

Appendices

Appendix 5.4-1 Biological Resources Assessment

Appendices

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Biological Resources Assessment for the Rio Vista General Plan Update

Rio Vista, Solano County, California

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LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
Act	Delta Protection Act
BCC	Birds of Conservation Concern
BRA	Biological Resources Assessment
BSA	Biological Study Area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of Rio Vista
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Commission	Delta Protection Commission

Term	Description
CRPR	California Rare Plant Ranks
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
Delta	Sacramento-San Joaquin Delta
Delta Plan	Land Use and Resource Management Plan for the Primary Zone of the Delta
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
HCP	Habitat Conservation Plan
LSAA	Lake or Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MCV	Manual of California Vegetation
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
PRC	Public Resources Code
Project	Rio Vista General Plan Update Project
RWQCB	Regional Water Quality Control Board
SNCs	Sensitive natural communities
SOI	Sphere of Influence
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WL	Watch List

1.0 INTRODUCTION

At the request of Placeworks, Inc., ECorp Consulting, Inc. conducted a Biological Resources Assessment (BRA) for the Rio Vista General Plan Update Project (Project) located in Rio Vista, Solano County, California. The BRA provides a regulatory background for projects within the City of Rio Vista (City) and the City's Sphere of Influence (SOI), and information regarding biological resources potentially occurring within the City and SOI. The SOI is located outside of the City limits and within Solano County. However, regulations specific to Solano County are not included in this BRA.

1.1 Project Description

The City's General Plan is a regulatory document that provides a framework for decision making by establishing goals and policies to guide the community in realizing a future vision. The General Plan was last comprehensively updated in 2001. The new General Plan Update is underway and will set a vision for the year 2045.

