparral, Coastal prairie, Marshes and swamps, Meadows and seeps, Valley and foothill grassland.	May-Nov	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Centromadia parryi</i> ssp. <i>rudis</i>	Parry's rough tarplant	CRPR 4.2	Valley and foothill grassland, Vernal pools.	May-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.

Species Name		Status	Habitat Requirements	Blooming Period	Probability of Occurrence
Scientific	Common				
<i>Chloropyron molle</i> ssp. <i>hispidum</i>	Hispid salty bird's-beak	CRPR 1B.1	Meadows and seeps, Playas, Valley and foothill grassland.	Jun-Sep	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Chloropyron molle</i> ssp. <i>molle</i>	Soft salty bird's-beak	FE, CR, CRPR 1B.2	Marshes and swamps.	Jun-Nov	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Cicuta maculata</i> var. <i>bolanderi</i>	Bolander's water-hemlock	CRPR 2B.1	Marshes and swamps.	Jul-Sep	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	Suisun thistle	FE, CRPR 1B.1	Marshes and swamps.	Jun-Sep	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Delphinium recurvatum</i>	Recurved larkspur	CRPR 1B.2	Chenopod scrub, Cismontane woodland, Valley and foothill grassland.	Mar-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Downingia pusilla</i>	Dwarf downingia	CRPR 2B.2	Valley and foothill grassland, Vernal pools.	Mar-May	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Erigeron biolettii</i>	Streamside daisy	CRPR 3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest	Jun-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Eriogonum truncatum</i>	Mt. Diablo buckwheat	CRPR 1B.1	Chaparral, Coastal scrub, Valley and foothill grassland	Apr-Sep (Nov-Dec)	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Eryngium jepsonii</i>	Jepson's coyote-thistle	CRPR 1B.1	Valley and foothill grassland, Vernal pools	Apr-Aug	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Extriplex joaquinana</i>	San Joaquin spearscale	CRPR 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland	Apr-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Fritillaria pluriflora</i>	Adobe-lily	CRPR 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland	Feb-Apr	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.

Species Name		Status	Habitat Requirements	Blooming Period	Probability of Occurrence
Scientific	Common				
<i>Hesperovax caulescens</i>	Hogwallow starfish	CRPR 4.2	Valley and foothill grassland, Vernal pools.	Mar-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Hesperolinon breweri</i>	Brewer's western flax	CRPR 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland.	May-Jul	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Iris longipetala</i>	Coast iris	CRPR 4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps.	Mar-May(Jun)	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Isocoma arguta</i>	Carquinez goldenbush	CRPR 1B.1	Valley and foothill grassland.	Aug-Dec	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	FE, CRPR 1B.1	Cismontane woodland, Playas, Valley and foothill grassland, Vernal pools.	Mar-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Lasthenia ferrisiae</i>	Ferris' goldfields	CRPR 4.2	Vernal pools.	Feb-May	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	CRPR 1B.1	Marshes and swamps, Playas, Vernal pools.	Feb-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	CRPR 1B.2	Marshes and swamps.	May-Jul(Aug-Sep)	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Legenere limosa</i>	Legenere	CRPR 1B.1	Vernal pools.	Apr-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Lessingia hololeuca</i>	Woolly-headed lessingia	CRPR 3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland.	Jun-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	CR, CRPR 1B.1	Marshes and swamps, Riparian scrub.	Apr-Nov	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.

Species Name		Status	Habitat Requirements	Blooming Period	Probability of Occurrence
Scientific	Common				
<i>Meesia triquetra</i>	Three-ranked hump moss	CRPR 4.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest.	Jul	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Microseris paludosa</i>	Marsh microseris	CRPR 1B.2	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland.	Apr-Jun(Jul)	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Myosurus minimus</i> ssp. <i>apus</i>	Little mousetail	CRPR 3.1	Valley and foothill grassland, Vernal pools.	Mar-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	CRPR 1B.1	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools.	Apr-Jul	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Orcuttia inaequalis</i>	San Joaquin Valley Orcutt grass	CE, FT, CRPR 1B.1	Vernal pools.	Apr-Sep	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	Gairdner's yampah	CRPR 4.2	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools	Jun-Oct	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Plagiobothrys hystriculus</i>	Bearded popcornflower	CRPR 1B.1	Valley and foothill grassland, Vernal pools	Apr-May	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Puccinellia simplex</i>	California alkali grass	CRPR 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	Mar-May	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Sidalcea keckii</i>	Keck's checkerbloom	FE, CRPR 1B.1	Cismontane woodland, Valley and foothill grassland	Apr-May(Jun)	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Spergularia macrotheca</i> var. <i>longistyla</i>	Long-styled sand-spurrey	CRPR 1B.2	Marshes and swamps, Meadows and seeps	Feb-May	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.

Species Name		Status	Habitat Requirements	Blooming Period	Probability of Occurrence
Scientific	Common				
<i>Stuckenia filiformis</i> <i>ssp. alpina</i>	Northern slender pondweed	CRPR 2B.2	Marshes and swamps.	May-Jul	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Symphyotrichum lentum</i>	Suisun Marsh aster	CRPR 1B.2	Marshes and swamps.	(Apr)May-Nov	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Trifolium amoenum</i>	Two-fork clover	FE, CRPR 1B.1	Coastal bluff scrub, Valley and foothill grassland.	Apr-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Trifolium hydrophilum</i>	Saline clover	CRPR 1B.2	Marshes and swamps, Valley and foothill grassland, Vernal pools.	Apr-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
<i>Viburnum ellipticum</i>	Oval-leaved viburnum	CRPR 2B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest.	May-Jun	Absent. No suitable habitat present; grassland and riparian habitat routinely disturbed, mowed, and/or disked.
Sensitive Communities					
Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	None	NA	NA	Absent.
Coastal Brackish Marsh	Coastal Brackish Marsh	None	NA	NA	Absent.
Coastal Brackish Marsh	Coastal Brackish Marsh	None	NA	NA	Absent.

Species Name		Status	Habitat Requirements	Blooming Period	Probability of Occurrence
Scientific	Common				
Notes: FE Federally endangered FT Federally threatened SE State endangered ST State threatened CNPS Ranking System (CNPS, 2020): CRPR California Rare Plant Rank 1A Plants presumed extirpated in California and either rare or extinct elsewhere. 1B Plants rare, threatened, or endangered in California and elsewhere. 2A Plants presumed extirpated in California but common elsewhere. 3 Plants about which more information is needed. 4 Plants of limited distribution. CRPR Threat Ranks (CNPS 2021): 0.1 Seriously threatened in California 0.2 Moderately threatened in California 0.3 Not very threatened in California					

4.7.3 Special-Status Wildlife

Special-status species are either listed as Endangered or Threatened under the under FESA or CESA, or considered rare (but not formally listed) by resource agencies, professional organizations, and the scientific community under the following categories. For the purposes of this report, special-status wildlife species include:

1. Animals listed or proposed for listing as Threatened or Endangered under the Federal Endangered Species Act (50 CFR 17.11 for listed animals and various notices in the Federal Register for proposed species).
2. Animals that are candidates for possible future listing as Threatened or Endangered under the Federal Endangered Species Act (Federal Register October 10, 2019).
3. Animals that meet the definitions of rare or endangered species under the CEQA (*State CEQA Guidelines*, Section 15380).
4. Animal Species of Special Concern to the CDFW (Shuford and Gardali, 2008 for birds; Williams, 1986 for mammals; Moyle et al., 2015 for fish; and Thomson et al., 2016 for amphibians and reptiles), and animals included in Special Animals List (CDFW, 2021).
5. Animals listed or proposed for listing by the State of California as Threatened and Endangered under the California Endangered Species Act (14 CCR 670.5).
6. Animal species that are fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
7. Animal species protected under the Marine Mammal Protection Act (as amended in 1994).
8. Birds of Conservation Concern. Migratory and nonmigratory bird species (beyond those already designated as federally Threatened or Endangered) that represent the USFWS highest conservation priorities in effort to draw attention to species in need of conservation action (Shuford and Gardali, 2008).
9. Birds on the CDFW Watch List include “Taxa to Watch” (Shuford and Gardali, 2008) 1) not on the current Special Concern list but were on previous lists and they have not been State listed under CESA; and 2) were previously State or federally listed and now are on neither list.

The CNDDDB query conducted during the desktop review documented 31 special-status wildlife species within approximately five miles surrounding the BSA. The USFWS IPaC species list indicated that there were 11 wildlife species with the potential to occur within the Project region, four of which were also documented in CNDDDB database. Padre evaluated these species to identify which had the highest potential to occur within the Project Site. This evaluation compared the habitat preferences of the documented species (CDFW 2021) to the existing habitats and conditions of the BSA. Table 4-3 – Regional Special-Status Wildlife Species summarizes the regulatory status, habitat requirements, presence of suitable habitat, and probability of occurrence of special-status wildlife species documented within five miles of the BSA.

No special-status wildlife species were observed during the August 2020 field survey. The following sections discuss the habitat preferences and potential for occurrence for species identified to have potential for occurrence (low, moderate, or high) as listed in Table 4-3 below.

Table 4-3. Regional Special-Status Wildlife Species

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
Insects					
<i>Bombus crotchii</i>	Crotch bumble bee	SC	Historically throughout much of southwestern California and Baja California, primarily in open grassland and scrub communities. Nests in underground cavities such as small mammal burrows.	P	Low. Low quality grassland habitat due to ongoing routine mowing and disking of the Project Site. Candidate info etc. Nearest documented occurrence approximately 5.5 miles east of the BSA (CDFW, 2021).
<i>Bombus occidentalis</i>	Western bumble bee	SC	Historically broadly distributed in western North America, occurs along the Pacific coast and western interior of North America. Found in abandoned rodent burrows and bird nests.	P	Low. Low quality grassland habitat due to ongoing routine mowing and disking of the Project Site. Nearest documented occurrence approximately 2.3 miles south of the BSA (CDFW, 2021).
<i>Danaus plexippus</i>	Monarch - California overwintering population	SC	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (Eucalyptus, Monterey pine, cypress) with adequate nectar and water sources	A	Absent. No suitable roosting habitat present.
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	FT	Occurrences of the VELB are primarily in the vicinity of moist valley oak woodlands associated with riparian corridors in the lower Sacramento River and upper San Joaquin River drainages (U.S. Fish and Wildlife Service, 1984). Elderberry plants are obligate hosts for the VELB, providing a source of food and brood wood.	A	Absent. No suitable habitat or vegetation present.
<i>Elaphrus viridis</i>	Delta green ground beetle	FT	Found along the margins of vernal pools within 1.5 meters of the water.	A	Absent. No suitable aquatic habitat present.

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
<i>Saldula usingeri</i>	Wilbur Springs shorebug	None	Aquatic (saline).	A	Absent. No suitable aquatic habitat present.
Crustaceans					
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp	FE	Large, cool-water vernal pools with moderately turbid water. Found in Butte, Tehama, Glenn, Yolo, Solano, Stanislaus, Merced, and Ventura counties.	A	Absent. No suitable vernal pool habitat present.
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	FT	Endemic to the grasslands of the central valley, central coast mountains and south coast mountains, in astatic rain-filled pools. Regionally inhabits small, clear-water sandstone depression pools and grassed swale, earth slump or basalt-flow depression pools.	A	Absent. No suitable vernal pool habitat present.
<i>Dumontia oregonensis</i>	Hairy water flea	None	Lakes and ponds, when pool habitats are inundated and entering dormancy to survive long periods when pools are dry	A	Absent. No suitable aquatic habitat present.
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	FE	Found in seasonally ponded habitats including vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, and ruts caused from vehicular traffic.	A	Absent. No suitable vernal pool habitat present.
<i>Linderiella occidentalis</i>	California linderiella	None	Most land forms, geologic formations, and soil types supporting vernal pools in California.	A	Absent. No suitable vernal pool habitat present.
<i>Syncaris pacifica</i>	California freshwater shrimp	FE, SE	Found in riverine habitats in clear, running water with emergent vegetation.	A	Absent. No suitable vernal pool habitat present.

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
Fish					
<i>Hypomesus transpacificus</i>	Delta smelt	FT, SE	Inhabits open waters of bays, tidal rivers, channels, and sloughs.	A	Absent. No suitable aquatic habitat present.
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	CSC	Sacramento splittail are freshwater species that are highly tolerant of brackish water. Shallow seasonally flooded vegetation is the preferred spawning substrate for the Sacramento splittail. Commonly occur in brackish waters of Suisun Bay, Suisun Marsh, and the Sacramento-San Joaquin Delta.	A	Absent. No suitable aquatic habitat present.
<i>Spirinchus thaleichthys</i>	Longfin smelt	FC, ST, CSC	Occupies a variety of coastal waters including estuaries, bays, and rivers. During breeding, this species spawns in freshwater tributaries near the ocean.	A	Absent. No suitable aquatic habitat present.
Amphibians					
<i>Ambystoma californiense</i>	California tiger salamander - central California DPS	FT, ST	Needs underground refuges, especially ground squirrel burrows as upland habitat for aestivation and vernal pools or other seasonal water sources as aquatic habitat for breeding.	A	Absent. No suitable aquatic habitat present.

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
<i>Rana boylei</i>	Foothill yellow-legged frog	SE	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats including coastal scrub, chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, and riparian forests and woodlands.	A	Absent. No suitable aquatic habitat present; and the Project Site is outside currently recognized range of this species.
<i>Rana draytonii</i>	California red-legged frog	FT	Occurs in or near quiet permanent water of streams, marshes, ponds, lakes, and other quiet bodies of water. In summer, frogs estivate in small mammal burrows, leaf litter, or other moist sites in or near (within a few hundred feet of) riparian areas.	A	Absent. No suitable aquatic habitat present; and the Project Site is outside currently recognized range of this species.
Reptiles					
<i>Emys marmorata</i>	Western pond turtle	CSC	Permanent or nearly permanent bodies of water in many habitat types, below 6000 ft. elevation; requires basking site such as submerged logs, vegetation mats or open mud banks. Breeds upland near water sources.	P	Low. The adjacent flood control channel provides marginal aquatic habitat. However, the nearest documented occurrence is approximately 3.8 miles northeast of the BSA (CDFW, 2021), greater than typical dispersal distance for this species.
<i>Thamnophis gigas</i>	Giant garter snake	FT, ST	Marshes and sloughs, sometimes low-gradient streams, ponds, and small lakes, with cattails, bulrushes, willows, or other emergent or water-edge vegetation usually present and used for basking and cover.	A	Absent. No suitable aquatic habitat present.
Birds					

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
<i>Agelaius tricolor</i>	Tricolored blackbird	ST, CSC	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, also in thickets of willow, blackberry, tall herbs. Feeds in grassland and cropland habitats. In winter, becomes more widespread along central coast and San Francisco Bay area.	P	Low. The adjacent flood control channel provides intermittent cattail stands suitable for breeding habitat, and the annual grassland habitat within the Project Site may provide foraging habitat in the winter. The nearest documented occurrence is approximately 1.8 miles northeast of the BSA (CDFW, 2021).
<i>Athene cunicularia</i>	Burrowing owl	CSC	Open, dry annual or perennial grasslands, deserts, and scrublands; Breeding is dependent on California ground squirrel burrows.	P	Moderate. Suitable grassland habitat containing ground squirrel burrows present. Nearest documented occurrence approximately 1.0 miles northwest of the BSA (CDFW, 2021).
<i>Buteo regalis</i>	Ferruginous hawk	WL	Open grasslands, sage flats, desert scrub, low foothills and fringes of pinyon-juniper habitats.	A	Absent. No suitable habitat present.

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
<i>Buteo swainsoni</i>	Swainson's hawk	ST, BCC	Breeds in stands with few trees in juniper-sage flats, riparian areas and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	P	Absent-Nesting / Moderate-Foraging. There are no suitable nest trees onsite, therefore no potential for Swainson's hawk to nest within the Project Site. However, the annual grassland within the Project Site provides suitable foraging habitat for Swainson's hawk nests in the surrounding area. The nearest nesting occurrence (Occ # 2714) is a 2015 occurrence in a eucalyptus tree approximately 2.5 miles northeast of the Project Site. There are 29 recorded occurrences of Swainson's hawk within 10 miles of the Project Site (CDFW, 2021). Because of the occurrences within 10 miles and presence of suitable foraging habitat, there is a moderate potential for Swainson's hawk to occur within the Project Site when foraging. Approximately 7.7 acres of suitable foraging habitat will be impacted by this Project.
<i>Circus hudsonius</i>	Northern harrier	CSC	Forages and nests in freshwater and brackish marshes and their adjacent grasslands.	A	Absent. No suitable aquatic habitat present.
<i>Coturnicops noveboracensis</i>	Yellow rail	CSC	Shallow marshes with fairly short vegetation.	A	Absent. No suitable aquatic habitat present.
<i>Egretta thula</i>	Snowy egret	None	shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields.	A	Absent. No suitable aquatic habitat present.
<i>Geothlypis trichas sinuosa</i>	Saltmarsh common yellowthroat	CSC	Mostly seeks cover in thick tangles in fresh and brackish wetlands. Occasionally breeds in dense shrubs and lush fields	A	Absent. No suitable aquatic habitat present.

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
<i>Laterallus jamaicensis coturniculus</i>	California black rail	BCC, ST, FP	Freshwater marshes, wet meadows and shallow margins of saltwater marshes with water depths of approximately one inch that do not fluctuate during the year and dense vegetation for nesting.	A	Absent. No suitable aquatic habitat present.
<i>Melospiza melodia maxillaris</i>	Suisun song sparrow	CSC	California endemic. Found in tidal salt and brackish marshes fringing the Carquinez Strait and Suisun Bay, in dense tidal marsh vegetation.	A	Absent. No suitable aquatic habitat present.
<i>Nycticorax nycticorax</i>	Black-crowned night heron	None	Roosts among dense foliage of trees, not always near water, and roosts and nests in dense, fresh or brackish emergent wetlands.	A	Absent. No suitable habitat present.
<i>Rallus obsoletus</i>	California clapper rail	FE	Saltmarsh swamps with extensive vegetation dominated by cordgrass and pickleweed.	A	Absent. No suitable aquatic habitat present.
<i>Strix occidentalis caurina</i>	Northern spotted owl	FT, ST	Forest stands with moderate to high canopy cover.	A	Absent. No suitable forest habitat present.
Mammals					
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	CSC	Wide variety of habitats, most common is mesic sites. Roosts in the open (do not tuck themselves into crevices), hang from walls and ceilings, extremely sensitive to human disturbance.	P	Moderate. Vacant building in Project Site may provide suitable roosting conditions. The nearest documented occurrence is approximately 3.0 miles northeast of the BSA (CDFW, 2021).
<i>Lasiurus cinereus</i>	Hoary bat	None	Generally roosts in dense foliage of medium to large trees, and requires water. Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding.	A	Absent. No suitable aquatic habitat present.

Species Name		Status	Habitat Requirements	Habitat Present/Absent	Probability of Occurrence
Scientific	Common				
<i>Reithrodontomys raviventris</i>	Salt-marsh harvest mouse	FE, SE, FP	Found only in saline emergent wetlands of San Francisco Bay and its tributaries. Uses pickleweed as primary habitat.	A	Absent. No suitable aquatic habitat present.
<i>Sorex ornatus sinuosus</i>	Suisun shrew	CSC	Inhabits salt and brackish marshes around the northern margins of San Pablo and Suisun bays. Prefer areas of low, dense vegetation, which provide adequate cover and nesting places.	A	Absent. No suitable aquatic habitat present.
<p>Notes: A - Absent P - Present Status: FE - Federal Endangered FT - Federal Threatened FC - Federal Candidate SE - California State Endangered ST - California State Threatened SC - California State Candidate FP - CDFW Fully Protected CSC - California Species of Special Concern BCC - USFWS Bird of Conservation Concern Status Codes: CSC California Species of Special Concern (CDFW) CFP Fully protected under Fish and Game Code (CDFW) SA Special Animal (CDFW) WL Watch List (CDFW) SE State Endangered (CDFW) FT Federal Threatened (USFWS) ST State Threatened (CDFW) FE Federal Endangered (USFWS) A Habitat Absent BCC Birds of Conservation Concern (USFWS) P Habitat Present WBWG – Western Bat Working Group (WBWG): H – High priority L/M - Low Moderate Priority M - Medium Priority</p>					

4.7.3.1 Crotch bumblebee and Western bumblebee

The CDFW is currently reviewing these species (Crotch bumblebee and western bumblebee) for potential listing as threatened or endangered under the CESA based on a formal petition from the Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety (CDFW, 2019). These species have already been listed as endangered by the International Union for the Conservation of Nature (IUCN); a listing based on estimates showing that historic (1805-2001) and recent (2002-2012) range and relative abundance has sharply declined. Historically, these species were common throughout much of southwestern California, but is now relatively uncommon or absent in much of the region. This is likely caused by intensive land uses such as agriculture and development which have replaced suitable habitat, as well as other human-related and natural causes, such as climate change and disease. Suitable nesting habitat consists primarily of open grassland and scrub communities where it nests in underground cavities such as small mammal burrows. Although little is known about preferred overwintering habitat, in general, bumble bees prefer loosely consolidated/disturbed soil or leaf litter for overwintering sites (Xerces et al., 2018). Padre did not observe any bees during the August 2021 survey. The habitat within the BSA was marginal due to on-going maintenance of the property and urban surroundings. However, there is a low potential for crotch bumblebee and/or western bumblebee to occur within the Project Site based on documented occurrences less than five miles from the BSA. Although these species are currently candidates for State listing, they are afforded the same protection as State threatened or endangered species.

4.7.3.2 Western pond turtle

The western pond turtle is listed as a species of special concern by the CDFW. It is an aquatic turtle inhabiting streams, marshes, reservoirs, and irrigation ditches within woodland, grassland, and open forest communities. However, it requires upland sites for nesting and overwintering. Stream habitat must contain large, deep pool areas with moderate-to-good plant and debris cover and rock and cobble substrates for escape retreats. Adult turtles do not mate until they are approximately eight to ten years old. When turtles reach maturity, females will dig nests in between April and August in soil typically 33 to 623 feet (10 to 190 meters) from a waterbody (Holland, 1991), usually along a stream or reservoir margin; however, they are known to travel as far as 1,391 ft from water (Jennings and Hayes, 1994). Some females lay two clutches in a year, but most are thought to lay eggs every other year. Western pond turtles may also hibernate during the winter months underwater in the muddy bottom of pools. No western pond turtle was observed during within the BSA during the August 2021 surveys. However, there was low-quality aquatic and bankside basking habitat for western pond turtle present within the adjacent flood control channel and low-quality terrestrial habitat in grasslands within the BSA. The nearest documented occurrence is approximately 3.8 miles from the BSA which is greater than the typical dispersal or movement distance for this species. Although the habitat is degraded and there is a lack of nearby occurrences, there is a low potential for this species to occur within the Project Site primarily because of the marginally suitable aquatic habitat found in the adjacent flood control channel.

4.7.3.3 Special-Status Birds

No special-status bird species were observed during the August 2021 field survey. However, based on the evaluation of regional special-status bird species listed in Table 4-3 tricolored blackbird, burrowing owl, Swainson's hawk, and migratory birds have the potential to

nest, breed, roost, forage, and/or temporarily pass through the Project Site. These bird species are discussed in this section.

Tri colored blackbird. Tricolored blackbird is considered a California species of special concern and are permanent residents of California, but birds make extensive migrations and movements, both in the breeding season and in winter, within their restricted range. Although resident in California, wintering Tricolored Blackbird populations move extensively throughout their range in the nonbreeding season. Major wintering concentrations occur in and around the Sacramento–San Joaquin River Delta and coastal areas (Shuford et. Al., 2008). Historically tricolored blackbirds nested in wetlands with cattails, bulrushes, and willows, but as wetlands were converted to agricultural fields, towns, and business parks they started nesting in agricultural fields. Foraging habitats include cultivated fields, feedlots associated with dairy farms, and wetlands. No tricolored blackbirds were observed during the August 2021 field survey. The BSA was dominated by disturbed annual grassland and the adjacent flood control channel supported intermittent dense stands of bulrush and willows and contained narrow channel of running water and ponded areas. The nearest documented occurrence is approximately 1.8 miles from the BSA. Based on the presence of marginally suitable habitat and proximity of documented occurrence, there is a low potential for tricolored blackbird to occur within the Project Site.

Burrowing owl. Burrowing owl is considered a California species of special concern and a species of management concern listed by the USFWS. This species is a year-round resident in annual and perennial grasslands or other vegetation communities that support little to no tree or shrub cover. In California, the species is typically found in close association with California ground squirrels which create burrows that are used by burrowing owls for year-round shelter and seasonal nesting habitat. They may also utilize badger, coyote and fox dens or holes (Ronan 2002), as well as human-made structures such as culverts, corrugated metal pipes, debris piles, or openings beneath pavement as shelter and nesting habitat (Rosenberg, et. al., 1998). Burrowing owl breeding season in California is from March to August but can begin as early as February and extend into December (Rosenberg and Haley, 2004). Burrowing owls are residents/nesting species in Solano County but are more common as winter residents (LSA, 2020). No direct or indirect observations of burrowing owl was observed during the August 2021 field survey. However, there were several ground squirrel burrows observed, and the nearest documented occurrence is approximately one mile from the BSA. Therefore, due to presence of marginally suitable habitat and proximity of documented occurrence there is a moderate potential for burrowing owl to occur within the Project Site.

Swainson's hawk. Swainson's hawk is listed as State threatened and is considered a CSC with the CDFW. This species occurs widely in the lowlands of Solano County and known to nest in trees within residential and industrial landscapes near suitable foraging habitat (LSA, 2020). The nearest documented nesting occurrence of Swainson's hawk is approximately 2.5 miles from the BSA. Swainson's hawks utilize open habitats for foraging and rely on scattered stands of trees near agricultural fields and grasslands for nesting sites. No Swainson's hawks or suitable nesting trees were observed onsite during the August 2021 field survey, therefore there is no potential for Swainson's hawk to *nest* within the Project Site. However, the annual grassland within the Project Site provides suitable *foraging* habitat albeit highly disturbed, limited in size, and surrounded by urban development for Swainson's hawks nesting in the region. Due to presence of suitable

foraging habitat onsite and proximity to known nesting occurrences, there is a moderate potential for Swainson's hawk to forage within the Project Site.

Migratory birds. No nesting bird activity was observed within the Project Site during the August 2021 field survey; however, vegetation, trees, and other substrates (e.g., man-made structures, areas of open ground, etc.) present within the site provide suitable nesting habitat for a variety of bird species. Nesting birds and their nests/eggs are protected under the Federal MBTA of 1918 and California Fish and Game Code Section 3503, 3503.5, and Section 3513. However, in 2017, Solicitor of the Department of the Interior issued a legal opinion (M-37050 or M-Opinion) stating that "The Migratory Bird Treaty Act Does Not Prohibit Incidental Take" which in effect revoked take protections under the MBTA. On January 5, 2021, the USFWS published a final rule that defined the scope of the MBTA stating that incidental take of birds resulting from an activity is not prohibited when the underlying purpose of that activity is not to take birds. On May 6, 2021, the USFWS announced a proposed rule to revoke the January 7, 2021 final regulation that limited the scope of the MBTA, in an effort to reinstate Federal MBTA protections. The proposed rule is pending as of June 2021. In the interim, migratory birds are protected (for take) through Assembly Bill 454 California Migratory Bird Protection Act (California Fish and Game Code Section 3513). Nesting season generally occurs between March 1 and August 31. Based on the presence of suitable vegetation and habitats within the Project Site, there is a high potential for migratory nesting birds to occur within the Project Site.

4.7.3.4 Townsend's big eared bat

Townsend's big-eared bat is considered a CSC with the CDFW and is found throughout California, but the details of its distribution are not well known. This species is found in all but subalpine and alpine habitats and may be found at any season throughout its range. Once considered common, Townsend's big-eared bat now is considered uncommon in California. It is most abundant in mesic habitats (CDFW, 2000). This species requires caves, mines, tunnels, buildings, or other human-made structures for roosting. May use separate sites for night, day, hibernation, or maternity roosts. Hibernation sites are cold, but not below freezing. Individuals may move within the hibernaculum to find suitable temperatures. Maternity roosts are warm. Roosting sites are the most important limiting resource. (CDFW, 2000).

No direct or indirect sign of Townsend's big eared bat was observed during the August 2021 field survey. However, the abandoned residence may provide suitable habitat within the Project Site and the nearest documented occurrence is less than five miles from the BSA. Therefore, there is a moderate potential for Townsend's big-eared bat to occur within the Project Site.

5.0 IMPACT DISCUSSION

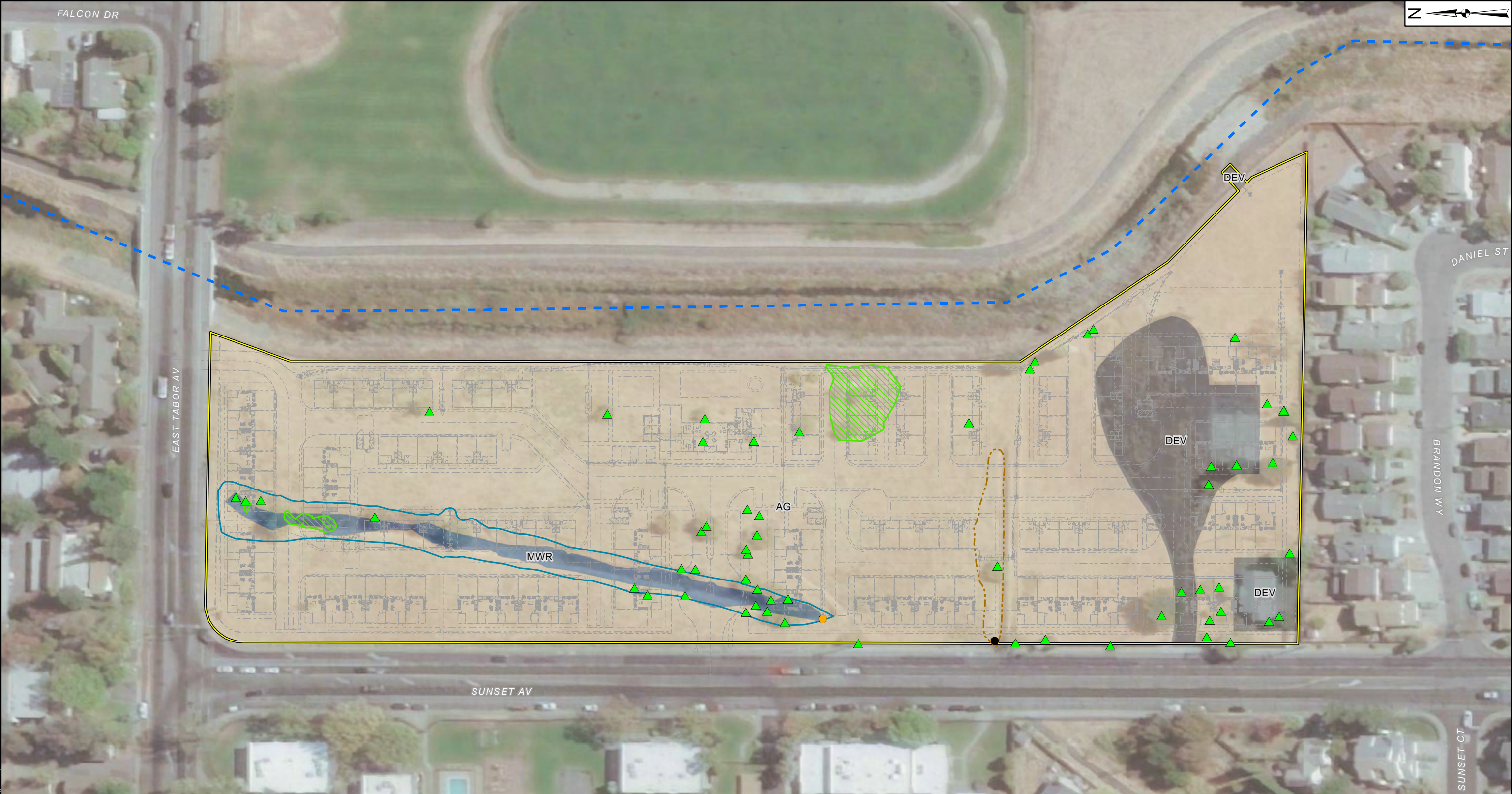
Biological resources that may be directly or indirectly impacted through implementation of the proposed Project include special-status wildlife and their habitats, and aquatic features. Special-status species that have the potential to be impacted include crotch bumblebee, western bumblebee, western pond turtle, tricolored blackbird, burrowing owl, Swainson's hawk, nesting migratory birds, and Townsend's big-eared bat. This section describes the potential impacts to each of these resources. In addition, the direct and indirect impacts are further categorized as temporary and permanent impacts to the biological resources within the Project Site. Temporary impacts are those resulting from disturbances such as vegetation trimming, equipment staging, and installation and use of temporary access routes. Permanent impacts are those resulting from construction of permanent structures, paved roads, and habitat fragmentation.

5.1 VEGETATION COMMUNITIES

The Project Site does not contain sensitive plant communities as defined by CDFW, or USFWS-designated Critical Habitat; however, it does contain two distinct vegetation communities consisting of an upland and wetland/riparian plant communities. These communities and habitats provide denning, foraging, and breeding habitat for potentially occurring wildlife within the Project region. Impacts to vegetation communities would be minimized by implementation of avoidance and minimization measures discussed in Section 6.0 below. Refer to Table 5-1 – Vegetation Community Impact Summary Table for acreages of plant communities to be disturbed during project activities.

Table 5-1. Vegetation Community Impact Summary Table

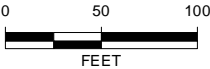
Plant Community/Habitat	Acres within the BSA	Impacted Acres ¹	
		Temporary	Permanent
Wild oats and annual brome grassland	7.67	0	7.67
Mixed Wetland Riparian	0.24	0	0.24
Developed	0.8	0	0.08
Totals:	8.72	0	8.72
Notes: ¹ Permanent impacts from construction of buildings, paved roads, and permanent infrastructure footprints. All impacts will be permanent because the entire site will be disturbed.			



LEGEND:

- ▲ Tree
- Culvert
- Basin
- Relict Channel Top of Bank
- Laurel Creek Flood Control Channel
- Project Footprint
- ▨ Tree/Sapling Clumps
- ▭ Biological Study Area

- Permanent Impacts**
- Wild oats and annual brome grassland (7.67 ac)
 - Developed (0.81 ac)
 - Mixed wetland riparian (0.24 ac)



Source: Sources, Esri Online Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME: ARRIVE FAIRFIELD LUXURY TOWNHOMES FAIRFIELD, CA	
PROJECT NUMBER: 2102-0373	DATE: January 2022

**VEGETATION COMMUNITY AND
HABITAT IMPACTS MAP**

5.2 TREES

There are expected to be impacts to designated protected trees, including valley oak and interior live oak. Based on the August 2021 tree inventory survey, there were a total of four oaks equal to or greater than six inches DBH within the Project footprint that are expected to be removed. The City of Fairfield requires mitigation for impacts (removal and/or damage) to oak trees that are six inches or greater DBH. A Native Tree Mitigation Plan (Plan) would be required by the Tree Ordinance to address the impacts to native oak trees which would provide specific details on required protected native tree replacement ratios and replacement/mitigation planting methods for trees to be removed or trimmed. Impacts to oak trees would be minimized by implementation of avoidance and minimization measures discussed in Section 6.0 below.

5.3 WILDLIFE

Based on the field survey, there was minimal wildlife presence and activity due to the highly disturbed grassland and wetland habitats, surrounding residential and commercial land uses, and human inhabitation and activities within the Project Site. However, there is low potential for wildlife to occur and as such Impacts to wildlife would be minimized by implementation of avoidance and minimization measures discussed in Section 6.0 below.

5.4 WILDLIFE MOVEMENT CORRIDORS

Based on the field survey, the Project Site is surrounded by urban development and the Project Site itself is highly disturbed, is bounded by heavily trafficked roads, and does not connect to open spaces frequented by wildlife. The adjacent flood control channel provides low quality habitat and connectivity to fragmented open spaces in the region of the Project Site. Therefore, there is low potential for wildlife to use the flood control channel and as such, impacts to wildlife movement corridor habitat would be minimized by implementation of avoidance and minimization measures discussed in Section 6.0 below.

5.5 AQUATIC RESOURCES

Based on the findings of the Preliminary Aquatic Resources Delineation survey completed by Padre, implementation of the Project will result in impacts to 0.247 acres of potentially federal jurisdictional waters of the U.S. and wetlands, potentially 0.247 acres of state jurisdictional waters and wetlands under RWQCB and 0.547 acres (including riparian vegetation) under CDFW, and 0.007 acres (flood control channel only) under Central Valley Flood Protection Board (CVFPB) jurisdiction. The Relict channel will be permanently impacted due to complete removal during Project implementation. The flood control channel within the proposed Project footprint will be temporarily impacted during storm drain outfall installation.

Impacts to waters and wetlands are regulated by the ACOE under Section 404 of the Clean Water Act, and the RWQCB under Section 401 of the Clean Water Act. Additionally, impacts to streams and riparian vegetation are regulated by the CDFW under Section 1600 of the California Fish and Game Code, and impact to the flood control channel is also regulated by the CVFPB. As discussed in Section 4.6, the Preliminary Aquatic Resources Delineation is subject to the verification and approval of the ACOE and the RWQCB prior to preparation of the associated permits. A preliminary list of permits that will need to be obtained include the following:

- ACOE Section 404 Nationwide Permit (pending verification of Preliminary Aquatic Resources Delineation);
- ACOE Section 408 Permission;
- RWQCB Section 401 Water Quality Certification (pending verification of Preliminary Aquatic Resources Delineation);
- CDFW Lake and Streambed Alteration Agreement; and
- CVFPB Encroachment Permit.

Impacts to aquatic resources would be minimized by implementation of avoidance and minimization measures discussed in Section 6.0 below.

A Wetland Habitat Mitigation Plan for the Project will be developed to provide recommendations for appropriate strategies to mitigate for permanent loss of aquatic habitat. The Wetland Habitat Mitigation Plan will include mitigation measures and strategies set forth in the Solano Multi-Species Habitat Conservation Plan and/or other potential strategies specific to this Project. In summary, there will be permanent impacts and loss aquatic resources to aquatic resources; however, impacts to aquatic resources would be compensated for by implementation of mitigation measures discussed in Section 6.0 below.

5.6 SPECIAL-STATUS BIOLOGICAL RESOURCES

5.6.1 Sensitive Plant Communities and USFWS Habitat

The Project Site does not contain sensitive plant communities as defined by CDFW, or USFWS-designated Critical Habitat; therefore, no impacts will occur to these sensitive biological resources.

5.6.2 Special-status Plants

No special-status plant species were observed within the BSA during the August 2021 field survey. The survey was conducted late in the growing season and outside the typical blooming period for potentially occurring special-status plant species, and many potentially occurring special-status annual plant species may not have been identifiable due to the timing of the survey. However, past, and present land uses have disturbed the habitat within the Project Site to such an extent that it is unlikely to provide suitable habitat for the potentially occurring special-status plant species. Therefore, no impacts are expected to occur to special-status plants due to Project implementation.

5.6.3 Special-Status Wildlife

No special-status wildlife species were observed during the August 2021 field survey. However, there is a low to moderate potential for crotch bumblebee, western bumblebee, western pond turtle, tricolored blackbird, burrowing owl, Swainson's hawk (foraging), and Townsend's big-eared bat to occur. In addition, under the MBTA, and currently California Fish and Game Code 3513, migratory bird species and their nests and eggs are protected from injury or death. The vegetated habitats within and in the vicinity of the Project Site provide suitable habitat for nesting birds and raptors. If present, special-status wildlife may be directly impacted by equipment strike during vegetation removal, ground disturbance, or building demolition, and increased

construction-related noise levels could adversely affect the ability of these species to forage and/or nest within and in the vicinity of the Project Site. Impacts to special-status wildlife would be minimized by implementation of avoidance and minimization measures discussed in Section 6.0 below.

6.0 RECOMMENDED AVOIDANCE AND MINIMIZATION MEASURES

Padre recommends that the following avoidance measures be implemented prior to and/or during proposed Project activities to avoid and or minimize impacts to biological resources:

- Work Timing. All work activities shall be completed during daylight hours (between sunrise and sunset) and outside of rain events.
- Work Limits. The Project Site area shall be clearly marked or delineated with stakes, flagging, tape, or signage prior to work. The purpose of marking the work limits is to avoid accidental release of any stockpiles or materials into the adjacent flood control channel.
- Vehicles and Equipment. All equipment and vehicles shall be checked and maintained daily to prevent spills of fuel, oil, and other hazardous materials. A designated staging area shall be established for vehicle/equipment parking and storage of fuel, lubricants, and solvents. All fueling and maintenance activities shall take place in the staging area.
- Environmental Awareness Training. A qualified biologist shall provide a Biological Awareness Training to all Project personnel to familiarize workers with surrounding common and special-status species and their habitats, applicable regulatory requirements and permit conditions, and measures that must be implemented to avoid or minimize potential impacts to sensitive biological resources.
- Special-Status Wildlife Pre-Construction Surveys. A qualified biologist shall conduct pre-construction surveys within seven days prior to the start of Project activities focused on the on presence of potentially occurring special-status wildlife species including crotch bumblebee, western bumblebee, western pond turtle, tricolored blackbird. Surveys for burrowing owl, Swainson's hawk, nesting birds and Townsend's big-eared bat are discussed in separately in this section.
- Burrowing Owl. The Solano Multi-Species Habitat Conservation Plan (HCP) provides specific avoidance and minimization measures for burrowing owl (Section 6.3.9 Burrowing Owl Avoidance and Minimization Measures) for construction Projects that occur within the Valley Floor Grasslands Burrowing Owl Conservation Area as designated in the HCP (the Project Site is situated within this designated area). The HCP burrowing owl avoidance, minimization, and mitigation measures are based on the protocols described in the *Staff Report on Burrowing Owl Mitigation, State of California Natural Resource Agency Department of Fish and Game* (CDFW BUOW Staff Report) (CDFW, 2012), that takes into account the *California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines* (dated 1993,1997) (SCWA, 2012).

However, the HCP has not been fully adopted as of January 2022 (the time the biological resources assessment report was completed). If the HCP is not adopted by the time the project begins, the avoidance and mitigation measures presented in the CDFW BUOW Staff Report will be implemented. Both HCP and the CDFW BUOW Staff Report measures are presented below for clarity.

Solano HCP Burrowing Owl avoidance and minimization measures:

- Site Design and Pre-Project Approval. The focus of the Burrowing Owl conservation Program involves establishing and maximizing foraging potential and protecting nesting habitat in agricultural and natural habitat areas outside of City growth areas, rather than trying to protect small, isolated habitat areas in urban environments. Therefore, no special site design considerations are required for the burrowing owl.
- Project Implementation and Construction.
 - *Pre-Construction Surveys (BO 1).* Between February 1 and August 31, an Approved Biologist shall conduct pre-construction surveys in known or suitable habitat areas to identify and subsequently avoid nesting areas for burrowing owls. The surveys shall be conducted within 15 days prior to start of construction to in known or suitable habitat areas to identify and subsequently avoid nesting areas for burrowing owls, and shall follow standard Solano HCP protocols;
 - *Exclusion (BO 2).* If burrowing owls or suitable nesting habitat are identified on site during the initial pre-application surveys, applicants shall allow vegetation to grow over the entire project site (except for required fuel breaks) to a height of 36 inches or more above the ground, unless impracticable due to surrounding or adjacent land uses. The increased vegetation height, if in place by the beginning of the nesting season (e.g., retention of previous year's growth or planting during the previous winter), will discourage burrowing owl use of the site;
 - *Construction Buffers and Exclusion (BO 3).* If Avoidance and Minimization Measure BO 2 cannot be implemented or is not effective, the following measures shall be implemented for new construction activities:
 1. During the non-breeding season (September 1 through January 31), a circular exclusion zone with a radius of 160 ft shall be established around occupied burrows. If a buffer cannot be established (except as provided below), burrowing owls shall be evicted from the entire construction area using passive relocation techniques. One-way doors shall be installed in all suitable burrows, left in place for a minimum of 48 hours, and monitored daily to evaluate owl exclusion and to ensure doors are functioning properly. Burrows shall then be excavated, using hand tools whenever possible, and refilled to prevent reoccupation. Sections of flexible plastic pipe shall be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow.
 2. During the breeding season (February 1 through August 31), an Approved Biologist shall establish a circular exclusion zone with a

radius of 250 ft around each occupied burrow. No construction-related activity (e.g., site grading, staking, surveying, any use of construction equipment) shall occur in the exclusion zone during the breeding season. Once the breeding season is over, passive relocation may proceed as described in Condition 1 above.

3. Construction buffer widths may be reduced from the 250 ft wide breeding season buffers and 160 ft wide non-breeding season buffers in accordance with the following requirements:

- A site-specific analysis prepared by an Approved Biologist indicates that the nesting pair(s) or wintering owl(s) would not be adversely affected by construction activities. SCWA, in consultation with the HCP Technical Review Committee, must approve this analysis in writing before construction can proceed;
- Monitoring by an Approved Biologist is conducted for a sufficient time (during all construction activities for a minimum of 10 consecutive days following the initiation of construction), the nesting pair does not exhibit adverse reactions to construction activities (e.g., changes in behavioral patterns, reactions to noise), and the burrows are not in danger of collapse due to equipment traffic;
- Monitoring is continued at least once a week through the nesting/wintering cycle at that site, and no change in behavior by the owls is observed. This longer-term monitoring may be reduced to a minimum of 2 hours in the morning and 2 hours in the afternoon during construction activities; however, additional and more frequent monitoring may be required if any adverse reactions are noted;
- Monitoring reports are submitted to SCWA; and
- If adverse effects are identified, construction activities shall cease immediately, and construction shall not be resumed until the Approved Biologist, in consultation with SCWA, has determined that construction may continue under modified restrictions or that nesting activity is complete.