1.2 Biological Study Area

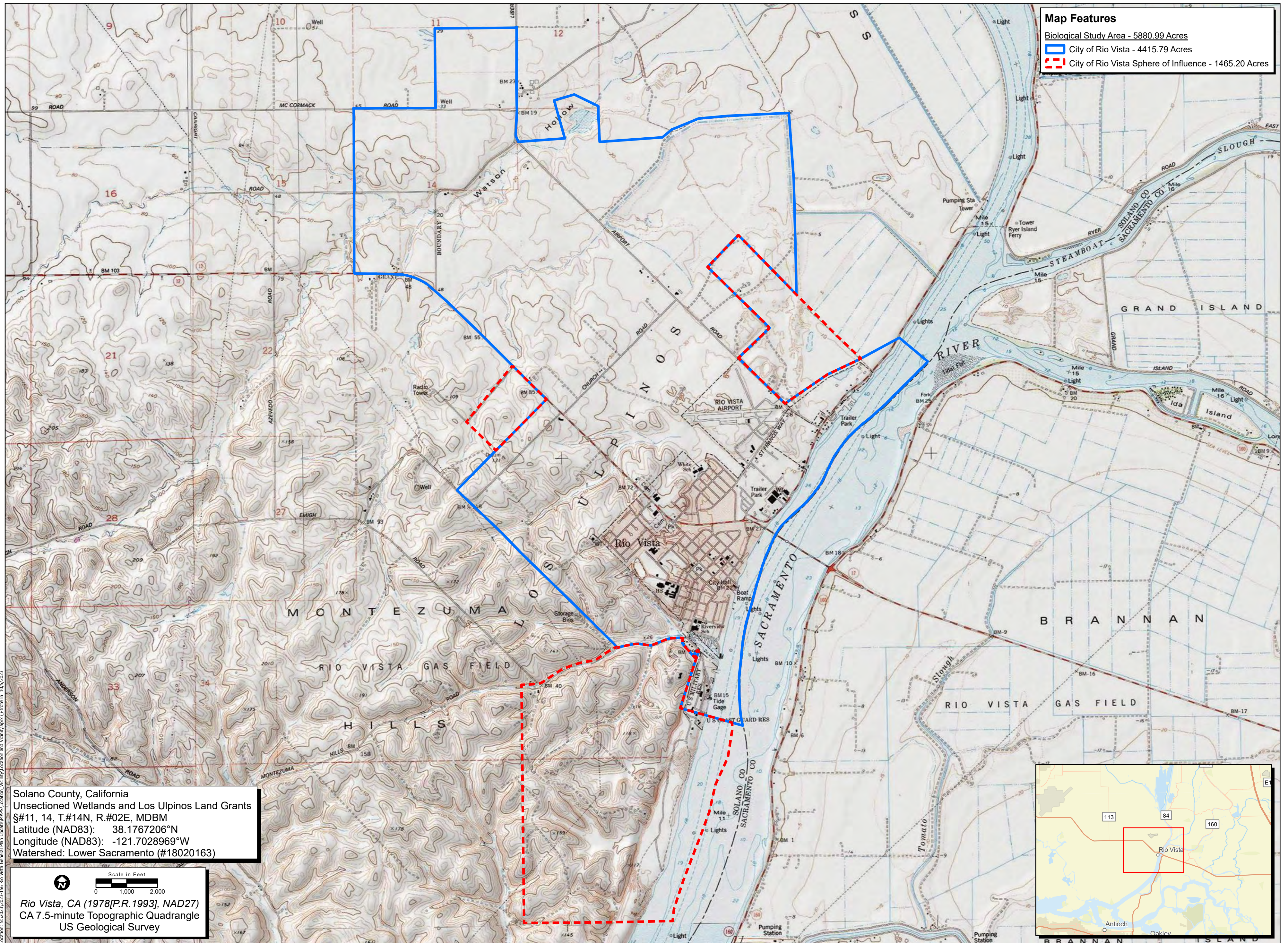
The 5,880.99-acre Biological Study Area (BSA) includes the 4,415.79-acre City and the 1,465.20-acre SOI, as depicted on Figure 1, and is generally located on the west side of the Sacramento River east of Suisun Bay and the Montezuma Hills and south of Cache Slough. The BSA corresponds to unsectioned areas (unsectioned wetlands and a portion of the Los Ulpinos Land Grant) and portions of Sections 11 and 14, Township 14 North, and Range 2 East (Mount Diablo Base and Meridian) within the "Rio Vista, California" 7.5-minute quadrangle (U.S. Geological Survey 1978, photorevised 1993). The approximate center of the BSA is located at 38.1767206° North and -121.7028969° West within the Lower Sacramento watershed (Hydrological Unit Code 18020163; Natural Resources Conservation Service [NRCS] et al. 2016).

1.3 Purpose of this Biological Resources Assessment

The purpose of this BRA is to provide a regulatory background and to identify special-status plant and animal species or their habitats, and other sensitive or protected resources such as migratory birds, sensitive natural communities, riparian habitat, oak woodlands, and potential Waters of the U.S. or State including wetlands, with potential to occur in the BSA. This assessment does not include determinate field surveys conducted according to agency-promulgated protocols or field reconnaissance. The conclusions and recommendations presented in this report are based upon a review of available literature.

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;



Map Features

Biological Study Area - 5880.99 Acres

City of Rio Vista - 4415.79 Acres

City of Rio Vista Sphere of Influence - 1465.20 Acres

Solano County, California
Unsectioned Wetlands and Los Ulpinos Land Grants
S#11, 14, T.#14N, R.#02E, MDBM
Latitude (NAD83): 38.1767206°N
Longitude (NAD83): -121.7028969°W
Watershed: Lower Sacramento (#18020163)

Scale in Feet
0 1,000 2,000

Rio Vista, CA (1978[P.R.1993], NAD27)
CA 7.5-minute Topographic Quadrangle
US Geological Survey