- *Active Relocation (BO 4).* Active relocation of burrowing owls may be implemented as part of the Burrowing Owl Conservation Program if the relocation action is approved by SCWA in consultation with the HCP Technical Review Committee. Active relocation may be used on sites where there is no adjacent habitat for owls to move into if passively relocated or in order to establish owls on a reserve in the Valley Floor Grassland or Inner Coast Range Conservation Areas. Active relocation would be subject to the following requirements:

1. A biological assessment report shall be prepared for the reserve site where owls will be relocated. The assessment will discuss in detail the suitability of the site to support both foraging and nesting burrowing owls;
2. A conservation easement shall be placed on the reserve site prior to attempted relocations;
3. A Burrowing Owl Management Plan for the reserve site shall be prepared and approved by SCWA, in consultation with the HCP Technical Review Committee;
4. An assessment of the potential impacts to other burrowing owls in the vicinity shall be made. The proposed relocation must be found to have no impacts on the existing owl populations;
5. Impacts to other Covered Species shall be avoided at the reserve site;
6. A funding source shall be secured to fund the relocation, habitat maintenance, and monitoring of the relocated burrowing owls; and
7. Approved Biologists shall be retained to carry out the monitoring program and prepare reports that will be submitted to SCWA.

CDFW Burrowing Owl Staff Report avoidance and minimization measures:

- Avoidance. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:
 - Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August;
 - Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls;
 - Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development;
 - Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection;
 - Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows;
 - Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting 03/7/12 DFG BUOW Staff Report 9 owls, designated use areas); and

- Restrict the use of treated grain to poison mammals to the months of January and February.
- Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.
- Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.
- Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.
- Buffers. Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (CDFW, 2012):

Location	Time of Year	Level of Disturbance		
		Low	Medium	High
Nesting Sites	April 1-Aug 15	200 m (656 ft)	500 m (1640 ft)	500 m (1640 ft)
Nesting Sites	Aug 16-Oct 15	200 m (656 ft)	200 m (656 ft)	500 m (1640 ft)
Nesting Sites	Oct 16-Mar 31	50 m (164)	100 m (328 ft)	500 m (1640 ft)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. If closer setbacks are allowed, a broad-scale, long-term, scientifically-rigorous

monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

- Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

However, when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
 - Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections as shown in the CDFW Burrowing Owl Staff Report (CDFW, 2012);
 - Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season; and
 - Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).
- Translocation. (Active relocation offsite >100 meters). Currently, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Note that the CDFW and HCP burrowing owl measures are generally comparable, except for buffer setback distances during the breeding season (CDFW Staff Report value is greater than the HCP value). If deemed necessary to follow the CDFW BUOW Staff Report measures during project implementation (HCP not adopted), then the project proponent may work with CDFW on buffer modification if necessary.

- Swainson's Hawk. The HCP provides specific avoidance and minimization measures for Swainson's hawk (Section 6.3.8 Swainson's Hawk Avoidance and Minimization Measures) for construction Projects greater than five acres that occur within Valley Floor Grasslands Swainson's Hawk Conservation Area as designated in the HCP (the Project Site is situated within this designated area). The HCP Swainson's hawk avoidance, minimization, and mitigation measures are based on the protocols described in the *Staff Report Regarding Mitigation Impacts to*

Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (CDFW Swainson's Hawk Staff Report) (CDFW, 1994).

However, the HCP has not been fully adopted as of January 2022 (the time the biological resources assessment report was completed). If the HCP is not adopted by the time the project begins, the avoidance and mitigation measures presented in the CDFW Swainson's Hawk Staff Report will be implemented. Both HCP and the CDFW Swainson's Hawk Staff Report measures are presented below for clarity.

Solano HCP Swainson's Hawk avoidance and minimization measures:

- Site Design and Pre-Project Approval. The primary focus of the Swainson's Hawk Conservation Program involves establishing and maximizing foraging potential and protecting nesting habitat in agricultural areas.
- Nest tree preservation (SH 1). Trees with active Swainson's hawk nests or with historically active nests (i.e., occupied within the last 10 years) shall be avoided to the maximum extent practicable.
- Project Implementation and Construction.
 - *Pre-construction nest surveys (SH 3).* Between March 1 and August 31, an Approved Biologist shall conduct pre-construction surveys to identify and subsequently avoid nesting areas for Swainson's hawk. Surveys shall be conducted within 15 days of the anticipated start of construction and shall be designed and of sufficient intensity to document nesting within 0.25 mi (1,320 ft) of planned work activities. If a lapse in project-related construction work of 15 days or longer occurs, additional pre-construction surveys shall be required before project work may be reinitiated; and
 - *Active Nest buffers (SH 4).* Construction work (including grading, earthmoving, and any operation of construction equipment) shall not occur within a 0.25 mi buffer zone around an active Swainson's hawk nest except as provided below. Construction work may commence in the buffer zone when an Approved Biologist has confirmed that nesting activity is complete (e.g., Swainson's hawk young have fully fledged and are capable of flight and have left the nest, or the adults have abandoned the nest for a minimum of 7 days and there is no evidence of re-nesting activity). Nest trees may be removed between September 16 and February 1 when nests are unoccupied.

The size of nest buffer zones may be reduced only under the following conditions:

1. A site-specific analysis shall be prepared by an Approved Biologist indicates that the nesting pair under consideration are not likely to be adversely affected by construction activities (e.g., the nest is in an area where the hawks are habituated to human activity and noise levels comparable to anticipated construction work). SCWA,

in consultation with the HCP Technical Review Committee, must approve this analysis before construction may begin within 0.25 mi of a nest;

2. Monitoring by an Approved Biologist is conducted for a sufficient time (during all construction activities for a minimum of 10 consecutive days following the initiation of construction), and the nesting pair does not exhibit adverse reactions to construction activities (e.g., changes in behavioral patterns, reactions to construction noise);
 3. Monitoring is continued at least once a week through the nesting cycle at that nest. This longer term monitoring may be reduced to a minimum of 2 hours in the morning and 2 hours in the afternoon during construction activities; however, additional and more frequent monitoring may be required if any adverse reactions are noted;
 4. Monitoring reports are submitted to SCWA;
 5. If monitoring is conducted, and adverse effects are identified, construction activities shall cease immediately and construction shall not be resumed until the Approved Biologist, in consultation with SCWA, has determined that construction may continue under modified restrictions or that nesting activity is complete; and
- *Post-Construction Occupied Nest Avoidance (SH 5).* If a nest tree becomes occupied by Swainson's hawk during ongoing construction activities, construction activities shall not occur within 500 ft of the nest, except where monitoring consistent with the criteria in Avoidance and Minimization Measure SH 4 documents that adverse effects will not occur.
 - Swainson's Hawk Habitat Loss Mitigation. The HCP requires mitigation for loss of Swainson's hawk foraging habitat located within the Valley Floor Grassland Swainson's Hawk Conservation Area in the Plan Area of the HCP, for projects resulting in loss greater than five acres. There is expected to be approximately 7.7 acres of annual grassland habitat lost as a result of Project implementation. Loss of this foraging habitat shall be mitigated through preservation and management of foraging habitat at a ratio of 1:1 (mitigation-to-impact) and subject to species management requirements specified in Sections 7.3 and 10.5.3 of the HCP. Mitigation shall be provided in the Irrigated Agriculture or Valley Floor Grassland Potential Reserve Areas.

CDFW Swainson's Hawk Staff Report avoidance and minimization measures:

- Buffer. No intensive new disturbances or other project related activities which may cause nest abandonment or forced fledging, should be initiated within 1/4 mile (buffer zone) of an active nest between March 1 - September 15 or until

August 15 if a Management Authorization or Biological Opinion is obtained for the project. The buffer zone should be increased to ½ mile in nesting areas away from urban development;

- Nest Tree Removal. Nest trees should not be removed unless there is no feasible way of avoiding it. If a nest tree must be removed, a Management Authorization (including conditions to off-set the loss of the nest tree) must be obtained with the tree removal period specified in the Management Authorization, generally between October 1- February 1;
- Monitoring. If construction or other project related activities which may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site by a qualified biologist (to determine if the nest is abandoned) should be required. If it is abandoned and if the nestlings are still alive, the project sponsor shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s).

Hacking as a substitute for avoidance of impacts during the nesting period may be used in unusual circumstances after review and approval of a hacking plan by appropriate agencies. Proponents who propose using hacking will be required to fund the full costs of the effort, including any telemetry work specified by the Department; and

- Routine Disturbances. Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within 1/4 mile of an active nest should not be prohibited.
- Swainson's Hawk Habitat Loss Mitigation.
 - Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree (the nearest documented nest is 2.5 miles from the Project site) shall provide 0.75 acres of Habitat Management (HM) land for each acre of urban development authorized (0.75:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk;
 - Management Authorization holders/project sponsors shall provide for the long-term management of the HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at the rate of \$400 per HM land acre (adjusted annually for inflation and varying interest rates); and
 - Some project sponsors may desire to provide funds to the Department for HM land protection. This option is acceptable to the extent the proposal is consistent with Department policy regarding acceptance of funds for land acquisition. All HM lands should be located in areas which are consistent with a multi-species habitat conservation focus.

Management Authorization holders/project sponsors who are willing to establish a significant mitigation bank (> 900 acres) should be given special consideration such as 1.1 acres of mitigation credit for each acre preserved.

Note that the CDFW and HCP Swainson's hawk measures are generally comparable, except for loss of habitat acreage mitigation ratio (CDFW Staff Report value is less than the HCP value). If deemed necessary to follow the CDFW Swainson's hawk Staff Report measures during project implementation (HCP not adopted), then the Project proponent will use the CDFW mitigation ratio as necessary.

- Nesting Birds. If the Project is anticipated to take place during nesting season (March 1 through August 31), then a qualified biologist shall conduct a nesting bird pre-activity survey within 48 hours of Project start. If an active nest is identified on or within 300 feet of the Project Site during the pre-activity survey or any time during Project activities, an appropriate work exclusion buffer of 75± feet for migratory bird species and 300± feet for non-listed raptor species, or a distance at the discretion of the biologist based on biological or ecological reasons, shall be established around the nest.

Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined on a case-by-case basis), the nest(s) shall be monitored by a qualified biologist during construction within the buffer. However, if it is an active raptor nest, the Project proponent shall first notify CDFW for consultation to determine the feasibility of continuing work within the standard 300±-foot buffer. Work will start within the buffer only after approval from CDFW. In the case of other active nests (non-raptor species), the biologist shall determine whether Project activities within the buffer would impact the nest, and if so, shall immediately inform the construction manager to stop work within the designated buffer. The qualified biologist shall monitor the nest until it is no longer active and/or the young have fledged and will notify the construction manager and Project proponent that work may start within the buffer.

- Townsend's Big-eared Bat. If onsite structure demolition is anticipated, a pre-activity survey shall be conducted to determine bat presence (day roosting). If bats are present within the structure, then bat exclusion methods will be incorporated into demolition activities.

Pre-activity field surveys shall be conducted early in the breeding season before any construction activities begin, when bats are establishing maternity roosts but before pregnant females give birth (typically late spring to early summer). If no roosting bats are found, then no further mitigation is required. If roosting bats are found, then disturbance of the maternity roosts shall be avoided by halting construction until the end of the breeding season or a qualified bat biologist excludes the roosting bats in consultation with CDFW. If at any time during the maternity roosting season

construction stops for a period of two weeks or longer, preconstruction surveys shall be conducted prior to construction resuming.

- Native Tree Mitigation Plan. Prior to grading permit issuance, a Native Tree Mitigation Plan shall be prepared and submitted for City approval. The Native Tree Mitigation Plan shall address the native oaks where grading, construction, utility installation or other disturbance (including removal) occurs within the dripline, and shall incorporate the following information in compliance with the Tree Protection Ordinance:
 - Whether the mitigation plan replaces the environmental, cultural, aesthetic, or other values of the lost trees;
 - Evaluation of the availability of land, either on-site or off-site, for mitigation planting;
 - Survivability, size, and value of the proposed replacement trees; and
 - Provisions for maintenance and survival of the replacement trees.
 - Determine the number of replacement plantings by using the DBH of the tree proposed for removal, measured at breast height (4-1/2 feet above the normal surface). Inches of replacement may be translated into standard nursery planting sizes using the following formulas:
 - 24-inch boxed tree = 3 replacement inches;
 - 15-gallon tree = 1 replacement inch; and
 - 5-gallon tree = 1/2 replacement inch.
- Aquatic Resources Delineation. Prior to project implementation, an aquatic resources delineation shall be completed within the Project Site to refine the limits of potentially jurisdictional wetlands and waters of the U.S. and determine whether these areas are subject to ACOE jurisdiction. The delineation shall be verified by the ACOE.
- Permitting. The applicant shall obtain all necessary permits for waters of the U.S. and wetlands impacts. The Preliminary Aquatic Resources Delineation Report completed for the Project (Appendix F) identified potentially federal and state jurisdictional waters and wetlands. Following ACOE verification of the Preliminary Aquatic Resources Delineation, an ACOE Nationwide permit and a Water Quality Certification from the RWQCB will be required. A CDFW LSA permit and a CVFPB Encroachment Permit must be obtained prior to Project implementation. Project activities shall comply with agency permit conditions to further reduce potential impacts to special-status species and sensitive habitats.
- Aquatic Resources Mitigation. The applicant shall comply with all permit conditions and impacts to waters of the U.S. and wetlands shall be mitigated pursuant to permit conditions. Compensatory mitigation must be consistent with the permit requirements pertaining to mitigation type, location, and ratios but will be

accomplished with a minimum of 1:1 replacement ratio. Additionally, mitigation must be consistent with any local policies regarding impacts and/or loss of wetlands.

As mitigation for impacts to waters of the U.S. and wetlands, the applicant may satisfy all or a portion of mitigation through the purchase of “credits” at a mitigation bank approved by the ACOE, RWQCB, and/or CDFW for compensatory mitigation of impacts to hydrologically similar wetlands and other waters of the U.S.

- Wetland Habitat Mitigation Plan. As part of the permitting process, the applicant will be required to provide a compensatory Wetland Habitat Mitigation Plan (Plan) to mitigate impacts to jurisdictional areas. The Plan shall be written and implemented by a biologist familiar with wetland mitigation strategies employed in the Solano County region. Because the Project is designed to infill the entire property, no on-site restoration is possible. Therefore, alternative mitigation strategies will focus of off-site mitigation or purchase conservation credits at an approved mitigation site.

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APPENDIX A

Site Photographs



Photo 1. Vacant residence in southern portion of the BSA
(aspect southwest; 8/26/21).



Photo 2. Abandoned asphalt pad with ruderal vegetation in the southern
portion of the BSA (aspect east; 8/26/21).



Photo 3. Basin feature (aspect east; 8/26/21).



Photo 4. Buried culvert at west end of the Basin feature (8/26/21).



Photo 5. Relict channel; southern end with walnut trees and Mixed Wetland Riparian vegetation (aspect north; 8/26/21).



Photo 6. Relict channel (aspect north, 8/26/21).



Photo 7. Relict channel (aspect southwest; 8/26/21).



Photo 8. Relict channel; northern terminus, evidence of past fire (aspect south, 8/26/21).



Photo 9. Representative view of mowing and tilling within the BSA
(aspect northwest; 8/26/21).



Photo 10. Ground squirrel burrow (aspect southeast, 8/26/21).



Photo 11. Flood control channel lined with armoring substrate at proposed outfall location (aspect southeast; 8/26/21).



Photo 12. Flood control channel; upstream from proposed outfall location, ponding visible (aspect north; 8/26/21).

APPENDIX B

Vascular Plant Species List

List of Vascular Plant Species Observed within the BSA
Arrive Fairfield Luxury Townhomes Project, Fairfield, California

Scientific Name	Common Name	Habit	Wetland	Native	Family	Cal-IPC	Listing
			Indicator				
			Status	Status		Rating	Status
<i>Ambrosia psilostachya</i>	Western ragweed	PH	FACU	N	Asteraceae		
<i>Arundo donax</i>	Giant reed	PH	-		Poaceae		
<i>Asclepias fascicularis</i>	Narrow-leaf milkweed	PH	FAC	N	Apocynaceae		
<i>Avena fatua</i>	Wild oats	AG	-		Poaceae	Moderate	
<i>Baccharis pilularis</i>	Coyote brush	S	-	N	Asteraceae		
<i>Brassica nigra</i>	Black mustard	AH	-		Brassicaceae	Moderate	
<i>Bromus diandrus</i>	Ripgut grass	AG	-		Poaceae	Moderate	
<i>Cichorium intybus</i>	Chicory	PH	-		Asteraceae		
<i>Convolvulus arvensis</i>	Bind-weed	PV	-		Convolvulaceae		
<i>Croton californicus</i>	California croton	PH	-	N	Euphorbiaceae		
<i>Cynodon dactylon</i>	Bermuda grass	PG	FACU		Poaceae	Moderate	
<i>Cyperus eragrostis</i>	Tall cyperus	PH	FACW	N	Cyperaceae		
<i>Distichlis spicata</i>	Salt grass	PG	FAC	N	Poaceae		
<i>Dittrichia graveolens</i>	Stinkwort	AH	-		Asteraceae	Moderate	
<i>Elymus triticoides</i>	Creeping wild-rye	PG	FAC	N	Poaceae		
<i>Erodium sp.</i>	Filaree	AH	-		Geraniaceae		
<i>Ficus carica</i>	Common fig	T	FACU		Moraceae	Moderate	
<i>Foeniculum vulgare</i>	Sweet fennel	PH	-		Apiaceae	Moderate	
<i>Heliotropium curassavicum</i>	Heliotrope	PH	FACU	N	Boraginaceae		
<i>Heterotheca grandiflora</i>	Telegraph weed	AH	-		Asteraceae		
<i>Hordeum murinum ssp. leporinum</i>	Barley	AG	FACU		Poaceae		
<i>Juglans sp.</i>	Cultivated walnut (hybrid)	T	-		Juglandaceae		
<i>Juglans hindsii</i>	Northern California black walnut	T	FAC	N	Juglandaceae		
<i>Juglans regia</i>	English walnut	T	-		Juglandaceae		
<i>Juniperus sp.</i>	Juniper	S	-		Cupressaceae		
<i>Lactuca serriola</i>	Prickly wild lettuce	AH	FACU		Asteraceae		
<i>Lepidium latifolium</i>	Broad-leaved peppergrass	PH	FAC		Brassicaceae	High	
<i>Malus sp.</i>	Apple (cultivated)	T	-		Rosaceae		
<i>Malva parviflora</i>	Cheese-weed	AH	-		Malvaceae		
<i>Malvella leprosa</i>	Alkali mallow	PH	FACU	N	Malvaceae		
<i>Phoenix sp.</i>	Date palm	T	-		Arecaceae		
<i>Plantago lanceolata</i>	English plantain	PH	FAC		Plantaginaceae	Limited	
<i>Populus fremontii</i>	Fremont cottonwood	T	-	N	Salicaceae		
<i>Punica sp.</i>	Pomegranate	S	-		Lythraceae		
<i>Quercus lobata</i>	Valley oak	T	FACU	N	Fagaceae		
<i>Quercus wislizeni</i>	Interior live oak	T	-	N	Fagaceae		
<i>Rubus armeniacus</i>	Himalayan blackberry	S	FAC		Rosaceae	High	
<i>Rumex crispus</i>	Curly dock	PH	FAC		Polygonaceae	Limited	
<i>Salix lasiandra</i>	Pacific willow	T	FACW	N	Salicaceae		
<i>Salsola tragus</i>	Russian thistle	AH	-		Chenopodiaceae	Limited	
<i>Schinus molle</i>	Pepper tree	T	FACU		Anacardiaceae	Limited	

**List of Vascular Plant Species Observed within the BSA
Arrive Fairfield Luxury Townhomes Project, Fairfield, California**

Scientific Name	Common Name	Habit	Wetland	Native	Family	Cal-IPC	Listing
			Indicator Status				
<i>Schoenoplectus acutus</i>	Hardstem bulrush	PH	OBL	N	Cyperaceae		
<i>Sequoia sempervirens</i>	Coast redwood	T	-	N	Cupressaceae		
<i>Tragopogon pratensis</i>	Meadow salsify	PH	-		Asteraceae		
<i>Typha angustifolia</i>	Narrowleaf cattail	PH	OBL		Typhaceae		
<i>Vitis vinifera</i>	Cultivated grape	V	-		Vitaceae		
<i>Washingtonia robusta</i>	Mexican fan palm	T	-		Arecaceae		
<i>Xanthium strumarium</i>	Cocklebur	AH	FAC	N	Asteraceae		
<i>Acacia</i> sp.*	Wattle	T/S	-		Fabaceae		

Notes:

Scientific nomenclature follows Baldwin (2012).

N - Native species

Habit definitions:

AG - Annual grass.

AH - Annual herb.

F - Fern

PG - Perennial grass.

PH - Perennial herb.

PV - Perennial vine.

S - Shrub

T - Tree

Wetland indicator status (Lichvar and Kartesz, 2016):

OBL (Obligate Wetland Plants) - Almost always occur in wetlands.

FACW (Facultative Wetland Plants) - Usually occur in wetland, but may occur in non-wetlands.

FAC (Facultative Wetland Plants) - Occur in wetlands and non-wetlands.

FACU (Facultative Upland Plants) - Usually occur in non-wetlands, but may occur in wetlands.

UPL (Upland Plants) - Almost always occur in non-wetlands.

Cal-IPC (California Invasive Plant Council) Ratings:

High - These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Most are widely distributed ecologically.

Moderate - These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure.

Limited - These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score.

APPENDIX C

Wildlife Species List

Wildlife Species Observed within the BSA
Arrive Fairfield Luxury Townhomes Project, Fairfield, California

Common Name	Scientific Name	Residence Status	Protected Status	Habitat
Invertebrates				
Ladybug	<i>Coccinellidae</i> sp.	R	--	M
Reptiles				
western fence lizard	<i>Sceloporus occidentalis</i>	R	--	G, D, P, S, M
Birds				
American crow	<i>Corvus brachyrhynchos</i>	R	M	M
Anna's hummingbird	<i>Calypte anna</i>	R	M	P
Black phoebe	<i>Sayornis nigricans</i>	R	M	G, S, M
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	R	M	M
Canada goose	<i>Branta canadensis</i>	W	M	A, W, M
Mallard	<i>Anas platyrhynchos</i>	R	M	A, W, R, M
Rock pigeon	<i>Columba livia</i>	R	M	D, M
Turkey vulture	<i>Cathartes aura</i>	R	M	R, G, P
Mammals				
Ground squirrel	<i>Otospermophilus beecheyi</i>	R	--	M

Notes:

Fauna observed by visualizations, indirect signs (tracks, scat, skeletal remains, burros, etc.), and/or auditory cues.

Residence Status

R - Permanent resident
W - Winter resident
B - Summer resident

Protected Status

FE - Federal
FT - Federal threatened species
FC - Federal candidate species
M - Migratory Bird Treaty Act
SE - State endangered species
ST - State threatened species
CS - Candidate species for CESA
CSC - California Species of Special Concern
CFP - California Fully Protected Species
BCC - Bird of Conservation Concern (USFWS)

Typical Habitat

A - Aquatic
D - Developed areas
G - Grassland
M - Multiple habitats
P - Woodland
R - Riparian
W - Wetland
C - Coastal lagoons, shores, oceans
O - Rock outcrops
S - Scrub

APPENDIX D

CNDDDB and USFWS Species Lists



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad(Fairfield North (3812231) OR Mt. Vaca (3812241) OR Allendale (3812148) OR Elmira (3812138) OR Denverton (3812128) OR Fairfield South (3812221) OR Cordelia (3812222) OR Mt. George (3812232) OR Capell Valley (3812242))
AND Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine OR Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Agelaius tricolor</i> tricolored blackbird	G1G2 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	10 372	955 S:9	0	0	1	0	2	6	2	7	7	2	0
<i>Agrostis hendersonii</i> Henderson's bent grass	G2Q S2	None None	Rare Plant Rank - 3.2	790 790	26 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	G2G3 S2S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	20 250	1261 S:24	6	9	2	1	0	6	0	24	24	0	0
<i>Ammodramus savannarum</i> grasshopper sparrow	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	46 46	27 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Antrozous pallidus</i> pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	1,070 1,070	420 S:1	0	0	0	0	0	1	0	1	1	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Aquila chrysaetos</i> golden eagle	G5 S3	None None	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	145 1,000	324 S:2	2	0	0	0	0	0	1	1	2	0	0
<i>Asio flammeus</i> short-eared owl	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern		11 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.2	7 150	65 S:10	0	7	0	0	2	1	4	6	8	2	0
<i>Athene cunicularia</i> burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	5 350	2011 S:29	5	8	5	2	5	4	17	12	24	3	2
<i>Atriplex cordulata</i> var. <i>cordulata</i> heartscale	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	10 150	66 S:2	0	0	0	0	1	1	1	1	1	0	1
<i>Atriplex depressa</i> brittlescale	G2 S2	None None	Rare Plant Rank - 1B.2	5 50	60 S:4	1	1	1	0	0	1	3	1	4	0	0
<i>Atriplex persistens</i> vernal pool smallscale	G2 S2	None None	Rare Plant Rank - 1B.2	10 10	41 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Balsamorhiza macrolepis</i> big-scale balsamroot	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	145 800	51 S:3	0	3	0	0	0	0	1	2	3	0	0
<i>Bombus crotchii</i> Crotch bumble bee	G3G4 S1S2	None Candidate Endangered		78 200	437 S:2	0	0	0	0	0	2	0	2	2	0	0
<i>Bombus occidentalis</i> western bumble bee	G2G3 S1	None Candidate Endangered	USFS_S-Sensitive	5 400	306 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Branchinecta conservatio</i> Conservancy fairy shrimp	G2 S2	Endangered None	IUCN_EN-Endangered	5 45	53 S:6	3	0	1	0	0	2	0	6	6	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	5 130	795 S:19	0	7	3	2	0	7	3	16	19	0	0
<i>Branchinecta mesoallensis</i> midvalley fairy shrimp	G2 S2S3	None None		45 45	144 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Brodiaea leptandra</i> narrow-anthered brodiaea	G3? S3?	None None	Rare Plant Rank - 1B.2	800 1,400	39 S:7	3	0	0	0	0	4	3	4	7	0	0
<i>Buteo regalis</i> ferruginous hawk	G4 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	100 100	107 S:1	1	0	0	0	0	0	1	0	1	0	0
<i>Buteo swainsoni</i> Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	3 333	2541 S:70	9	25	17	2	3	14	11	59	67	1	2
<i>Carex lyngbyei</i> Lyngbye's sedge	G5 S3	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	6 6	37 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Castilleja affinis</i> var. <i>neglecta</i> Tiburon paintbrush	G4G5T1T2 S1S2	Endangered Threatened	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	580 580	7 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Castilleja ambigua</i> var. <i>meadii</i> Mead's owls-clover	G4T1 S1	None None	Rare Plant Rank - 1B.1	1,470 1,600	3 S:2	0	0	0	0	0	2	1	1	2	0	0
<i>Ceanothus purpureus</i> holly-leaved ceanothus	G2 S2	None None	Rare Plant Rank - 1B.2 SB_SBBG-Santa Barbara Botanic Garden	700 2,200	43 S:23	4	1	0	0	0	18	15	8	23	0	0
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	G3T1T2 S1S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	200 200	98 S:1	0	0	0	1	0	0	0	1	1	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Centromadia parryi</i> ssp. <i>parryi</i> pappose tarplant	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	6 215	39 S:18	1	4	0	2	0	11	7	11	18	0	0
<i>Chloropyron molle</i> ssp. <i>hispidum</i> hispid salty bird's-beak	G2T1 S1	None None	Rare Plant Rank - 1B.1	30 30	35 S:1	0	0	1	0	0	0	0	1	1	0	0
<i>Chloropyron molle</i> ssp. <i>molle</i> soft salty bird's-beak	G2T1 S1	Endangered Rare	Rare Plant Rank - 1B.2	4 15	27 S:12	2	3	2	0	1	4	7	5	11	1	0
<i>Cicuta maculata</i> var. <i>bolanderi</i> Bolander's water-hemlock	G5T4T5 S2?	None None	Rare Plant Rank - 2B.1	0 1	17 S:3	0	0	1	0	0	2	2	1	3	0	0
<i>Circus hudsonius</i> northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	5 5	54 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i> Suisun thistle	G2T1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	0 0	3 S:3	0	1	1	1	0	0	1	2	3	0	0
<i>Coastal Brackish Marsh</i> Coastal Brackish Marsh	G2 S2.1	None None			30 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	180 220	635 S:2	0	2	0	0	0	0	0	2	2	0	0
<i>Coturnicops noveboracensis</i> yellow rail	G4 S1S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	2 7	45 S:3	0	1	0	0	0	2	0	3	3	0	0
<i>Danaus plexippus</i> pop. 1 monarch - California overwintering population	G4T2T3 S2S3	Candidate None	USFS_S-Sensitive	20 20	383 S:1	0	0	0	0	0	1	1	0	1	0	0



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<i>Delphinium recurvatum</i> recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden		119 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	G3T2 S3	Threatened None		1 500	271 S:12	1	5	2	1	1	2	6	6	11	0	1
<i>Downingia pusilla</i> dwarf downingia	GU S2	None None	Rare Plant Rank - 2B.2	40 1,930	132 S:11	2	4	1	0	0	4	8	3	11	0	0
<i>Dumontia oregonensis</i> hairy water flea	G1G3 S1	None None		26 26	2 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Egretta thula</i> snowy egret	G5 S4	None None	IUCN_LC-Least Concern	32 32	20 S:1	0	0	1	0	0	0	0	1	1	0	0
<i>Elanus leucurus</i> white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	20 140	180 S:4	1	2	1	0	0	0	2	2	4	0	0
<i>Elaphrus viridis</i> Delta green ground beetle	G1 S1	Threatened None	IUCN_CR-Critically Endangered	30 47	7 S:5	0	1	0	0	0	4	0	5	5	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	0 2,360	1398 S:19	3	10	3	0	0	3	5	14	19	0	0
<i>Erigeron greenei</i> Greene's narrow-leaved daisy	G3 S3	None None	Rare Plant Rank - 1B.2	800 1,500	20 S:4	1	2	0	0	0	1	0	4	4	0	0
<i>Eriogonum truncatum</i> Mt. Diablo buckwheat	G1 S1	None None	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley		7 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Eryngium jepsonii</i> Jepson's coyote-thistle	G2 S2	None None	Rare Plant Rank - 1B.2		19 S:1	0	0	0	0	0	1	1	0	1	0	0



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<i>Extriplex joaquinana</i> San Joaquin spearscale	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	2 220	127 S:7	0	1	2	0	1	3	5	2	6	1	0
<i>Falco peregrinus anatum</i> American peregrine falcon	G4T4 S3S4	Delisted Delisted	CDFW_S-Sensitive CDFW_FP-Fully Protected USFWS_BCC-Birds of Conservation Concern	300 300	58 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Fritillaria pluriflora</i> adobe-lily	G2G3 S2S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	180 180	114 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	G5T3 S3	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	0 9	112 S:11	0	5	6	0	0	0	0	11	11	0	0
<i>Hesperolinon breweri</i> Brewer's western flax	G2 S2	None None	Rare Plant Rank - 1B.2	825 1,650	29 S:6	0	1	0	0	0	5	5	1	6	0	0
<i>Hesperolinon sharsmithiae</i> Sharsmith's western flax	G2Q S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCSC-UC Santa Cruz	800 900	32 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Hydrochara rickseckeri</i> Ricksecker's water scavenger beetle	G2? S2?	None None		60 60	13 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Icteria virens</i> yellow-breasted chat	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	500 500	100 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Isocoma arguta</i> Carquinez goldenbush	G1 S1	None None	Rare Plant Rank - 1B.1	5 40	14 S:8	0	2	0	0	0	6	8	0	8	0	0



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<i>Lasiurus blossevillii</i> western red bat	G4 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_H-High Priority	0 1,070	128 S:2	1	0	0	0	0	1	1	1	2	0	0
<i>Lasiurus cinereus</i> hoary bat	G3G4 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		238 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lasthenia conjugens</i> Contra Costa goldfields	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	10 1,465	36 S:16	1	6	0	0	2	7	7	9	14	2	0
<i>Lasthenia glabrata ssp. coulteri</i> Coulter's goldfields	G4T2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	35 35	111 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Laterallus jamaicensis coturniculus</i> California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	5 10	303 S:12	4	4	1	0	0	3	1	11	12	0	0
<i>Lathyrus jepsonii var. jepsonii</i> Delta tule pea	G5T2 S2	None None	Rare Plant Rank - 1B.2 SB_BerrySB-Berry Seed Bank SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	0 5	133 S:37	3	2	3	0	0	29	32	5	37	0	0
<i>Legenere limosa</i> legenere	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley	20 70	83 S:3	0	0	0	0	2	1	3	0	1	0	2



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	G4 S3S4	Endangered None	IUCN_EN-Endangered	10 130	324 S:13	4	1	1	1	0	6	1	12	13	0	0
<i>Leptosiphon jepsonii</i> Jepson's leptosiphon	G2G3 S2S3	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	430 1,800	51 S:7	0	0	0	0	0	7	0	7	7	0	0
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	G2 S2	None Rare	Rare Plant Rank - 1B.1	0 10	198 S:11	1	1	1	0	0	8	9	2	11	0	0
<i>Linderiella occidentalis</i> California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	5 100	508 S:8	0	1	2	2	0	3	2	6	8	0	0
<i>Melospiza melodia maxillaris</i> Suisun song sparrow	G5T3 S3	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	0 9	36 S:14	0	4	3	0	0	7	6	8	14	0	0
<i>Microseris paludosa</i> marsh microseris	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden SB_UCSC-UC Santa Cruz	10 10	38 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Navarretia leucocephala ssp. bakeri</i> Baker's navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.1	100 175	64 S:9	0	1	0	0	2	6	7	2	7	2	0
<i>Navarretia leucocephala ssp. pauciflora</i> few-flowered navarretia	G4T1 S1	Endangered Threatened	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	1,460 1,460	10 S:1	1	0	0	0	0	0	0	1	1	0	0
<i>Northern Claypan Vernal Pool</i> Northern Claypan Vernal Pool	G1 S1.1	None None		5 70	21 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Northern Vernal Pool</i> Northern Vernal Pool	G2 S2.1	None None		1,450 1,460	20 S:2	1	0	0	0	0	1	2	0	2	0	0
<i>Nycticorax nycticorax</i> black-crowned night heron	G5 S4	None None	IUCN_LC-Least Concern	32 32	37 S:1	0	0	1	0	0	0	0	1	1	0	0



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<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	40 40	47 S:1	1	0	0	0	0	0	0	1	1	0	0
<i>Plagiobothrys hystriculus</i> bearded popcornflower	G2 S2	None None	Rare Plant Rank - 1B.1	5 115	15 S:4	1	2	0	0	0	1	0	4	4	0	0
<i>Pogonichthys macrolepidotus</i> Sacramento splittail	GNR S3	None None	AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern IUCN_EN-Endangered	0 0	15 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Puccinellia simplex</i> California alkali grass	G3 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	30 30	80 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail	G3T1 S1	Endangered Endangered	CDFW_FP-Fully Protected NABCI_RWL-Red Watch List	0 10	99 S:8	3	1	0	0	0	4	6	2	8	0	0
<i>Rana boylei</i> foothill yellow-legged frog	G3 S3	None Endangered	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	78 1,343	2467 S:20	2	4	9	0	4	1	5	15	16	1	3
<i>Rana draytonii</i> California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	80 840	1664 S:19	0	7	8	1	0	3	6	13	19	0	0
<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	G1G2 S1S2	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	0 10	144 S:33	2	10	5	2	0	14	14	19	33	0	0
<i>Rhynchospora californica</i> California beaked-rush	G1 S1	None None	Rare Plant Rank - 1B.1	875 875	9 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Saldula usingeri</i> Wilbur Springs shorebug	G1 S1	None None		680 680	4 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Serpentine Bunchgrass</i> Serpentine Bunchgrass	G2 S2.2	None None		550 550	22 S:1	0	1	0	0	0	0	1	0	1	0	0
<i>Sidalcea hickmanii ssp. napensis</i> Napa checkerbloom	G3T1 S1	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	1,380 1,380	2 S:1	0	0	0	0	0	1	1	0	1	0	0



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<i>Sidalcea keckii</i> Keck's checkerbloom	G2 S2	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	110 780	50 S:6	0	0	0	0	0	6	6	0	6	0	0
<i>Sorex ornatus sinuosus</i> Suisun shrew	G5T1T2Q S1S2	None None	CDFW_SSC-Species of Special Concern	3 100	15 S:7	0	0	0	0	0	7	7	0	7	0	0
<i>Spergularia macrotheca var. longistyla</i> long-styled sand-spurrey	G5T2 S2	None None	Rare Plant Rank - 1B.2	20 20	22 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Speyeria callippe callippe</i> callippe silverspot butterfly	G5T1 S1	Endangered None		28 657	12 S:4	0	0	0	0	0	4	0	4	4	0	0
<i>Spirinchus thaleichthys</i> longfin smelt	G5 S1	Candidate Threatened		0 0	46 S:5	0	0	0	0	0	5	0	5	5	0	0
<i>Stuckenia filiformis ssp. alpina</i> northern slender pondweed	G5T5 S2S3	None None	Rare Plant Rank - 2B.2	20 20	21 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Symphotrichum lentum</i> Suisun Marsh aster	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	0 50	175 S:27	1	2	0	0	0	24	23	4	27	0	0
<i>Taxidea taxus</i> American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	115 115	594 S:1	0	0	0	1	0	0	0	1	1	0	0
<i>Trichostema ruygtii</i> Napa bluecurls	G1G2 S1S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	215 1,930	19 S:7	0	0	0	0	1	6	2	5	6	0	1



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Trifolium amoenum</i> two-fork clover	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley SB_USDA-US Dept of Agriculture	65 65	26 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Trifolium hydrophilum</i> saline clover	G2 S2	None None	Rare Plant Rank - 1B.2	10 775	56 S:7	0	1	0	0	0	6	2	5	7	0	0
<i>Valley Needlegrass Grassland</i> Valley Needlegrass Grassland	G3 S3.1	None None		30 100	45 S:3	0	1	0	0	0	2	3	0	3	0	0
<i>Viburnum ellipticum</i> oval-leaved viburnum	G4G5 S3?	None None	Rare Plant Rank - 2B.3	600 1,480	39 S:4	0	0	0	0	0	4	1	3	4	0	0



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:

August 06, 2021

Consultation Code: 08ESMF00-2021-SLI-2491

Event Code: 08ESMF00-2021-E-07170

Project Name: Sunset Avenue Apartments

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, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) 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 Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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 ECOS-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 ECOS-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:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

[http://](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html)

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 Tracking Number 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

Consultation Code: 08ESMF00-2021-SLI-2491

Event Code: 08ESMF00-2021-E-07170

Project Name: Sunset Avenue Apartments

Project Type: DEVELOPMENT

Project Description: Multifamily residential development

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@38.2636881,-122.01911785575422,14z>



Counties: Solano 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 Fisheries¹, 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.

-
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.

Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Delta Green Ground Beetle <i>Elaphrus viridis</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2319	Threatened
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
California Freshwater Shrimp <i>Syncaris pacifica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7903	Endangered
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Contra Costa Goldfields <i>Lasthenia conjugens</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Showy Indian Clover <i>Trifolium amoenum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX E

Tree Inventory Survey Report

September 24, 2021

Project No. 2102-0373

Ryan Keith; Red Tail Multifamily Land Development, LLC
c/o TK Consulting
2082 Michelson Dr., Suite 400
Irvine, CA 92612

Subject: Tree Inventory Survey Results Letter Report for the Arrive Fairfield Luxury
Townhomes Project, Fairfield, California

Dear Mr. Keith:

Padre Associates, Inc. (Padre) has prepared the following Letter Report (Report) to document the results of a tree inventory survey conducted on behalf of Red Tail Multifamily Land Development, LLC (RTD) for the Arrive Fairfield Luxury Townhomes Project (Project) located at 1776 Sunset Avenue, Fairfield, Solano County California (Project Site). Padre understands that the City of Fairfield requires completion of a tree survey to ensure conformance with their Tree Protection Ordinance (Ordinance) that protects designated native trees. In accordance with this requirement, Padre completed a tree inventory survey that was focused on identification and mapping of all trees within the Project Site to determine potential impacts to protected native trees. The Ordinance (City of Fairfield, 2021) is intended to conserve tree resources by protecting significant trees from unnecessary destruction or removal, and encourages the replacement of trees lost to disease, natural hazards, or human intervention. The Ordinance states that the following trees are designated as protected trees: native Oaks (*Quercus* sp.), bay Laurel (*Umbellularia californica*), madrone (*Arbutus menziesii*), and buckeye (*Aesculus californica*). This Report includes a summary of field survey methods and results including photographs, a figure depicting the location of mapped trees and associated electronic data file (shapefile) with all collected tree data.

FIELD SURVEY METHODS

On August 26, 2021, Padre Biologists Sarah Powell and Christina Santala completed the tree inventory in conjunction with the biological resources assessment field survey to document all trees located within the Biological Study Area (BSA). Field methods consisted of walking through the BSA and recording on the location and relevant data for all trees onsite. Tree data collected includes the location using a Global Positioning System (GPS), species, diameter at breast height (DBH), and status (living / dead) of each tree. Trees were mapped and documented individually unless conditions required mapping the trees as a "cluster". Cluster mapping was conducted primarily when the group of trees was comprised of saplings and/or stump regrowth too numerous or dense to map as individuals. Within this Report, saplings are specimens that are less than two inches DBH, or otherwise noted as a sapling.

TREE INVENTORY SURVEY RESULTS

The Project Site supports two vegetation communities including annual grassland and mixed wetland riparian. As observed, trees occurred intermittently as individuals and small clumps scattered throughout the BSA. The most common species was the native northern California black walnut (*Juglans hindsii*) with other native, non-native, and cultivated species including English walnut (*Juglans regia*), cultivated walnut (*Juglans* sp.), valley oak (*Quercus lobata*), interior live oak (*Quercus wislizeni*), common fig (*Ficus carica*), cultivated apple (*Malus* sp.), date palm (*Phoenix* sp.), Mexican fan palm (*Washingtonia robusta*), pepper tree (*Schinus molle*), cottonwood (*Populus fremontii*), and redwood (*Sequoia sempervirens*).

The northern California black walnut trees within the BSA appeared to be remnants of agricultural history of this area and not naturally occurring. Many of the northern California black walnuts were sprouted rootstock from grafted trees that had been cut above the graft and others appear to be escaped from previous walnut orchards in the surrounding area. Historical imagery (Padre 2021) shows an orchard on the property east of the Project Site dating back to the 1930s to 1950s. The other trees within the BSA appeared to be mature remnant planted ornamentals associated with the past residential land use and a few scattered oaks. Trees within the relict channel primarily consisted of northern California black walnut saplings with several Mexican fan palms. Many of trees in the northern portion of the relict channel were dead or charred due to a recent fire within the channel feature.

Upon review of the Ordinance, oak (*Quercus* sp.) was identified as the only protected native tree species occurring within the BSA. The other trees documented within the BSA did not qualify as protected trees according to the Ordinance categories, and outlined below:

- A. All trees on public property.
- B. Trees planted or preserved on private property or within the public right of way which were:
 - Required by the City as a condition of approval for the project; or
 - Shown on a landscape drawing or plan for a project approved by the City.
- C. The following species of trees located on undeveloped private properties which exceed 6 inches in caliper or diameter at breast height. Breast height is measured at a point located 4-1/2 feet above the existing ground level of the tree:
 - Native Oaks (*Quercus* sp.);
 - Bay Laurel (*Umbellularia californica*);
 - Madrone (*Arbutus menziesii*); and
 - Buckeye (*Aesculus californica*).
- D. Trees or groups of trees having one or more of the following characteristics, as determined by the City during project review or through special studies:
 - Demonstrated habitat value;
 - Historical or cultural value, as documented by published sources;
 - Important aesthetic value;
 - Uniqueness or rarity; and
 - Unusual size or age.

The results of the inventory survey documented a total of 60 native and non-native trees ranging in size from sapling (less than one inch diameter at breast height [DBH]) to large mature trees. Of these trees, there were a total of four protected oak trees. In addition, two clumps of northern California black walnut saplings and/or sprouting rootstock were mapped within the BSA. See Table 1 – Tree Inventory Survey Results Summary Table for a summary of the results, and Attachments – Site Photographs and Figure 1 –Tree Inventory Survey Results.

Table 1. Tree Inventory Survey Results Summary Table

Species	Diameter at Breast Height (DBH) ¹	Native Status	Protected
Oaks			
Valley oak	1	Native	No
Valley oak	10	Native	Yes
Valley oak	13	Native	Yes
Interior live oak	5	Native	No
Interior live oak	28	Native	Yes
Interior live oak	38	Native	Yes
Other Species			
Northern California black walnut	Multiple	Native	No
English walnut	Multiple	Non-native	No
Cultivated walnut	NA	Non-native	No
Common fig	NA	Non-native	No
Apple	NA	Non-native	No
Date palm	NA	Non-native	No
Mexican fan palm	NA	Non-native	No
Pepper tree	NA	Non-native	No
Cottonwood	NA	Native	No
Redwood	NA	Native	No
Notes: ¹ DBH for oaks were calculated as the total inches of a single trunk tree, or the cumulative DBH of multiple trunks on a multi-trunked tree. The DBH for other species ranged from sapling to greater than six inches DBH. NA – Not Applicable			

IMPACT DISCUSSION

All trees within the proposed Project Site are expected to be removed. Most of the trees are northern California black walnut tree saplings or sprouted rootstock that appear to remain from the agricultural history of this area and are not naturally occurring. The ornamental trees surrounding the abandoned residence were planted by past property owners. There are two valley oaks and two interior live oaks that are equal to or greater than six inches DBH, for a total of four protected native oak trees within the Project Site that are expected to be removed. The City of Fairfield requires mitigation for impacts (removal and/or damage) to oak trees that are six inches or greater DBH. A Native Tree Mitigation Plan (Plan) will be required to be developed and approved by the City of Fairfield to address impacts to protected native oak trees. The Plan will address and incorporate the following:

- Whether the mitigation Plan replaces the environmental, cultural, aesthetic, or other values of the lost trees;
- Evaluation of the availability of land, either on-site or off-site, for mitigation planting;
- Survivability, size, and value of the proposed replacement trees; and
- Provisions for maintenance and survival of the replacement trees.
- Determine the number of replacement plantings by using the DBH of the tree proposed for removal, measured at breast height (4-1/2 feet above the normal surface). Inches of replacement may be translated into standard nursery planting sizes using the following formulas:
 - 24-inch boxed tree = 3 replacement inches;
 - 15-gallon tree = 1 replacement inch; and
 - 5-gallon tree = 1/2 replacement inch.