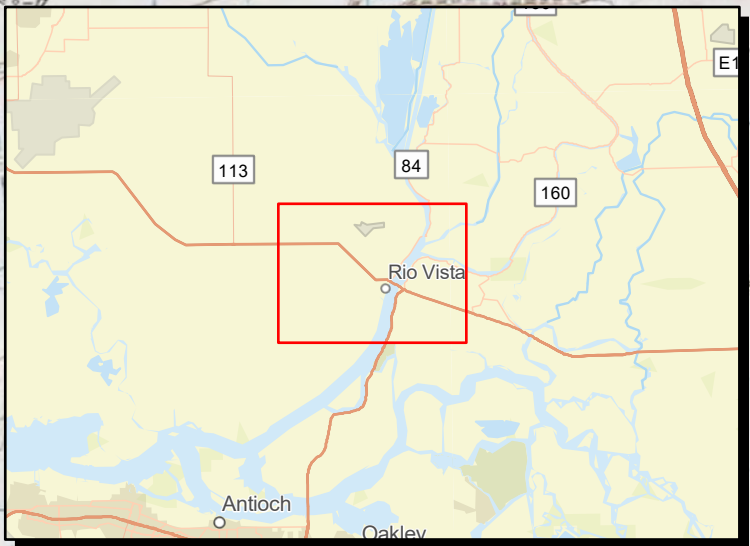


Figure 1. Biological Study Area Location and Vicinity

- meet the definitions of endangered or rare under Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- are identified as a Species of Special Concern (SSC) by the California Department of Fish and Wildlife (CDFW);
- are birds identified as Birds of Conservation Concern (BCC) by the U.S. Fish and Wildlife Service (USFWS);
- are included on the CDFW Watch List (WL);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" or "rare, threatened, or endangered in California but more common elsewhere" (California Rare Plant Ranks [CRPRs] 1 and 2), plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4);
- are plants listed as rare under the California Native Plant Protection Act (NPPA; California Fish and Game Code, Section 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, Sections 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The federal ESA protects plants and animals that are listed as endangered or threatened by the USFWS or the National Marine Fisheries Service (NMFS). Section 9 of the ESA prohibits the taking of listed wildlife, where take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, the ESA prohibits removing or possessing any listed plant on federal land, maliciously damaging or destroying any listed plant in any area, or removing, cutting, digging up, damaging, or destroying any such species in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its designated Critical Habitat. Through consultation and the issuance of a Biological Opinion, the USFWS may issue an incidental take statement allowing take of a listed species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of the ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a Habitat Conservation Plan (HCP) is developed.

2.1.2 Critical Habitat

Critical Habitat is defined in Section 3 of ESA as:

1. the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and
2. specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features that are essential to the conservation of the species. Critical Habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the primary constituent elements). Primary constituent elements are the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

- Space for individual and population growth and for normal behavior
- Food, water, air, light, minerals, or other nutritional or physiological requirements
- Cover or shelter
- Sites for breeding, reproduction, or rearing (or development) of offspring
- Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species

Excluded essential habitat is defined as areas that were found to be essential habitat for the survival of a species and assumed to contain at least one of the primary constituent elements for the species but were excluded from the Critical Habitat designation. The USFWS has stated that any action within the excluded essential habitat that triggers a federal nexus will be required to undergo the Section 7(a)(1) process, and the species covered under the specific Critical Habitat designation would be afforded protection under Section 7(a)(2) of ESA.

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The protections of the MBTA extend to disturbances that result in abandonment of a nest with eggs or young. As authorized by the MBTA, the USFWS may issue permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds,

taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits.

2.1.4 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended) provides for the protection of bald eagle and golden eagle by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit [16 USC 668(a); 50 CFR 22]. The USFWS may authorize take of bald eagles and golden eagles for activities where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided (50 CFR 22.26).

2.1.5 Magnuson-Stevens Act

Essential Fish Habitat (EFH) was defined by the U.S. Congress in the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, or Magnuson-Stevens Act, as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." Implementing regulations clarified that waters include all aquatic areas and their physical, chemical, and biological properties; substrate includes the associated biological communities that make these areas suitable for fish habitats, and the description and identification of EFH should include habitats used at any time during the species' life cycle. EFH includes all types of aquatic habitat, such as wetlands, coral reefs, sand, seagrasses, and rivers.

2.1.6 Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into Waters of the U.S. without a permit from the U.S. Army Corps of Engineers (USACE). The definition of Waters of the U.S. includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas:

"that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 7b).

The U.S. Environmental Protection Agency (USEPA) also has authority over wetlands and may override a USACE permit.

Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

2.2 State or Local Regulations

2.2.1 California Fish and Game Code

2.2.1.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of the federal ESA, but unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called *candidates* by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. *Take* is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Section 2081 allows CDFW to authorize incidental take permits if species-specific minimization and avoidance measures are incorporated to fully mitigate the impacts of the project.

2.2.1.2 Fully Protected Species

The State of California first began to designate species as *fully protected* prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have subsequently been listed as threatened or endangered under the state and/or federal ESAs. Previously, the regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provided that fully protected species may not be taken or possessed at any time. However, on July 10, 2023, Senate Bill 147 was signed into law, authorizing CDFW to issue take permits under the California ESA for fully protected species for qualifying projects through 2033. Qualifying projects include:

- A maintenance, repair, or improvement project to the State Water Project, including existing infrastructure, undertaken by the Department of Water Resources.
- A maintenance, repair, or improvement project to critical regional or local water agency infrastructure.
- A transportation project, including any associated habitat connectivity and wildlife crossing project, undertaken by a state, regional, or local agency, that does not increase highway or street capacity for automobile or truck travel.
- A wind project and any appurtenant infrastructure improvement, and any associated electric transmission project carrying electric power from a facility that is located in the state to a point of junction with any California based balancing authority.

- A solar photovoltaic project and any appurtenant infrastructure improvement, and any associated electric transmission project carrying electric power from a facility that is located in the state to a point of junction with any California-based balancing authority.

The CDFW may also issue licenses or permits for take of these species for necessary scientific research or live capture and relocation, and may allow incidental take for lawful activities carried out under an approved Natural Community Conservation Plan (NCCP) within which such species are covered.

2.2.1.3 Native Plant Protection Act

The NPPA of 1977 was created with the intent to “preserve, protect and enhance rare and endangered plants in this State.” The NPPA is administered by CDFW and provided in California Fish and Game Code §§ 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as *endangered* or *rare* and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code §§ 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.1.4 California Fish and Game Code Special Protections for Birds

Sections 3503, 3513, and 3800 of the California Fish and Game Code specifically protect birds. Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 prohibits the take, possession, or destruction of any birds in the orders Strigiformes (owls) or Falconiformes (hawks and eagles), as well as their nests and eggs. Section 3513 prohibits the take or possession of any migratory nongame bird as designated in the MBTA. Section 3800 states that, with limited exceptions, it is unlawful to take any nongame bird, defined as all birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds. These provisions, along with the federal MBTA, serve to protect all nongame birds and their nests and eggs, except as otherwise provided in the code.

2.2.1.5 Lake or Streambed Alteration Agreements

Section 1602 of the California Fish and Game Code requires that a Notification of Lake or Streambed Alteration be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” The notification must incorporate proposed measures to protect affected fish and wildlife resources. During their review, CDFW may suggest additional protective measures. A Lake or Streambed Alteration Agreement (LSAA) is the final proposal mutually agreed upon by CDFW and the applicant. Projects that require an LSAA often also require a permit from the USACE under Section 404 of the CWA. The conditions of the Section 404 permit and the LSAA frequently overlap in these instances.

2.2.2 California Oak Woodlands Conservation Act

The California Oak Woodlands Conservation Act was passed in 2001 to address loss of oak woodland habitats throughout the state. As a result of the Act, the Oak Woodland Conservation Program was established to provide funding for conservation and protection of California oak woodlands. Public

Resources Code (PRC) Section 21083.4 went into effect as of January 1, 2005, and requires lead agencies to analyze potential effects to oak woodlands during the CEQA process. If it is determined that a project may have a significant effect on oak woodlands, the lead agency must implement one of several mitigation alternatives, including conservation of oak woodlands through conservation easements, planting or restoration of oak woodlands, contribution of funds to the Oak Woodlands Conservation Fund, or other appropriate mitigation measures.

2.2.3 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB also regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the water of the state" (Water Code 13260(a)). Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050 (e)). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirement for these activities.

2.2.4 California Environmental Quality Act

Per CEQA Guidelines Section 15380, a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in the federal and California ESAs, and Sections 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the CEQA Guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW.