CLOSING

There was a total of four protected oak trees identified within the Project Site. These oaks are expected to be removed due to Project implementation. A Native Tree Mitigation Plan will be prepared to mitigate for loss of these protected trees in compliance with the City of Fairfield's Tree Protection Ordinance. If you have any questions or would like more information regarding the contents of this letter report, please contact Christina Santala at csantala@padreinc.com, or (805) 786-2650, ext. 113.

Sincerely,

Padre Associates, Inc.



Christina Santala
Project Biologist



Sarah Powell
Principal/Senior Biologist

Attachments: Site Photographs
Figure 1 – Tree Inventory Survey Results

REFERENCES

- Baldwin, Bruce G., Goldman, Douglas H., Keil, David J., Rosatti, Thomas J. 2012. The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press. Berkeley, California.
- California Native Plant Society (CNPS), Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v8-030.39). Website <http://www.rareplants.cnps.org> (Accessed: September 2021).
- Calflora: Information on California plants for education, research and conservation. [web application]. 2021. Berkeley, California: The Calflora Database (a non-profit organization). Website: <https://www.calflora.org> (Accessed: September 2021).
- City of Fairfield. 2021. Fairfield Municipal Code; Chapter 7A – Environmental Quality; Section 25.36 Tree Conservation; Subsection 25.36.3 Protected Trees.
- Padre Associates, Inc. 2021. Phase I Environmental Site Assessment for Assessor's Parcel Numbers 0037-030-200, 0037-030-210, AND 0037-060-480, 1776 Sunset Avenue, Fairfield, Solano County, California. April 2021.

ATTACHMENTS

Site Photographs

Figure 1 –Tree Inventory Survey Results



Photo 1. Representative view of northern California black walnut associated with agricultural history of the Project Site (aspect southeast; 8/26/21).



Photo 2. Sprouted rootstock of northern California black walnut (8/26/21).



Photo 3. Mature valley oaks on left (protected native trees), date palm (not protected) on right (aspect; northeast; 8/26/21).



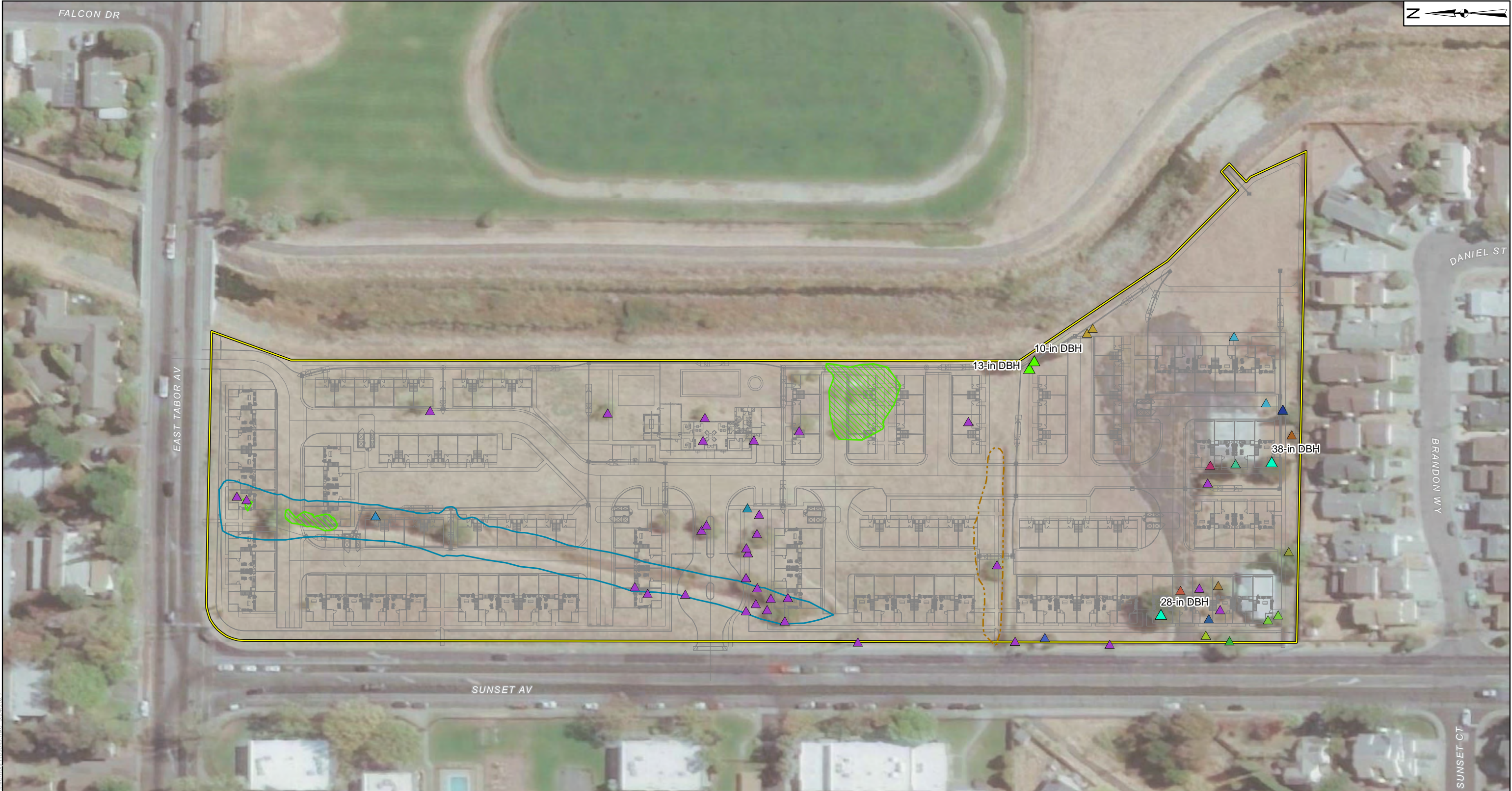
Photo 4. Valley oak sapling (not protected) in foreground, northern California black walnut in background (aspect northwest; 8/26/21).



Photo 5. Representative view of trees planted as ornamentals (aspect west; 8/26/21).



Photo 6. Ornamentals including grafted walnut near vacant residence within the BSA (aspect east; 8/26/21).



LEGEND:

- | | |
|-----------------------|--|
| — Tree/Sapling Clumps | — Project Footprint |
| - - - Basin | ▨ Tree/Sapling Clumps (Northern California black walnut) |
| — Relict Channel | ▭ Biological Study Area (BSA) |

Tree Species

- | | |
|---------------|---|
| ▲ Acacia | ▲ English walnut and Northern California black walnut |
| ▲ Cottonwood | ▲ English walnut |
| ▲ Date Palm | ▲ Fig |
| ▲ Douglas fir | ▲ Northern California black walnut |

▲ Juniper

- | |
|----------------------|
| ▲ Olive |
| ▲ Ornamental |
| ▲ Palm- Phoenix sp . |
| ▲ Fan Palm |

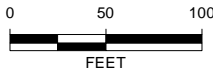
▲ Interior live oak

- | |
|--------------|
| ▲ Redwood |
| ▲ Pepper |
| ▲ Valley oak |

Protected Native Trees (Designated Natives >6 inch DBH)

- | |
|---|
| ▲ Interior live oak (<i>Q. wislizeni</i>) |
| ▲ Valley oak (<i>Q. lobata</i>) |

MAP EXTENT:



Source: Sources, Esri Online Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



PROJECT NAME:
ARRIVE FAIRFIELD LUXURY TOWNHOMES
FAIRFIELD, CA

PROJECT NUMBER:
2102-0373

DATE:
September 2021

TREE INVENTORY SURVEY RESULTS

FIGURE

1

APPENDIX F

Preliminary Aquatic Resources Delineation Report

PRELIMINARY AQUATIC RESOURCES DELINEATION REPORT

ARRIVE FAIRFIELD LUXURY TOWNHOMES PROJECT FAIRFIELD, CALIFORNIA

PROJECT NO. 2102-0373

Prepared for:

Red Tail Multifamily Land Development, LLC
c/o TK Consulting
2082 Michelson Dr., Suite 400
Irvine, California 92612

Prepared by:

Padre Associates, Inc.
369 Pacific Street
San Luis Obispo, California 93401

JANUARY 2022



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APPENDICES

Appendix A	WETS Table
Appendix B	Wetland Delineation Data Forms
Appendix C	Site Photographs
Appendix D	Plant List

1.0 INTRODUCTION

Padre Associates, Inc. (Padre) has prepared this Preliminary Aquatic Resources Delineation Report (Report) on behalf of Red Tail Multifamily Land Development, LLC (RTD) for the property located at 1776 Sunset Avenue, Fairfield, Solano County California (Project Site). The purpose of this Report is to identify and delineate the geographic extent of aquatic resource features and determine Federal and/or state jurisdiction. The methodology used in this delineation is consistent with guidance provided by the U.S. Army Corps of Engineers (ACOE) and Environmental Protection Agency (EPA) for Federal jurisdictional waters of the United States (waters of the U.S.) and wetlands and the State Water Resources Control Board (SWRCB) for waters of the State.

1.1 PROJECT LOCATION

The Project Site is located at 1776 Sunset Avenue, Fairfield, California and consists of three separate parcels identified with Solano County Assessor's Parcel Numbers (APNs) 0037-030-200, 0037-030-210, and 0037-060-480 and is within the Fairfield North 7.5-minute United States Geological Survey (USGS) quadrangle. The northern two parcels are currently undeveloped and the southern-most parcel contains a vacant single-family residence. The Project Site is bounded by East Tabor Avenue to the north, a flood control channel and Grange Middle School to the east, Brandon Way to the south, and Sunset Avenue to the west (see Figure 1).

1.2 PROJECT DESCRIPTION

The Project proposes development of the approximately 8.71-acre property consisting of construction of multi-family residential units and associated infrastructure including streets and driveways and improvement of a storm water outfall system that drains into the adjacent flood control channel. The Project will eliminate a relict channel of Laurel Creek (relict channel), which was hydrologically isolated and partially backfilled in conjunction with the construction of an adjacent flood control channel constructed in the mid-1980s by the ACOE. A portion of the Project Site is currently developed with one vacant single-family residential building, a concrete pad, and asphalt paved area at the south end of the Project Site. The remainder of the Project Site is vacant land that has been previously disturbed and is routinely disked to reduce fire hazard. The Project is currently in the initial planning and permitting phase.

1.3 EXISTING SITE CONDITIONS

The Project Site consists primarily of vacant land that is partially developed and has a history of disturbance that includes mowing and disking for fire breaks and recent use of the Project Site as a homeless encampment.

The Project Site was generally level with several topographical features (soil berms, a large soil mound, depressions) creating moderate topographical variability. The relict channel extended north to south in the western portion of the Project Site. The study area boundary also includes a small area on the west bank of the Flood Control Channel where improvements to an outfall drainage are proposed to direct stormwater run-off onto the armored bank of the existing Flood Control Channel.

Based on a review of readily available historical information, the Project Site was historically utilized for agricultural and residential purposes from at least the 1930s (Padre, 2021a). The Project Site has been disturbed through past and present property maintenance activities. The primary vegetation type was disturbance-adapted non-native annual grassland and an assemblage of wetland and riparian plant species concentrated in the relict channel. Details on biological resources of the Project Site including botanical, wildlife, and potentially occurring sensitive plant and wildlife species can be found in the draft biological resources survey report (Padre, 2021b) for the Project.

1.4 CLIMATE SUMMARY

The Project Site is situated in Climate Zone 12, which includes part of the Northern California Central Valley situated just inland of the Bay Area (PEC, 2006). The climate in this zone is characterized by cooler winters and hotter summers than the Bay Area, and tule fog is common in the winter east of Mount Diablo. Some lower areas receive frost on winter nights (PEC, 2006). Most of the rainfall in this zone occurs between November and April. At the Fairfield Weather Station, located approximately 2.6 miles northwest of the Project Site, the average maximum temperature includes a range of 55.9°F in January to 89.2°F in July for the 80-year period between 1941 and 2021. The average minimum temperature for this time period includes a range of 38.1°F in December and January to 56.3°F in August. The average annual precipitation for this station is 22.48 inches with a range of 0.02 inches in July and 4.72 inches in January. Average snowfall for the Project Site is zero inches per year.

Using climate data from the Fairfield Station, it was determined that the delineation field effort occurred during a period of average rainfall. Therefore, climatic conditions at the Project Site can be considered normal. Table 1-1 – Precipitation Analysis shows analysis of climate data obtained from the National Resources Conservation Service (NRCS) Climate Analysis for Wetlands Table (WETS table) used to determine site conditions at the time of surveys (NRCS, 2020c) (Appendix A – WETS table). The three months prior to the survey are shown on the left followed by the lower than average rainfall, average rainfall, and above average rainfall amounts as determined based on long-term rainfall records. Under the Rain Fall column are the actual precipitation values for each of the three months leading up to the survey. Each month's condition (dry, normal, wet) is assigned based on comparison to the long-term rainfall records and is considered against a weighted number that prioritizes the month prior to surveys over the two preceding months. The condition value and month weight value are then multiplied, and the results summed and compared to an index evaluating values from six to 18. The sum value of 11 that was generated using the Fairfield Station climate data indicates that the August 2021 delineation survey was conducted at a time that had normal rainfall conditions.

Table 1-1. Precipitation Analysis

Long-term Rainfall Records (Period of Record 1941-2021)					Analysis				
Timing	Month	3 yrs. in 10 < (Inches)	Average (Inches)	3 yrs. in 10 > (Inches)	2021 Rain Fall (Inches)	Condition ¹	Condition Value ¹	Month Weight Value	Products of previous two columns
First month prior to surveys	July	0.00	0.02	0.00	0.00	N	2	3	6
Second month prior to surveys	June	0.00	0.15	0.00	0.00	N	2	2	4
Third month prior to surveys	May	0.13	0.49	0.47	0.00	D	1	1	1
								Sum²	11
¹ Condition / Condition Value: D = Dry / 1 N = Normal / 2 W = Wet / 3				² Index for Sum: 6 - 9 = period preceding surveys has been drier than normal 10-14 = period preceding surveys has been normal 15-18 = period preceding surveys has been wetter than normal					

Precipitation in the months preceding a delineation can influence wetland indicators observed in the field. It is important to understand the influence that precipitation in months leading up to the surveys may have on field conditions at the time surveys were conducted. The normal rainfall conditions concluded by the precipitation analysis was taken into consideration during analysis of the field data collected for this Report.

1.5 REGIONAL SETTING

The Project Site is located in the densely populated and highly developed City of Fairfield, approximately three miles of the northern extent of Suisun Slough and approximately 60 miles southwest of the Sierra Nevada foothills at an elevation of approximately 40 feet above mean sea level. The surrounding land uses include transportation, commercial, and residential. The regional topography is generally flat to minimally sloping.

The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map of the Project vicinity (USFWS, 2020a) was reviewed prior to the delineation of waters and wetlands on the Project Site. The NWI depicted a Riverine feature labeled as Laurel Creek running north to south in the eastern-central portion of the Project Site.

The Project Site is located within the Central Coast Subregion of the Central Western California Region of the California Floristic Province. These geographic subdivisions provide an eco-geographic context for plant diversity in California (Baldwin et. al., 2012).

1.6 GEOLOGY AND SOILS

The Project Site is located along the western margin of the Great Valley Geomorphic Province. The Fairfield area is located along the valley floor north of Suisun Bay. The Project Site is underlain primarily by alluvial fan deposits from the late Pleistocene age, consisting of interbedded sand, gravel, silt and clay (Wieggers et. al., 2006).

United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey indicated that there were two soil types within the Project Site. Antioch-San Ysidro complex, thick surface, zero to two percent slopes, and Yolo loam, clay substratum (NRCS, 2021a). Antioch soil series consists of moderately alkaline clay and clay loam and are on nearly level to strongly sloping alluvial fans and terraces. Yolo series consists of very deep, well drained soils that formed in alluvium from mixed rocks and are on alluvial fans and flood plains. These soils are not considered hydric soils (NRCS, 2021b). See Appendix A – Figures for the Soil Map of the Project Site.

2.0 REGULATORY AUTHORITY

2.1 FEDERAL REGULATIONS

2.1.1 Waters of the United States

The ACOE is responsible for the issuance of permits for the placement of dredged or fill material into waters of the U.S. pursuant to Section 404 of the Clean Water Act (CWA) (33 USC 1344).

In non-tidal waters the lateral extent of Federal jurisdiction is determined by the ordinary high water mark (OHWM), which is defined as the: “...*line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*” (33 CFR 328[e]). Additional physical characteristics, including matted vegetation, sediment sorting, multiple observed flow events, water staining, and others, have also been used to determine the OHWM (U.S. Army Corps of Engineers, 2005).

Wetlands could also be regulated as waters of the U.S if they were adjacent to jurisdictional waters (other than waters that are themselves wetlands). The ACOE regulation concerning wetlands adjacent to jurisdictional waters is defined at 33 CFR 328.4(c)(4).

Non-tidal waters of the U.S. The limits of jurisdiction in non-tidal waters:

- In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
- When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.

The term adjacent is defined at 33 CFR 328.3(C) as:

The term adjacent means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes and the like are “adjacent wetlands.”

In 2015, the ACOE and EPA issued new definitions for waters/wetlands (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency, 2015), known as the 2015 Clean Water Rule. In December 2018 the ACOE and EPA proposed a revised definition of waters of the U.S. that was published in the Federal Register in early 2019, and subsequently repealed the 2015 Clean Water Rule reverting regulation back to the 1986 regulations with subsequent guidance. On January 23, 2020, the ACOE and EPA finalized the Navigable Waters Protection Rule to define waters of the U.S and it became effective on June 23, 2020. On August 30, 2021, in the case of Pascua Yaqui Tribe v. U.S. Environmental Protection Agency, the U.S. District Court for the District of Arizona vacated and remanded the Navigable Waters Protection Rule. Subsequently, the EPA and ACOE halted implementation of the Navigable Waters Protection Rule and, until further notice, are interpreting “waters of the U.S.” consistent with the pre-2015 regulations (USEPA, 2021).

According to the USEPA, under the current implementation of CWA regulation, the term waters of the U.S. means:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - c. Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the U.S. under this definition;
5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
6. The territorial sea;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the U.S.

In addition, the pre-2015 regulations use the 1986 definition and subsequent guidance from previous U.S. Supreme Court decisions.

In January 2001, the U.S. Supreme Court ruled in the case of *Northern Cook County v. United States Army Corps of Engineers et al.* (SWANCC) that isolated intrastate non-navigable waters could not be considered “waters of the U.S.” under Section 404 of the Clean Water Act on the basis of the migratory bird rule (U.S. Supreme Court, 2001). Based on the SWANCC decision and subsequent guidance from the ACOE (2001), waters covered by subsection (a) (3) that could affect interstate commerce solely by virtue of their use as habitat by migratory birds were no longer considered waters of the U.S.

In 2006, the U.S. Supreme Court, in its decision in *Rapanos v. United States and Carabell v. United States* (*Rapanos* decision), revisited the jurisdictional scope of Section 404 of the CWA with respect to waters of the U.S. The Court confirmed ACOE jurisdiction over waters that have been or are navigable waters. However, disputes arose over waterbodies and wetlands associated with intermittent and ephemeral waterbodies.

The Court provided two new analytical standards for determining whether waterbodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction. These standards are:

- 1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW) it is under the jurisdiction of the CWA, or
- 2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs, it is under the jurisdiction of the CWA.

In response to the *Rapanos* Decision, the ACOE and the U.S. EPA issued new guidance to determine over which waters bodies to assert jurisdiction (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency, 2006). The agencies will assert CWA jurisdiction over:

- a) Traditional Navigable Waters (TNWs)
- b) All wetlands adjacent to TNWs
- c) Non-navigable tributaries of TNWs that are relatively permanent tributary waters (RPW tributaries typically flow year-round or have continuous flow at least seasonally); and,
- d) Wetlands that directly abut RPWs
- e) Non-RPWs determined to have a “significant nexus” with a TNW, based on a fact-specific analysis.

The classes of water bodies that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecological, and other functions performed by the tributary and all of its adjacent wetlands.

2.1.2 Federal Wetlands

Wetlands are a special category of waters of the U.S., and are defined at 33 CFR 328.3(b) as: “...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

The ACOE utilizes the *Corps of Engineers Wetland Delineation Manual* (1987), herein referred to as *1987 ACOE Manual*, to identify wetlands subject to regulatory jurisdiction (jurisdictional wetlands) under the CWA. In central and southern California, Nevada, Arizona, and the other arid regions of the western U.S. the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* prepared by the ACOE's Engineer Research and Development Center (2008) is used to delineate jurisdictional wetlands.

The ACOE identifies jurisdictional wetlands based on a three-parameter definition using vegetation, soil, and hydrological characteristics. Excluding unusual conditions (atypical conditions or disturbed sites), all three parameters must be present for a site to be considered a jurisdictional wetland.

2.1.3 Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403)

The ACOE is also responsible for authorizing work affecting navigable waters of U.S. Structures or work under or over a navigable water of the U.S. is considered to have an impact on the navigable capacity of the waterbody (33 CFR 322.3[a]). There are no Section 10 waters on or near the Project Site.

2.1.4 Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408)

The secretary of the Army may upon the recommendation of the Chief of Engineers grant other entities for the permanent or temporary alteration or use of any ACOE Civil Works Project. An alteration refers to any action by any entity other than the ACOE that builds upon, alters, improves, moves, occupies, or otherwise affects the usefulness, or the structural or ecological integrity of a ACOE project. Section 408 permission requires a determination that the requested alteration is not injurious to the public interest and will not impair the usefulness of the project. This means that ACOE has the authority to review, evaluate, and approve all alterations to federally authorized civil works projects to make sure they are not harmful to the public and still meet the project's intended purposes mandated by congressional authorization.

2.2 STATE REGULATIONS

2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (CA Water Code §§ 13000-13999.10) mandates that waters of the State of California shall be protected. Current policy in California is that activities that may affect waters of the State shall be regulated to attain the highest quality. waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the State. The Porter-Cologne Act establishes that the State assumes responsibility for implementing portions of the Federal CWA, rather than operating separate state and Federal water pollution control programs in California. Consequently, the State is involved in activities such as setting water quality standards, issuing discharge permits, and operating grant programs. Pursuant to Section 401 of the CWA, the ACOE cannot issue a Federal CWA permit until the State of California first issues a Water Quality Certification to ensure that a project will comply with state water quality standards. The CWA's 401 certification requirement applies to many types of permits and is an important tool for the State to control projects that might degrade state waters.

In 2019, the State Water Resources Control Board adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material (Procedures), for inclusion in the Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: 1) a wetland definition; 2) wetland delineation procedures; 3) a wetland jurisdictional framework; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. The Procedures took effect in May 2020.

2.2.1.1 Waters of the State

State Water Code defines waters of the State broadly to include any surface water or groundwater including saline waters, within the boundaries of the State. These include:

- Natural wetlands;
- Wetlands created by modification of a water of the State;
- Wetlands that meet definition of waters of the U.S.; and
- Artificial wetlands that meet the following criteria:
 - Agency approved mitigation projects,
 - Specifically identified in a water quality control plan as a wetland or other water of the State,
 - Resulting from historic human activity, not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape, and
 - Greater than or equal to one acre in size, unless constructed for one of a variety of industrial or land management purposes.

2.2.1.2 State Wetland

A State wetland is defined in the new Procedures as an aquatic feature that “...*under normal circumstances has continuous or recurrent saturation of the upper substrate caused by groundwater, shallow surface water, or both; duration of saturation sufficient to cause anaerobic conditions in the upper substrate; and, vegetation that is dominated by hydrophytes or lacks vegetation.*”

If an aquatic feature meets the definition of a wetland it may be considered a water of the State.

2.2.2 California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) administers several laws and programs designed to protect fish and wildlife resources in the State of California, including Section 1602 of the California Fish and Game Code, which requires a Lake or Streambed Alteration Agreement between CDFW and any state or local governmental agency or public utility before the initiation of any construction project that will:

- Substantially divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake;
- Use materials from a streambed; or
- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Therefore, the CDFW claims jurisdiction over the bed, bank, and channel of drainage features with regard to activities regulated under Section 1602 of the California Fish and Game Code. The CDFW has adopted the same wetland definition as the USFWS, classified by the presence of only one parameter; however, CDFW does not specifically regulate wetlands.

3.0 METHODOLOGY

The fieldwork for the delineation was conducted on August 26, 2021, by Padre biologists Sarah Powell and Christina Santala within the Project Site. Prior to the field delineation, Padre conducted a literature review to determine the general character of the proposed Project Site, identify potential areas of interest, and to locate previously documented wetlands and waters. Documents and resources reviewed included the following:

- USGS 7.5-minute topographic map for Fairfield North;
- NRCS Websoil Soil Survey;
- USFWS NWI Map for the Project region;
- United States Department of Homeland Security Federal Emergency Management Agency (FEMA) flood zone map for the Project region;
- WETS Climate Table (NRCS 2021c);
- Phase I Environmental Site Assessment for 1776 Sunset Avenue, includes aerial imagery from 1937 to 2016 (Padre 2021a); and
- Biological Resources Constraints Analysis, East Tabor and Sunset Avenue, City of Fairfield (LSA, 2020).

An aquatic resources delineation study area (study area) was identified prior to beginning field surveys. The study area includes all Project permanent and temporary impact areas, staging areas, and access routes. The boundaries of the study area are depicted in the attached Figure 5-1 – Preliminary Federal Aquatic Resources Delineation Map.

3.1 WATERS OF THE UNITED STATES

Physical indicators of OHWM, such as the natural line on the bank, shelving, destruction of terrestrial vegetation, and the presence of litter and debris are used to record the location of OHWM within a waters of the U.S.

Evaluation of the extent of jurisdiction within channels (the adjacent flood control channel and the relict Laurel Creek channel) followed the guidelines of *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar et. al., 2008) and *data was recorded on the Updated Datasheet for the Identification of the OHWM in the Arid West Region of the Western United States* (Curtis and Lichvar, 2010).

3.2 WETLANDS

The ACOE has prescribed methodologies for delineating waters and wetlands pursuant to the CWA. Methods for delineating wetlands are detailed in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and further refined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Regional Supplement) (U.S. Army Corps of Engineers, 2008). These manuals require that, under normal circumstances, an area possess three technical criteria (parameters) to be designated as a jurisdictional wetland. These criteria are prevalence of hydrophytic vegetation, presence of hydric soils, and a wetland hydrology.

Sample plot locations were determined based on topography and vegetation communities within the areas of interest to characterize the features and determine potential jurisdiction. The locations of sample plots were recorded using a Global Positioning System (GPS) unit. The GPS data were used to identify sample plot locations depicted on Figure 2 – Preliminary Aquatic Resources Delineation Map, attached to this Report. The vegetation, soil, and hydrology were examined at all sample plots and approved wetland data sheets were prepared (Appendix B – Wetland Delineation Data Forms). Sampling methods are discussed in this section.

3.2.1 Hydrophytic Vegetation

Hydrophytic vegetation is plant life that occurs in areas that are frequently flooded or have saturated soil for a prolonged duration during the growing season. In accordance with ACOE methodology, for a site to display a positive wetland vegetation indicator, a dominance or prevalence of hydrophytic (water-loving) plants species must be present.

To determine the dominance or prevalence of hydrophytic vegetation, a sample plot located in the lowest topographic area of each potential seasonal wetland was selected. The plot size was determined according to the Regional Supplement. A five-foot radius plot is used in areas with only herbaceous vegetation and a 15-foot radius plot is used in areas with shrubs and sub-shrubs, and a 30-foot radius plot is used in wooded areas (U.S. Army Corps of Engineers, 2008). The shape of the sample plot areas can be adjusted in order to fit within vegetation communities observed in the field. Within each plot, the plants were identified to species using standard taxonomic references (Baldwin et. al., 2012; Mason, 1957). The hydrophytic class of each plant species was determined in accordance with the *National Wetland Plant List, version 3.4* (U.S. Army Corps of Engineers, 2018b) as facultative, facultative-wetland, or obligate wetland species.

3.2.2 Hydric Soils

At each sample plot location, a soil pit was excavated to a depth of approximately 18 inches below ground surface (bgs), where possible, to determine the extent of saturation and to examine the soil for evidence of wetland hydrology. Once the pit was excavated, a soil sample was obtained from below the A horizon, approximately 10 inches below ground surface (bgs), and examined for evidence of redoximorphic characteristics, such as low matrix chroma, gleying, and/or mottling resulting from anaerobic conditions. After moistening, the soil color was determined using Munsell soil color charts (Munsell Color, 1990). Soil texture was evaluated using field methods described by the ACOE (Environmental Laboratory, 1987). The characteristics of the soils were then compared against descriptions of soil-mapping units detailed in the Natural Resources Conservation Service Web Soil Survey (NRCS, 2020).

3.2.3 Wetland Hydrology

Hydrologic characteristics of the sample plots were evaluated by identifying primary and secondary indicators including evidence of inundation, free water in the soil pit, soil saturation, drainage patterns, oxidized root channels in the upper 12 inches of the soil, and/or surface soil cracking.

3.3 WATERS OF THE STATE

Waters of the State were determined based on field survey results from the preliminary aquatic resource delineation and map. For state jurisdictional wetlands regulated by the Regional Water Quality Control Board (RWQCB), the methodology described for Federal aquatic resource delineations was employed in the field, and data analyzed consistent with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB, 2019). The Procedures do not include guidance for jurisdictional determination for other waters of the State; therefore, non-wetland waters of the State regulated by RWQCB include all waters of the U.S., including features that are consistent with any current or historic final judicial interpretation of “waters of the U.S.” or any current or historic Federal regulation defining “waters of the U.S.”.

For non-wetland waters of the State regulated by CDFW, the top of bank or outside canopy boundary of riparian vegetation was used to delineate CDFW jurisdiction.

4.0 RESULTS

There were four potential aquatic features identified within the study area boundary during the August 2021 field survey consisting of the relict channel (CH-1), a seasonal wetland within the bottom of the relict channel (SW-1), the constructed Flood Control Channel located east of the property (CH-2), and an excavated feature referred to as the basin (EX-1). The results of the aquatic resources delineation field survey and the geographic extent of the preliminary jurisdictional limits of the ACOE, RWQCB, and CDFW for the aquatic features are discussed this section. Table 4-1 – Aquatic Resources Summary Table lists aquatic resource features observed and documented within the Project Site. Descriptions of each feature follow Table 4-1. See Appendix C – Photographs for representative photographs of aquatic features.

Table 4-1. Aquatic Resources Summary Table

Aquatic Resource	Dimensions				Preliminary Jurisdictional Determination
	Square Feet (ft ²)	Acres (ac)	Length (ft)	Width (ft)	
Relict channel (CH-1)	23,379	0.54	665	53	CDFW
Seasonal wetland ¹ (SW-1)	10,441	0.24	646	26	ACOE, RWQCB
Flood Control Channel (CH-2)	301	0.007	24	13	ACOE, RWQCB, CDFW, CVFPB ²
Total Preliminary Jurisdictional Area					
Agency	Ac (ft ²)		Aquatic Resources		
ACOE	0.247 (10,742)		SW-1, CH-2		
RWQCB	0.247 (10,742)		SW-1, CH-2		
CDFW	0.547 (23,680)		CH-1, CH-2		
Notes:					
¹ The Seasonal Wetland is located in the bottom of the relict channel (CH-1). CH-1 does not have an OHWM, and therefore, was determined to be potentially jurisdictional based on the boundary of the seasonal wetland (SW-1) located in the bottom of the relict channel.					
² Central Valley Flood Protection Board					
NA - Not applicable					

4.1 OTHER WATERS OF THE U.S.

There were two channel features evaluated to determine whether they could be considered waters of the U.S. These include the constructed Flood Control Channel that occurs east of the site and the relict Laurel Creek channel that was cut off when the Flood Control Channel was constructed, rerouting flows around the site. Evaluation of these features as potential waters of the U.S. included a combination of desktop review (e.g., review of historic aerial imagery) and surveys for field indicators of OHWM. These features are described below.

4.1.1 Flood Control Channel

The Flood Control Channel is adjacent and parallel to the eastern boundary of the study area, and a small portion of the west bank of the Flood Control Channel occurs within the study area at a location for the proposed storm drain outfall. The Flood Control Channel runs north to south through the City of Fairfield and eventually flows into the Suisun Marsh and Suisun Bay in the Sacramento-San Joaquin Delta, and the Pacific Ocean, a TNW.

Transects were walked on the east and west banks of the Flood Control Channel to identify the OHWM. As observed, the bed and banks at the proposed outfall location were covered with a solid armoring material intended to minimize erosion within the channel. The dimensions of the armored area were approximately 130 feet long (upstream and downstream extending beyond the study area boundary), ten feet deep, and 95 feet wide. No obvious OHWM indicators were visible, and no vegetation was growing on the armored banks. There was shallow, flowing water and ponding in eroded and/or areas of sediment buildup that supported sparse to dense hydrophytic vegetation in the channel bed; however, those locations were outside of the study area boundary. No field indicators of OHWM were noted on the west bank due to the level of disturbance and the bank armoring. Shelving and an abrupt transition to upland grasses above the armored banks was the only field indicator of a potential OHWM. No stream gauges were identified on the Flood Control Channel.

4.1.2 Relict Channel

The relict channel was identified as a Riverine feature in the USFWS NWI (USFWS, 2021a). The relict channel was created as a result of construction of the flood control channel in the 1980's that diverted flows in Laurel Creek to the east of the property.

Based on review of historical imagery (Padre, 2021), Laurel Creek north of East Tabor Avenue was converted to a flood control channel with the development of residential housing sometime between 1957 and 1968. As of the 1968 aerial imagery, Laurel Creek north of East Tabor Avenue appears to be channelized and still connected via culvert to Laurel Creek in its natural configuration within the study area. Based on review of 1982 aerial imagery, prior to construction of the flood control channel east of the site, Laurel Creek flowed from north to south through the property, and apparently through culverts under East Tabor and Sunset Avenues, then continued through relatively undeveloped areas to the south. Based on review of 1993 aerial imagery, after the flood control channel east of the study area was constructed, Laurel Creek within the property still appeared to be connected via culverts under East Tabor Avenue and Sunset Avenue. Based on a review of aerial imagery between 2006 and 2016, Laurel Creek appears to have lost connectivity with the Flood Control Channel upstream and has become the distinct and disconnected relict channel that was observed onsite at the time of field surveys. A review of historic and current topographic maps shows the Laurel Creek Channel flowing through the site as an intermittent stream in its original configuration through the alignment of the relict channel.

Based on the August 2021 field visit, there was no culvert at the upstream limits of the relict channel that would convey flows under East Tabor Avenue. There was a culvert present at the downstream end, as identified and described in the Project constraint's analysis (LSA, 2020). The culvert was partially buried and covered with vegetation and debris. According to LSA, the presence of the culvert at the south end of the relict channel suggests that there is hydrological

connectivity to the other channel segments west of Sunset Avenue which after several hundred feet enters a larger City storm drain which eventually discharges to the Laurel Creek Flood Control Channel (LSA, 2020).

Within the Project Site, the relict channel was an average of approximately 600 feet long, 30 feet wide (from top of bank), and six feet deep. Transects were walked on the east and west banks of the relict channel to search for indicators of OHWM. The vegetation within the relict channel exhibited variable cover ranging from sparse to dense and was comprised of native and non-native hydrophytic and riparian herbaceous and tree species with intermittent occurrences of non-native upland grasses. The northern portion of the relict channel had recently sustained a fire as evidenced by bare, blackened soil, charred tree stumps, branches and trunks, and root sprouting from trees that were impacted by the fire. There was no surface water present at the time of the survey. The relict channel appeared to function as a water collection feature with water ponding in the bottom of the channel based on direct precipitation and overland surface flow from the immediately surrounding area. In the lower portion of the relict channel there appeared to be a connection with ground water as evidenced by saturation of the soil at the surface at SP-3A and water present in the sample pit at SP-2A (approximately 12" below ground surface) at the time of field surveys during the dry season. No evidence of flow from upstream tributaries and no OHWM field indicators were observed and as such, no cross-section sample or OHWM Arid West Data Sheet (Lichvar et. al., 2008) was completed. However, field indicators for wetland hydrology and hydrophytic plants were observed; therefore, Padre conducted a wetland delineation to map the geographic extent of the seasonal wetland that occurs within the bottom of the relict channel (see Section 4.2.1 below).

4.2 WETLANDS

There were two features evaluated to determine whether they met the three parameters for classification as a wetland. These include the seasonal wetland that occurs in the bottom of the relict channel and a topographic basin. These features are described below.

4.2.1 Seasonal Wetland

There was one seasonal wetland identified during the field survey occurring in the bottom of the relict channel as described in Section 4.1.2 above. Three representative sample locations within the potential seasonal wetland feature were chosen based on changes in vegetation cover and composition. The hydrophytic vegetation and wetland hydrology indicators were assessed, then a soil test pit was dug for hydric soil assessment. The three parameters were met at all three sample locations and paired upland sample plots were evaluated, to map the extent of the wetland feature using GPS. Appendix B – Wetland Delineation Forms contains the wetland data forms completed during the field survey.

4.2.1.1 Hydrophytic Vegetation

The seasonal wetland exhibited a distinct assemblage of hydrophytic vegetation designated as a site-specific Mixed Wetland Riparian vegetation type transitioning to Wild oats and brome grassland on the banks of the relict channel. The dominant to co-dominant species consisted of cocklebur (*Xanthium strumarium*), perennial pepperweed (*Lepidium latifolium*), and Hardstem bulrush (*Schoenoplectus acutus*) with component herbaceous and tree species including narrowleaf cattail (*Typha angustifolia*), creeping wild-rye (*Elymus triticoides*), curly dock

(*Rumex crispus*), and California black walnut. These species are hydrophytic with an indicator status ranging from facultative wetland species (plants that occur in wetlands and non-wetlands) to obligate (plants that almost always occur in wetlands). Sparse cover of upland species observed within the seasonal wetland vegetation included ambrosia (*Ambrosia psilostachya*), wild oats (*Avena barbata*), black mustard (*Brassica nigra*), and palm trees (*Washingtonia robusta* and *Phoenix* sp.). A complete list of plant species observed during the field survey is compiled and attached in Appendix D – Plant List.

4.2.1.2 Wetland Hydrology

Surveys were conducted in August 2021, during the dry season. At the time of the field survey, there was no surface water present in the seasonal wetland, though saturation was observed at SP-3A and subsurface water in the soil test pit was observed at SP-2A. The primary indicators of wetland hydrology observed at the sampled plots included presence of a high water table (A2), Saturation (A3), Drainage patterns (B10) and Dry-Season Water Table (B11). Indicators of wetland hydrology were observed within the wetland sample plots (SP-1A, SP-2A, and SP-3A).

4.2.1.3 Hydric Soils

Based on a review and analysis of the U.S. Department of Agriculture's Web Soil Survey for Solano County, the Project Site is underlain by Antioch-San Ysidro complex, thick surface, zero to two percent slopes (soil map unit symbol AsA), and Yolo loam, clay substratum (soil map unit symbol Yr) (NRCS, 2021a). These soil mapping units are described below in Table 4-2 – Soil Mapping Units and Characteristics.

Soil textures observed at the wetland sample plot locations ranged from clay to clay-loam and silty clay-loam, consistent with the soil mapping units. Soil pits were excavated at all sample plot locations and the three soil pits in the seasonal wetland (SP-1A, SP-2A, and SP-3A) met the hydric soil parameter. SP-1A had a matrix color of dark brown (7.5YR 3/2) with reddish yellow redox features (7.5YR 6/8), SP-2A had a matrix color of very dark grayish brown (10YR 3/2) in the top three inches and a matrix color of black (7.5YR 2.5/1) with strong brown (7.5YR 5/8) redox features from three to 18 inches. SP-3A had a matrix color of black (7.5YR 2.5/1) with dark reddish brown (5YR 3/4) redox features. All of the soil profiles observed at the wetland sample plots met depleted below dark surface (A11) hydric soil indicator as evidenced by values of three or less and chromas of two or less.

Soil colors at the upland sample plot locations (SP-1B, SP-2B, SP-3B, and SP-4A) tended to be lighter in color (10YR 3/3 and 7.5 YR 3/4) and lacked redox concentrations. These sample plots did not meet the hydric soil indicator.

Table 4-2. Soil Mapping Units and Characteristics at 1776 Sunset Avenue, Fairfield, CA

Soil Mapping Unit (Taxonomic Class)	Location	Typical Profile (by horizon)	Drainage Class ¹	PERM ²	AWC ³	Runoff ⁴	ERD ⁵	Hydric
Antioch-San Ysidro complex, thick surface, 0 to 2 percent slopes (AsA)	Northern portion of study area (underlies northern part of relict channel)	H1 (0-25") Sandy Loam H2 (25-35") Clay loam H3 (35-54") Sandy clay loam H4 (54-68") Stratified sandy loam to clay loam	4	-	2	5	3	No
Yolo loam, clay substratum (Yr)	Southern portion of study area (underlies southern part of relict channel)	H1 (0-28") Loam H2 (28-45") Loam H3 (45-60") clay	3	-	3	3	2	No

¹Drainage Class

1. Excessively drained
2. Somewhat excessively drained
3. Well drained
4. Moderately well drained
5. Somewhat poorly drained
6. Poorly drained
7. Very poorly drained

²PERM (Permeability)

- 1 Very slow (< 0.06 inch)
- 2 Slow (0.06 to 0.2 inch)
- 3 Moderately slow (0.2 to 0.6 inch)
- 4 Moderate (0.6 to 2 inches)
- 5 Moderately rapid (2 to 6 inches)
- 6 Rapid (6 to 20 inches)
- 7 Very rapid (>20 inches)

³AWC (Available Water Capacity)

- 1 Very low (0 to 2.5 inches)
- 2 Low (2.5 to 5 inches)
- 3 Moderate (5 to 7.5 inches)
- 4 High (7.5 to 10 inches)
- 5 Very High (> 10 inches)

⁴Surface Runoff

- 1 Negligible
- 2 Very low
- 3 Low
- 4 Medium
- 5 High
- 6 Very high

⁵ERD (Effective Rooting Depth)

- 1 Very deep (> 60 inches)
- 2 Deep (40 to 60 inches)
- 3 Moderately deep (20 to 40 inches)
- 4 Shallow (10 to 20 inches)
- 5 Very shallow (< 10 inches)

4.3 BASIN

The Basin was a linear feature located in the south-central portion of the Project Site and was characterized as distinct topographical depression with a culvert at the western end, and approximately 210 feet long and 32 feet wide for a total of approximately 4,600 square feet (0.1 acre) in size. There was a culvert located at the west end of the basin; however, the culvert was almost completely buried. No indicators of OHWM were observed on this feature, but because of the potential for the topographic depression to collect water, the presence of a culvert to convey water, and the observation of hydrophytic species within the basin, a sample plot was positioned in the basin where the highest density of hydrophytic species was observed to determine if the basin met the three parameters for consideration as a wetland. Although some facultative species were noted at this location, the dominance test and the prevalence index were not met; therefore, the hydrophytic vegetation indicator was not met. In addition, the soils did not meet any of the hydric soil indicators and no indicators of wetland hydrology were observed. The basin feature did not meet any of the three parameters for consideration as a wetland and was not mapped as an aquatic feature.

5.0 JURISDICTIONAL DETERMINATION

Aquatic resources mapped and evaluated during the August 2021 field survey includes the relict channel (CH-1), one seasonal wetland (SW-1), and one man-made Flood Control Channel (CH-2).

5.1 FEDERAL JURISDICTIONS

5.1.1 Relict Channel and Seasonal Wetland

The relict channel did not have indicators of OHWM and has been disconnected from the upstream connectivity with the Flood Control Channel; therefore, it was not mapped as other waters of the U.S. However, the seasonal wetland in the channel bottom was considered potentially jurisdictional based on the presence of the three wetland indicators. Sample plots 1B, 2B, and 3B served as paired datapoints to wetland sample plots 1A, 2A, and 3A for the purposes of determining the geographic extent of the seasonal wetland within the channel bottom. While there is not enough flow through the relict channel to create an OHWM, there may still be flowing water through the relict channel from the collection of surface water draining from the Project Site and potential for connectivity to TNW downstream of the Project Site based on the presence of a culvert under Sunset Avenue suggesting connectivity to other channel segments south and west of the study area. Additionally, it was noted that the relict channel segments enter City storm drains that discharge to the Flood Control Channel (LSA, 2020). Therefore, the seasonal wetland within the relict channel is potentially jurisdictional as an adjacent wetland with surface or subsurface connectivity to a water of the U.S. downstream of the study area.

On the basis of this delineation, a total of 0.24-acre of seasonal wetland occurring within the bottom of the relict channel may be connected to offsite wetlands and waters of the U.S. and is potentially considered federally jurisdictional.

5.1.2 Flood Control Channel

The Flood Control Channel is a man-made feature that was constructed in the 1980's as part of the Fairfield Vicinity Streams Flood Control Project (LSA, 2020). The Flood Control Channel is part of the Federal and state flood control system within an Adopted Plan of Flood Control, as defined by California Code of Regulations Title 23 and is under the jurisdiction of the Central Valley Flood Protection Board.

The feature contains perennial to intermittent surface flows and supports hydrophytic vegetation along much of its extent. The portion of the Flood Control Channel within the study area is limited to a small area on the west bank that is proposed for construction of an outfall feature for drainage of the subject property. The Flood Control Channel is considered a perennial water of the U.S. and is considered federally jurisdictional.

A total of 0.007-acres of Federal jurisdictional waters of the U.S. occur within the study area below the OHWM on the west bank of the Flood Control Channel.

5.2 STATE JURISDICTION

Data collected during delineation field surveys was analyzed to determine the geographic extent of state jurisdiction(s) within the study area, including waters of the State under RWQCB jurisdiction, and stream features under CDFW jurisdiction.

5.2.1 Relict Channel and Seasonal Wetland

5.2.1.1 Regional Water Quality Control Board

The seasonal wetland met the definition of waters of the State, defined as any surface water or groundwater, including saline waters, within the boundary of the State. The seasonal wetland also met the State definition of a wetland as any area that under normal circumstances, has (1) continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation sufficient to cause anaerobic conditions in the upper substrate; and, (3) supports vegetation dominated by hydrophytes or lacks vegetation. Therefore, the seasonal wetland is considered a State wetland and jurisdictional waters of the State.

The Procedures do not include guidance for jurisdictional determinations for other waters of the State. Because the relict channel does not have an OHWM and is not considered a water of the U.S. outside the limits of the seasonal wetland in the channel bottom, the relict channel is not considered waters of the State based on the definitions at 23 CCR 3831(w). Therefore, the limits of waters of the State are consistent with the limits of waters of the U.S. on this feature.

5.2.1.2 California Department of Fish and Wildlife

The bed and bank of the relict channel is potentially a 1600 jurisdictional stream feature under California Fish and Game Code Section 1602 jurisdiction. CDFW typically extends jurisdiction to top of bank or limits of riparian vegetation. There is no riparian corridor on the relict channel; therefore, potential CDFW jurisdiction extends to top of bank.

5.2.2 Flood Control Channel

5.2.2.1 Regional Water Quality Control Board

The Flood Control Channel is considered a perennial water of the U.S. All waters of the U.S. are also considered waters of the State; therefore, the Flood Control Channel meets the definition of a water of the State. The portion of the Flood Control Channel within the study area is limited to a small area on the west bank that is proposed for construction of an outfall feature for drainage of the subject property. This area is subject to RWQCB jurisdiction.

5.2.2.2 California Department of Fish and Wildlife

The bed, bank, and channel of the Flood Control Channel is under CDFW Section 1600 jurisdiction. The portion of the Flood Control Channel within the study area is limited to a small area on the west bank that is proposed for construction of an outfall feature for drainage of the subject property. This area is subject to CDFW jurisdiction.

5.3 CONCLUSION

On the basis of the field delineation and data analysis, it has been concluded that the study area supports approximately 0.247 acres of potentially Federal jurisdictional waters of the U.S. (under ACOE jurisdiction) within the seasonal wetland feature in the bottom of the relict channel and the Flood Control Channel adjacent to the Project Site. Additionally, it has been concluded that the study area contains approximately 0.247 acres of potentially state jurisdictional aquatic resources under RWQCB jurisdiction and 0.547 acre under CDFW jurisdiction. These preliminary jurisdictional findings are subject to the verification and approval of the ACOE, RWQCB, and/or CDFW.

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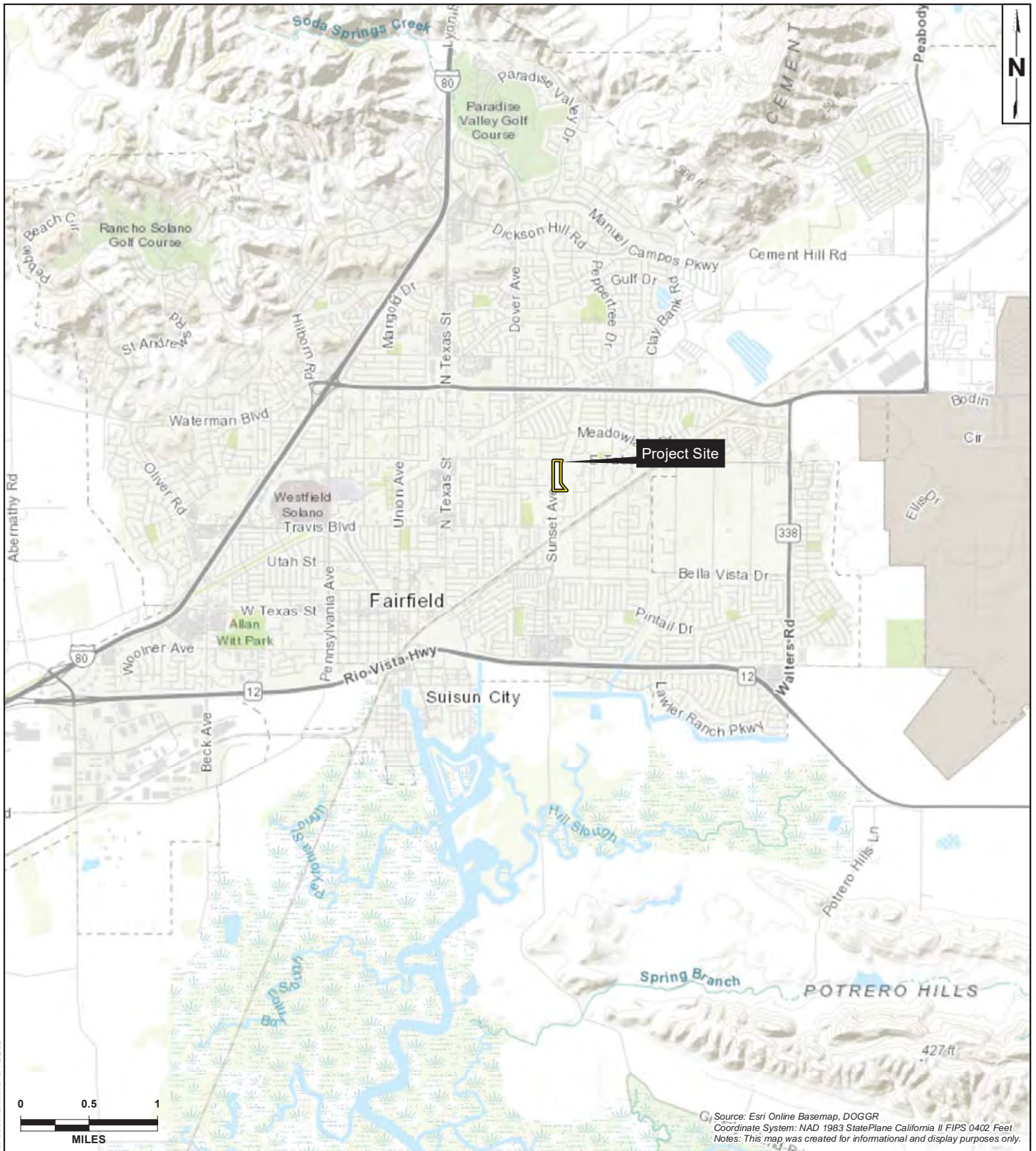
FIGURES

Figure 1. Project Location

Figure 2. Preliminary Aquatic Resources Delineation Map

Figure 3. National Wetland Inventory and FEMA Map

Figure 4. Soils Map



LEGEND:

Project Boundary

MAP EXTENT:



padre
associates, inc.
ENGINEERS, GEOLOGISTS &
ENVIRONMENTAL SCIENTISTS

PROJECT NAME:
**ARRIVE FAIRFIELD LUXURY TOWNHOMES
FAIRFIELD, CA**

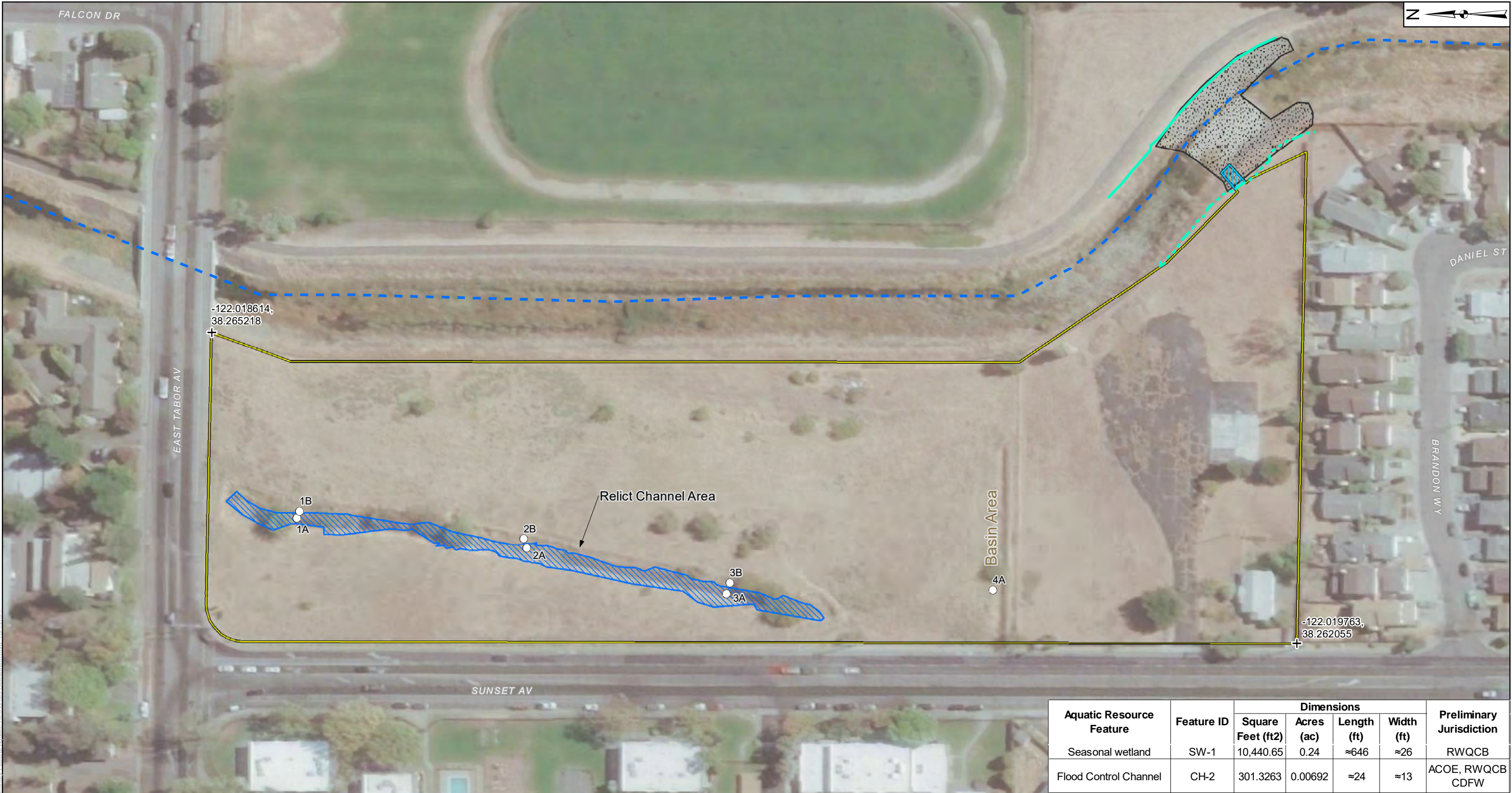
PROJECT NUMBER:
2102-0373

DATE:
January 2022

PROJECT LOCATION

FIGURE

1

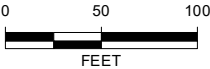


C:\GIS\Projects\GIS Maps\Map Project\Fairfield\Preliminary Federal Aquatic Resources Delineation.mxd 1/14/2024

LEGEND:

- Sample Plot Location — OHWM - - Offsite Flood Control Channel Flood Control Channel Study Area Boundary
+ Control Point - - Potential OHWM Armored Area; Bed and Bank Seasonal wetland (SW-1)

Aquatic Resource Feature	Feature ID	Dimensions				Preliminary Jurisdiction
		Square Feet (ft2)	Acres (ac)	Length (ft)	Width (ft)	
Seasonal wetland	SW-1	10,440.65	0.24	≈646	≈26	RWQCB
Flood Control Channel	CH-2	301.3263	0.00692	≈24	≈13	ACOE, RWQCB CDFW

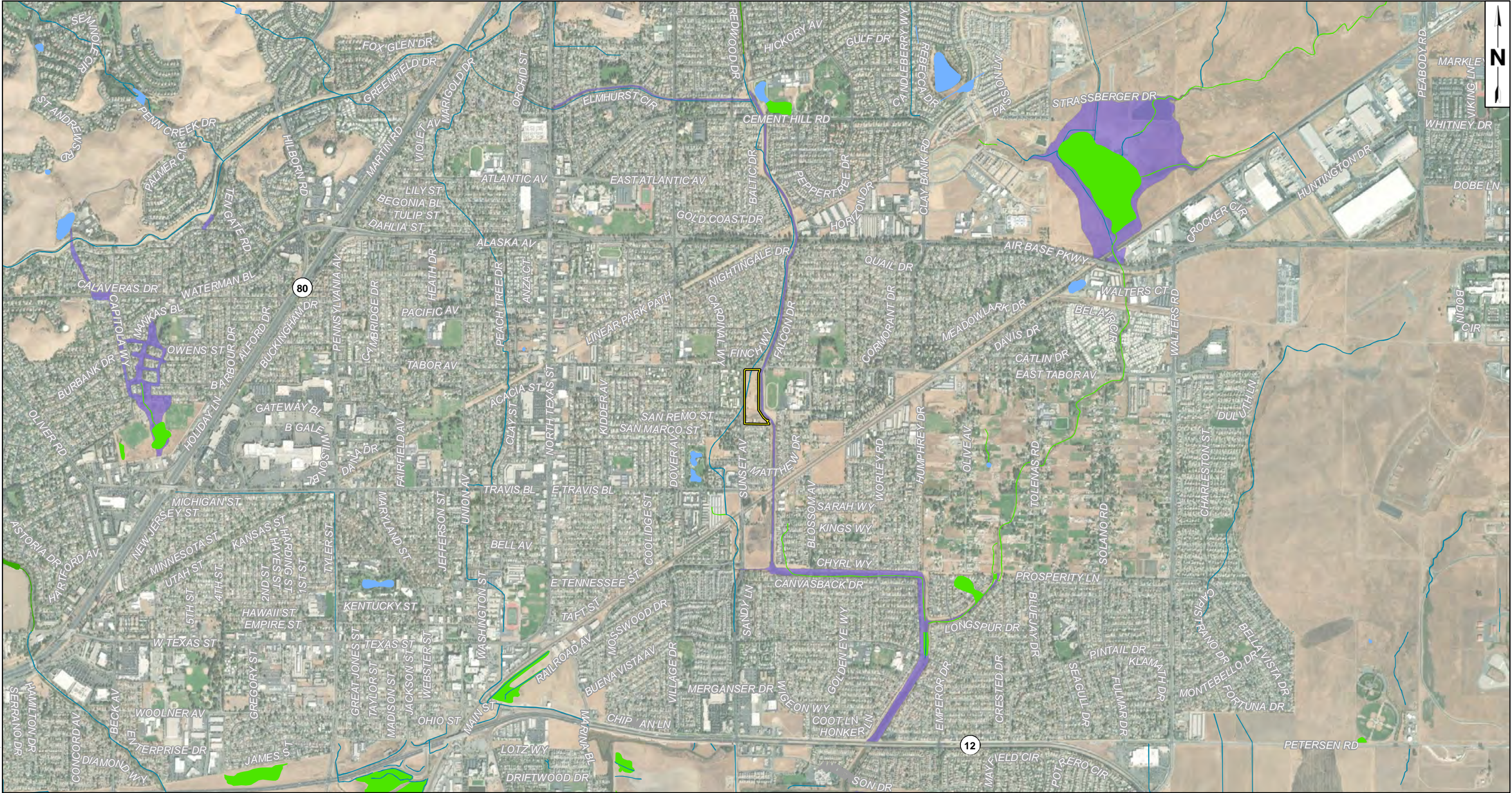


Source: Sources, Esri Online Basemap
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: This map was created for informational and display purposes only.



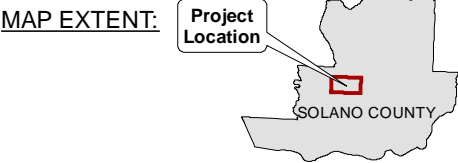
PROJECT NAME: ARRIVE FAIRFIELD LUXURY TOWNHOMES FAIRFIELD, CA	
PROJECT NUMBER: 2102-0373	DATE: January 2022

**PRELIMINARY AQUATIC
RESOURCES DELINEATION MAP**



LEGEND:

-  100 Year Flood Area - 1.0% Annual Chance
-  **NWI Feature Type**
-  Freshwater Pond
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Riverine



Source: Esri Online Imagery Basemap, County of Solano,
U.S. Fish and Wildlife Services, FEMA
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet
Notes: CF= Channel Feature; NWI= National Wetland Inventory
This map was created for informational and display purposes only.



PROJECT NAME: ARRIVE FAIRFIELD LUXURY TOWNHOMES, FAIRFIELD, CA		
PROJECT NUMBER: 2102-0373	DATE: January 2022	

NWI AND FEMA MAP

Custom Soil Resource Report Soil Map




Figure 4
Map and Map legend/Information from
USDA NRCS Web Soil Survey Results
Online Survey completed on
September 10, 2021 by Padre Associates.

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 14, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2019—Apr 17, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AsA	Antioch-San Ysidro complex, thick surface, 0 to 2 perce nt slopes	8.0	83.2%
Yr	Yolo loam, clay substratum	1.6	16.8%
Totals for Area of Interest		9.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

APPENDIX A

WETS Table

WETS Table

WETS Station: FAIRFIELD, CA								
Requested years: 1941 - 2021								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	55.9	38.1	47.0	4.72	2.01	5.75	8	0.0
Feb	61.9	41.3	51.6	4.05	1.70	4.74	7	0.0
Mar	66.1	43.6	54.8	3.12	1.47	3.81	6	0.0
Apr	71.4	46.2	58.8	1.42	0.51	1.71	3	0.0
May	78.0	50.5	64.2	0.49	0.13	0.47	1	0.0
Jun	84.9	54.3	69.6	0.15	0.00	0.09	0	0.0
Jul	89.2	56.2	72.7	0.02	0.00	0.00	0	0.0
Aug	88.8	56.3	72.6	0.05	0.00	0.00	0	0.0
Sep	86.8	54.8	70.8	0.22	0.00	0.16	1	0.0
Oct	78.4	50.2	64.3	1.20	0.38	1.27	2	0.0
Nov	65.5	43.1	54.3	2.70	1.08	3.24	5	0.0
Dec	56.3	38.1	47.2	4.32	1.93	5.22	7	0.0
Annual:					18.50	26.44		
Average	73.6	47.7	60.7	-	-	-	-	-
Total	-	-	-	22.48			40	0.0

GROWING SEASON DATES

Years with missing data:	24 deg = 29	28 deg = 30	32 deg = 23
Years with no occurrence:	24 deg = 46	28 deg = 20	32 deg = 4
Data years used:	24 deg = 52	28 deg = 51	32 deg = 58
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	1/4 to 1/1: 362 days	2/12 to 12/7: 298 days
70 percent *	No occurrence	No occurrence	1/29 to 12/21: 326 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1950												M3.86	3.86
1951	3.40	2.10	2.19	0.98	M0.83	0.00	0.00	0.00	MT	M1.28	4.84	8.25	23.87
1952	9.00	M1.31	2.68	0.77	0.27	0.40	M0.00	T	M0.00	M0.00	M2.08	M7.79	24.30
1953	4.31	T	M2.26	M2.58	M0.35	M0.38	0.00	0.04	M0.00	M0.00	M2.93	0.72	13.57
1954	M3.02	2.94	M2.76	1.97	0.17	M0.00	M0.00	M0.00	0.00	M0.00	M0.00	M4.96	15.82
1955	3.16	M1.61	0.53	2.21	0.32	M0.00	M0.00	0.00	0.28	M0.05	2.06	13.66	23.88
1956	7.89	2.11	M0.32	1.10	M0.08	0.04	0.00	0.00	0.55	M0.41	0.12	M0.33	12.95
1957	M2.48	4.46	M1.69	1.61	M0.73	0.00	M0.00	M0.00	M0.41	3.66	0.37	2.73	18.14

1958	M4.22	9.55	6.02	4.33	0.64	0.33	0.15	0.07	0.04	0.13	0.08	26.66
1959	5.19	5.59	1.05	0.19	T	0.00	0.00	T	2.49	0.00	T	16.85
1960	3.11	4.79	2.21	1.05	0.74	0.00	T	0.00	0.00	0.13	M3.01	16.59
1961	4.06	0.96	1.92	0.71	0.20	0.04	0.00	0.05	0.15	M0.18	4.01	14.62
1962	0.80	6.25	3.05	0.22	0.00	0.00	0.00	0.00	T	7.85	0.16	20.91
1963	5.32	2.67	3.59	5.49	0.45	0.09	0.00	T	0.40	1.77	2.80	23.06
1964	3.22	0.00	1.91	0.12	0.22	0.93	0.04	0.05	0.00	2.23	2.85	16.58
1965	4.34	0.00	1.35	2.94	0.12	0.00	0.00	0.43	0.00	0.00	4.94	16.75
1966	4.46	2.49	0.26	0.34	0.45	0.00	0.08	0.18	0.37	0.00	5.68	18.70
1967	9.90	0.31	4.17	4.78	0.12	1.45	T	T	0.05	0.36	1.36	24.25
1968	4.93	3.11	2.31	0.29	0.40	0.00	0.00	1.18	0.00	0.75	3.55	20.96
1969	9.80	7.04	1.95	1.25	0.00	0.10	0.00	0.00	0.00	2.12	0.46	28.88
1970	11.75	1.36	1.86	0.16	0.00	0.39	0.00	0.00	0.00	0.76	5.94	28.22
1971	1.86	0.26	2.72	0.22	0.69	0.00	0.00	0.00	0.15	0.06	2.20	12.32
1972	1.30	1.54	0.19	1.00	0.02	0.20	0.00	0.00	0.98	4.60	6.73	18.23
1973	11.54	5.62	2.71	0.19	0.14	0.00	0.00	0.00	0.35	1.66	7.20	34.14
1974	3.64	1.06	4.61	1.80	0.11	0.00	0.60	0.00	0.00	1.29	0.88	17.78
1975	1.16	7.03	5.58	1.13	0.07	0.10	0.06	0.14	0.03	3.50	0.44	19.54
1976	0.52	1.31	1.89	0.86	0.00	0.01	0.00	0.66		0.33	1.02	7.86
1977	1.89	1.06	2.13	0.14	0.81	T	0.00	0.00	1.08	0.42	5.44	18.48
1978	9.73	5.25	5.12	2.02	0.05	0.05	0.00	0.00	0.23	0.00	1.67	24.96
1979	9.13	4.31	1.93	1.19	0.59	0.00	0.00	0.00	0.00	2.38	2.47	28.58
1980	6.94	10.33	3.58	1.24	0.34	0.01	0.13	0.00	0.00	0.20	0.08	25.52
1981	M5.14	1.11	3.74	0.36	0.04	0.00	0.00	0.00	0.19	1.40	5.91	23.61
1982	8.12	3.82	6.14	5.05	0.00	0.01	T	0.00	1.11	2.79	4.32	33.87
1983	5.78	8.72	10.89	3.06	0.79	M0.00	0.00	0.01	0.74	0.30	6.51	44.28
1984	0.30	1.49	1.17	0.80	T	0.08	0.00	0.17	0.10	1.96	6.52	13.85
1985	0.68	1.95	4.14	0.06	0.06	0.02	0.00	0.00	0.30	0.65	4.32	15.23
1986	4.57	11.30	5.61	0.99	0.19	0.00	0.00	0.00	1.09	0.38	0.10	25.37
1987	3.02	4.12	3.14	0.08	0.07	0.00	0.00	0.00	0.00	0.95	2.97	19.98
1988	5.62	0.39	0.26	1.49	0.68	0.36	0.00	T	0.00	0.17	3.86	16.76
1989	1.05	1.82	5.23	0.37	0.01	0.21	0.00	0.00	1.37	1.59	1.66	13.31
1990	4.26	2.44	0.80	0.24	3.25	0.00	0.00	0.00	0.26	0.23	0.35	12.83
1991	0.47	3.21	9.17	0.31	0.09	0.02	0.00	0.02	0.00	1.99	0.67	18.37

1992	2.18	7.09	4.14	0.63	0.00	0.49	0.00	0.00	0.00	3.17	0.26	9.55	27.51
1993	10.57	5.79	3.54	M0.55	M0.86	M0.96	0.00	0.00	0.00	0.59	2.65	2.39	27.90
1994	2.71	4.48	0.14	M1.19	1.26	0.00	0.00	0.00	0.02	0.28	5.30	4.49	19.87
1995	12.47	0.14	9.21	0.88	1.21	1.83	0.00	0.00	0.00	0.07	0.01	10.02	35.84
1996	8.65	8.34	2.32	2.18	M3.03	0.00	0.00	0.00	0.00	1.61	3.58	11.67	41.38
1997	11.07	0.28	0.52	0.20	M0.47	0.27	0.00	0.41	0.00	0.81	6.73	2.30	23.06
1998	8.95	14.71	2.35	2.30	3.29	0.00	0.00	0.00	0.34	0.71	4.29	1.57	38.51
1999	2.11	6.97	2.85	1.73	0.03	0.00	0.00	0.00	0.04	0.56	2.91	0.52	17.72
2000	5.98	11.25	2.87	1.29	0.98	0.17	0.00	0.00	0.08	2.54	1.15	1.13	27.44
2001	3.36	6.35	1.37	0.62	0.00	0.08	0.00	0.00	0.20	0.50	4.47	10.23	27.18
2002	3.10	1.37	1.95	0.10	1.33	0.00	0.00	0.00	0.00	0.00	3.80	13.86	25.51
2003	2.42	1.53	2.00	2.92	1.02	0.00	0.00	0.33	0.00	0.00	1.08	6.72	18.02
2004	2.84	7.68	0.91	0.16	0.05	0.00	0.00	0.00	0.04	2.30	3.30	6.66	23.94
2005	5.52	4.24	4.28	1.43	1.46	0.28	0.00	0.00	0.01	0.24	2.16	16.69	36.31
2006	4.13	4.02	8.87	4.96	0.60	0.00	0.00	0.00	0.00	0.12	2.55	3.41	28.66
2007	0.20	4.38	0.11	2.05	0.55	0.00	0.00	0.00	0.38	2.22	0.92	4.35	15.16
2008	7.80	3.96	0.46	0.05	0.00	0.00	0.00	0.00	0.00	0.45	2.67	2.87	18.26
2009	1.55	9.31	2.39	1.10	1.13	0.00	0.00	0.00	0.04	5.71	0.69	2.13	24.05
2010	8.29	4.14	1.66	3.43	0.98	0.00	0.00	0.00	0.03	2.38	2.50	7.13	30.54
2011	0.55	4.26	5.05	0.39	0.96	1.21	0.00	0.00	0.00	1.65	1.25	0.23	15.55
2012	0.55	1.04	6.77	M2.31	M0.04	0.03	M0.00	M0.00	0.00	1.48	M4.75	7.73	24.70
2013	0.60	M0.11	1.07	1.41	M0.37	M0.00	M0.00	M0.00	M1.10	M0.00	M1.28	0.74	6.68
2014	M0.26	9.58	2.66	M2.39	0.00	0.00	0.00	0.05	0.82	0.78	2.29	M10.44	29.27
2015	0.01	1.99	0.16	1.26	0.00	0.16	0.04	0.00	M0.00	0.12	2.08	4.01	9.83
2016	9.25	0.59	6.92	0.59	0.35	0.00	0.00	0.00	0.00	2.65	2.29	5.12	27.76
2017	13.87	11.47	3.49	3.40	0.00	0.32	0.00	0.00	0.02	0.14	2.69	0.03	35.43
2018	3.43	0.32	4.79	3.32	0.04	0.00	0.00	0.00	0.00	0.07	4.52	2.87	19.36
2019	6.29	10.43	5.57	0.36	2.83	0.00	0.00	0.00	0.00	0.00	M0.57	7.37	33.42
2020	1.56	0.00	1.84	0.83	0.71	0.00	0.00	0.00	0.00	0.00	1.35	2.03	8.32
2021	4.02	2.55	1.91	0.02	0.00	0.00	0.00	0.00					8.50

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2021-09-10

APPENDIX B

Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fairfield Bio & wetland; Sunset City/County: Fairfield Sampling Date: 8/26/2021
 Applicant/Owner: TK Consulting State: CA Sampling Point: CH-1A
 Investigator(s): Christina Santala, Sarah Powell Section, Township, Range: S19 T05N R01W
 Landform (hillslope, terrace, etc.): Channel Local relief (concave, convex, none): Concave Slope (%): Vert to flat
 Subregion (LRR): C Lat: 30.264980 Long: -122.019309 Datum:
 Soil Map Unit Name: Yolo loam NWI classification:

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: <u>Sample plot in bottom of "disturbed" channel, area recently burned, used as homeless encampment</u> <u>the "disturbed" area is the same area as the sample plot area.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Juglans</u>				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u></u>				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. <u></u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. <u></u>				
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				Prevalence Index worksheet:
1. <u>Juglans hindsii (or english?)</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>	Total % Cover of: <u>25</u> Multiply by:
2. <u></u>				OBL species <u>0</u> x 1 = <u>0</u>
3. <u></u>				FACW species <u>0</u> x 2 = <u>0</u>
4. <u></u>				FAC species <u>0</u> x 3 = <u>0</u>
5. <u></u>				FACU species <u>0</u> x 4 = <u>0</u>
= Total Cover				UPL species <u>0</u> x 5 = <u>0</u>
Herb Stratum (Plot size: <u>5'</u>)				Column Totals: <u>0</u> (A) <u>0</u> (B)
1. <u>Xanthium strumarium</u>	<u>55</u>	<u>Y</u>	<u>FAC</u>	Prevalence Index = B/A = <u>0</u>
2. <u>Lepidium latifolium</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. <u>Typha angustifolia</u>	<u>3</u>	<u>N</u>	<u>OBL</u>	
4. <u>Atriplex sp.</u>	<u>1</u>	<u>N</u>	<u></u>	
5. <u>Brassica nigra</u>	<u>1</u>	<u>N</u>	<u></u>	
6. <u>Avena barbata</u>	<u>1</u>	<u>N</u>	<u></u>	
7. <u>Ambrosia</u>	<u>1</u>	<u>N</u>	<u></u>	
8. <u></u>				
= Total Cover				
Woody Vine Stratum (Plot size: <u></u>)				
1. <u></u>				
2. <u></u>				
= Total Cover				
% Bare Ground in Herb Stratum <u></u>	% Cover of Biotic Crust <u></u>			

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%
☐ Prevalence Index is ≤3.0¹
☐ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes ☒ No ☐

Remarks:

Juglans dominant (shrubs)

SOIL

Sampling Point:

CH 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

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

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped-Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy <u>Gleyed</u> Matrix (F2) >4 | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input checked="" type="checkbox"/> Depleted Matrix (F3) — | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) — | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present unless disturbed or problem

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Remarks:
Used 2017 Pocket guide for hydric soils → confirmed / keyed indicators.

HYDROLOGY

ARID WEST - check secondarys

Wetland Hydrology Indicators:

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

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

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? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Remarks: Moist soil start @ 2" below surface. Secondary indicators. Related to surface. According to...

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fairheld Bio-wetland/Sunset Ave. City/County: Fairheld Sampling Date: 8/26/21
 Applicant/Owner: TK Consulting State: CA Sampling Point: CHIB (paired pt)
 Investigator(s): C. Santala, S. Powell Section, Township, Range: S19 T05 R01W
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 30%
 Subregion (LRR): C Lat: 38.264973 Long: -122.019271 Datum: _____
 Soil Map Unit Name: Yolo loam NWI classification: _____

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 _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: <u>Sample point on bank in patch of Elymus triticoides</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>50</u> x 3 = <u>150</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>2</u> x 5 = <u>10</u> Column Totals: <u>52</u> (A) <u>160</u> (B) Prevalence Index = B/A = <u>3.1</u>
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Juglans</u>	<u>2</u>	<u>Y</u>	<u>up</u>	
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0' _____ 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, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
Herb Stratum (Plot size: <u>15'</u>)				
1. <u>Elymus triticoides</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Malvella</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. <u>Lepidium latifolium</u>	<u>8</u>	<u>N</u>		
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____	% Cover of Biotic Crust _____			
Remarks: <u>Bareground, dry, green veg</u>				

Sampling Point: CH 1B

HYDROLOGY

Arid West – Version 2.0

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fairheld Bio Wetland: smelter City/County: Fairheld Sampling Date: 8/26/21
 Applicant/Owner: TK Consulting State: CA Sampling Point: CH-2A
 Investigator(s): C. Santala, S. Powe Section, Township, Range: S19 T05N R01W
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 0-45%
 Subregion (LRR): CA 10082 Lat: 38.264330 Long: -122.019398 Datum:
 Soil Map Unit Name: Ancho-San Ysidro Complex NWI classification:

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
 Wetland Hydrology Present? Yes ☒ No

Is the Sampled Area within a Wetland? Yes ☒ No

Remarks:

Disturbed site, relict channel, urban area

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>Palm (Pinnate)</u>				
2. <u></u>				
3. <u></u>				
4. <u></u>				
= Total Cover				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u></u> x 1 = <u></u> FACW species <u></u> x 2 = <u></u> FAC species <u></u> x 3 = <u></u> FACU species <u></u> x 4 = <u></u> UPL species <u></u> x 5 = <u></u> Column Totals: (A) <u></u> (B) <u></u> Prevalence Index = B/A = <u></u>
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. <u>Palm (Pinnate)</u>	<u>1</u>	<u>N</u>		
2. <u></u>				
3. <u></u>				
= Total Cover				
Herb Stratum (Plot size: <u>15'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Lepidium latifolium</u>	<u>70</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Rumex crispus</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
3. <u>Ambrosia</u>	<u>2</u>	<u>N</u>		
4. <u></u>				
5. <u></u>				
6. <u></u>				
7. <u></u>				
8. <u></u>				
= Total Cover				
Woody Vine Stratum (Plot size: <u></u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <u></u>
1. <u></u>				
2. <u></u>				
= Total Cover				
% Bare Ground in Herb Stratum <u></u> % Cover of Biotic Crust <u></u>				
Remarks: <u>No standing water; lepidium generally remnant but identifiable; some live Palm is a sapling</u>				

SOIL

Sampling Point: CH2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

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

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input checked="" type="checkbox"/> Other (Explain in Remarks) |
| <input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present unless disturbed or problematic

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks:

Remarks:
X molusk / inverte shell

HYDROLOGY

Wetland Hydrology Indicators:

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

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

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?	Yes	No	Depth (inches):
---------------------	-----	----	-----------------

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Remarks: Water table 12" From top

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fairheld Bio-wetland; sunset Ave City/County: Fairheld Sampling Date: 8/26/21
 Applicant/Owner: TK Consulting State: CA Sampling Point: CH 28 (paired pt)
 Investigator(s): C. Sambala, S. Powell Section, Township, Range: S19 T05N R01W
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): _____ Slope (%): 0-1
 Subregion (LRR): Central Coast Lat: 38.264334 Long: -122.019384 Datum: _____
 Soil Map Unit Name: Anhoch-San Ysidro complex NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology X 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: _____) 1. <u>Avena sp.</u> <u>40</u> <u>Y</u> <u>UP</u> 2. <u>Bromus diandrus</u> <u>40</u> <u>Y</u> <u>UP</u> 3. <u>Ambrosia sp.</u> <u>1</u> <u>N</u> <u></u> 4. <u>Malva parviflora</u> <u>1</u> <u>N</u> <u></u> 5. <u>Lactuca scariola</u> <u>1</u> <u>N</u> <u></u> 6. _____ 7. _____ 8. _____ _____ = Total Cover <u>83</u>				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
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)				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: <u>Avena dry/dead</u>				

Sampling Point: CH 2B

HYDROLOGY

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

- ☐ 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)

Surface Water Present? Yes _____ No ~~X~~ Depth (inches): _____

Water Table Present? Yes _____ No ~~X~~ Depth (inches): _____

Saturation Present? Yes _____ No ~~X~~ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

Remarks.
Dry soils

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fairheld Bw swetland; sunset Ave City/County: Fairfield Sampling Date: 8/26/21
 Applicant/Owner: TIC Consulting State: CA Sampling Point: CH3A
 Investigator(s): C. Santala, S. Powell Section, Township, Range: S19 T05N R01W
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 0-1
 Subregion (LRR): Central Coast Lat: 38.263769 Long: -122.619544 Datum: _____
 Soil Map Unit Name: Antioch-san gandro complex NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>Disturbed site, relict channel, urban area</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. <u>Schlotheimia acutifolia</u>	_____	_____	_____	Hydrophytic Vegetation Indicators: ____ Dominance Test is >50% ____ Prevalence Index is ≤3.0' ____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ____ Problematic Hydrophytic Vegetation ¹ (Explain)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>15'</u>)				
1. <u>Schlotheimia acutifolia</u>	<u>90</u>	<u>Y</u>	<u>OBL</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. <u>Lepidium latifolium</u>	<u>50</u>	<u>N</u>	<u>FAC</u>	
3. <u>Elymus farctus</u>	<u>20</u>	<u>N</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: <u>No standing water, bulrush primarily remnant/dense</u>				

SOIL

Sampling Point: CH 3A

[illegible]

HYDROLOGY

Wetland Indicators			
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)		<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)		<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)		<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)		<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)		<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)		<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)		<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)		<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:			
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Dense bulrush			

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fairfield Bio Wetland; Sunset Ave City/County: Fairfield Sampling Date: 8/26/21
 Applicant/Owner: TIC Consulting State: CA Sampling Point: CH3B (paired pt)
 Investigator(s): C. Santala, S. Powell Section, Township, Range: 519 T05N R01W
 Landform (hillslope, terrace, etc.): slope/bank Local relief (concave, convex, none): concave Slope (%): 30%
 Subregion (LRR): C1C1 Coastal Lat: 38.263762 Long: -122.019521 Datum: _____
 Soil Map Unit Name: Antioch-San Ysidro complex NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: <u>Disturbed site, relict channel, urban area</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Juglans</u>	<u>1</u>		<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: _____)				
1. <u>Elymus tataricus</u>	<u>80</u>	<u>Y</u>	<u>FAC</u>	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, unless disturbed or problematic.
2. <u>Lepidium latifolium</u>	<u>10</u>		<u>FAC</u>	
3. <u>Bromus diandrus</u>	<u>10</u>	<u>N</u>		
4. <u>Avena sp</u>	<u>10</u>	<u>N</u>		
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: <u>Elymus remnant, some alive</u>				

SOIL

Sampling Point: CA 50

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Sunset Ave City/County: Fairfield, CA Sampling Date: 8/26/21
 Applicant/Owner: TK Consulting State: CA Sampling Point: 4A
 Investigator(s): S. Powell Section/Township/Range: S19 T05N R01W
 Landform (hillslope, terrace, etc.): Basin Local Relief (concave, convex, none): concave Slope (%): 0-1
 Subregion (LRR): C/C Coast Lat: 38.262905 Long: -122.019605 Datum:
 Soil Map Unit Name: Antioch-San Ysidro Complex NWI Classification:

Are climatic/hydrologic conditions on the site typical for this time of years? Yes X No (if no, explain in Remarks)
 Are Vegetation , Soil , or Hydrology X 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 <u></u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u></u> No <u>X</u>
Hydric Soil Present?	Yes <u></u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u></u> No <u>X</u>	

Remarks: Bottom of top depression at south end of vacant lot

VEGETATION

Tree Stratum (Plot size: <u></u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u></u>	<u></u>	<u></u>	<u></u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u></u>	<u></u>	<u></u>	<u></u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. <u></u>	<u></u>	<u></u>	<u></u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
4. <u></u>	<u></u>	<u></u>	<u></u>	
<u></u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1. <u>Juglans hindsi</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
2. <u></u>	<u></u>	<u></u>	<u></u>	
3. <u></u>	<u></u>	<u></u>	<u></u>	
4. <u></u>	<u></u>	<u></u>	<u></u>	
<u>5</u> = Total Cover				
Herb Stratum (Plot size: <u></u>)				Prevalence Index Worksheet:
1. <u>Dichoris spicata</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	OBL species <u>0</u> X1 <u>0</u>
2. <u>Avena pectin</u>	<u>40</u>	<u>Y</u>	<u>NL</u>	FACW species <u>0</u> X2 <u>0</u>
3. <u>Involucris arvensis</u>	<u>1</u>	<u>N</u>	<u>NL</u>	FAC species <u>30</u> X3 <u>90</u>
4. <u>Elymus triticoides</u>	<u>3</u>	<u>N</u>	<u>FAC</u>	FACU species <u>0</u> X4 <u>0</u>
5. <u>Malva leprosa</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	UPL species <u>81</u> X5 <u>405</u>
6. <u>Bromus diandrus</u>	<u>40</u>	<u>Y</u>	<u>NL</u>	Column Totals: <u>111</u> (A) <u>495</u> (B)
7. <u></u>	<u></u>	<u></u>	<u></u>	Prevalence Index = B/A = <u>4.5</u>
8. <u></u>	<u></u>	<u></u>	<u></u>	
<u>106</u> = Total Cover				
Woody Vine Stratum (Plot size: <u></u>)				Hydrophytic Vegetation Indicators:
1. <u></u>	<u></u>	<u></u>	<u></u>	<u>No</u> Dominance Test is >50%
2. <u></u>	<u></u>	<u></u>	<u></u>	<u>No</u> Prevalence Index is ≤3.0 ¹
<u></u> = Total Cover				<u></u> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
<u></u>				<u></u> Problematic Hydrophytic Vegetation ¹ (Explain)
<u></u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
% Bare Ground in Herb Stratum: <u></u> % Cover of Biotic Crust: <u></u>				Hydrophytic Vegetation Present? Yes <u></u> No <u>X</u>

Remarks:

APPENDIX C

Site Photographs



Photo 1. Relict channel; upstream (north) end (aspect northwest; 8/26/21).



Photo 2. Relict channel (aspect north; 8/26/21).



Photo 3. Relict channel (aspect southwest; 8/26/21).



Photo 4. Relict channel (aspect northeast; 8/26/21).



Photo 5. Relict channel; partially buried culvert at downstream (south) end (aspect southeast; 8/26/21).



Photo 6. Relict channel visible in top of photo, view from sidewalk on Sunset Avenue (aspect west; 8/26/21).



Photo 7. Seasonal wetland; sample plot CH-1A (within Relict Channel)
(8/26/21).



Photo 8. Seasonal wetland; paired upland sample plot CH-1B (8/26/21).



Photo 8. Seasonal wetland; sample plot CH-2A (8/26/21).



Photo 10. Seasonal wetland; paired upland sample plot CH-2B (8/26/21).



Photo 11. Seasonal wetland; sample plot CH-3A (8/26/21).



Photo 12. Seasonal wetland; paired upland sample plot CH-3B (8/26/21).



Photo 11. Basin feature, indistinct eastern end (aspect west; 8/26/21).



Photo 12. Basin feature; sample plot 4A (8/26/21).



Photo 11. Flood Control Channel lined with armoring substrate at proposed outfall location (aspect southeast; 8/26/21).



Photo 12. Flood Control Channel, top of bank at property boundary fence (aspect southeast; 8/26/21).

APPENDIX D

Plant List

**Plant Species Observed in Aquatic Resources Delineation Sample Plots
Arrive Fairfield Luxury Townhomes Project, Fairfield, California**

Scientific Name	Common Name	Habit	Wetland	Native	Family	Cal-IPC	Listing
			Indicator	Status			
						Rating	Status
<i>Ambrosia psilostachya</i>	Western ragweed	PH	FACU	N	Asteraceae		
<i>Atriplex</i> sp.	Saltbush	PH	-		Chenopodiaceae		
<i>Avena barbata</i>	Slim oats	AG	-		Poaceae	Moderate	
<i>Avena fatua</i>	Wild oats	AG	-		Poaceae	Moderate	
<i>Brassica nigra</i>	Black mustard	AH	-		Brassicaceae	Moderate	
<i>Bromus diandrus</i>	Ripgut grass	AG	-		Poaceae	Moderate	
<i>Convolvulus arvensis</i>	Bind-weed	PV	-		Convolvulaceae		
<i>Distichlis spicata</i>	Salt grass	PG	FAC	N	Poaceae		
<i>Elymus triticoides</i>	Creeping wild-rye	PG	FAC	N	Poaceae		
<i>Juglans hindsii</i>	Northern California black walnut	T	FAC	N	Juglandaceae		
<i>Lactuca serriola</i>	Prickly wild lettuce	AH	FACU		Asteraceae		
<i>Lepidium latifolium</i>	Broad-leaved peppergrass	PH	FAC		Brassicaceae	High	
<i>Malva parviflora</i>	Cheese-weed	AH	-		Malvaceae		
<i>Malvella leprosa</i>	Alkali mallow	PH	FACU	N	Malvaceae		
<i>Rumex crispus</i>	Curly dock	PH	FAC		Polygonaceae	Limited	
<i>Schoenoplectus acutus</i>	Hardstem bulrush	PH	OBL	N	Cyperaceae		
<i>Typha angustifolia</i>	Narrowleaf cattail	PH	OBL		Typhaceae		
<i>Xanthium strumarium</i>	Cocklebur	AH	FAC	N	Asteraceae		

Notes:

Scientific nomenclature follows Baldwin (2012).

N - Native species

Habit definitions:

AG - Annual grass.

AH - Annual herb.

F - Fern

PG - Perennial grass.

PH - Perennial herb.

PV - Perennial vine.

S - Shrub

T - Tree

Wetland indicator status (Lichvar and Kartesz, 2016):

OBL (Obligate Wetland Plants) - Almost always occur in wetlands.

FACW (Facultative Wetland Plants) - Usually occur in wetland, but may occur in non-wetlands.

FAC (Facultative Wetland Plants) - Occur in wetlands and non-wetlands.

FACU (Facultative Upland Plants) - Usually occur in non-wetlands, but may occur in wetlands.

UPL (Upland Plants) - Almost always occur in non-wetlands.

Cal-IPC (California Invasive Plant Council) Ratings:

High - These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Most are widely distributed ecologically.

Moderate - These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure.

Limited - These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score.