2.2.4.1 CEQA Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant. Assessment of "impact significance" to populations of nonlisted species (e.g., SSC) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study

checklist contained in Appendix G of the CEQA Guidelines. Pursuant to Appendix G, impacts to biological resources would normally be considered significant if a project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on federally protected Waters of the U.S. including wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA because although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

2.2.4.2 *Species of Special Concern*

The CDFW defines SSC as a species, subspecies, or distinct population of an animal native to California that are not legally protected under ESA, the California ESA or the California Fish and Game Code, but currently satisfy one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered, and meets the state definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.

- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.

SSC are typically associated with threatened habitats. Projects that result in substantial impacts to SSC may be considered significant under CEQA.

2.2.4.3 USFWS Bird of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under ESA.” To meet this requirement, the USFWS published a list of BCC (USFWS 2021) for the U.S. The list identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS’ highest conservation priorities. Depending on the policy of the lead agency, projects that result in substantial impacts to BCC may be considered significant under CEQA.

2.2.4.4 Watch List Species

The CDFW maintains a list consisting of taxa that were previously designated as “Species of Special Concern” but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

Depending on the policy of the lead agency, projects that result in substantial impacts to species on the CDFW WL may be considered significant under CEQA.

2.2.4.5 California Rare Plant Ranks

The CNPS maintains the Rare Plant Inventory (CNPS 2023a), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, or low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- CRPR 1A – presumed extirpated in California and either rare or extinct elsewhere
- CRPR 1B – rare, threatened, or endangered in California and elsewhere
- CRPR 2A – presumed extirpated in California, but more common elsewhere
- CRPR 2B – rare, threatened, or endangered in California but more common elsewhere
- CRPR 3 – a review list of plants about which more information is needed
- CRPR 4 – a watch list of plants of limited distribution

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 0.1 through 0.3, with 0.1 being the most threatened and 0.3 being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

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

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank; differences in Threat Ranks do not constitute additional or different protection (CNPS 2023a). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, 2A, or 2B are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

2.2.4.6 Sensitive Natural Communities

Sensitive natural communities (SNCs) are vegetation communities that are imperiled or vulnerable to environmental effects of projects. The CDFW maintains the California Natural Community List (CDFW 2022), which provides a list of vegetation alliances, associations, and special stands as defined in *A Manual of California Vegetation Online* (MCV; CNPS 2023b), along with their respective state and global rarity ranks, if applicable. Natural communities with a state rarity rank of S1, S2, or S3 are considered SNCs. Depending on the policy of the lead agency, impacts to SNCs may be considered significant under CEQA.

2.2.4.7 Wildlife Movement Corridors and Nursery Sites

Impacts to wildlife movement corridors or nursery sites may be considered significant under CEQA. As part of the California Essential Habitat Connectivity Project, CDFW and Caltrans maintain data on Essential Habitat Connectivity areas. These data are available in the CNDDDB. The goal of this project is to map large intact habitat or natural landscapes and potential linkages that could provide corridors for wildlife. In urban settings, riparian vegetated stream corridors can also serve as wildlife movement corridors. Nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries, bat maternity roosts, and mule deer critical fawning areas. These data are available through CDFW's Biogeographic Information and Observation System database or as occurrence records in the CNDDDB and may be supplemented with the results of field surveys.

2.2.5 Sacramento-San Joaquin Delta Regulations

The Delta Protection Act of 1992 (Act; PRC Division 19.5) declared that “the Sacramento-San Joaquin Delta (Delta) is a natural resource of statewide, national, and international significance, containing irreplaceable resources, and it is the policy of the state to recognize, preserve, and protect those resources of the Delta for the use and enjoyment of current and future generations.” The Act established goals for the Delta and created the Delta Protection Commission (Commission) pursuant to PRC Section 29703.5. The Commission adopted the Land Use and Resource Management Plan for the Primary Zone of the Delta (Delta Plan; Delta Protection Commission 2010) in 2010 pursuant to PRC section 29760. The primary zone is defined as “the delta land and water area of primary state concern and statewide significance which is situated within the boundaries of the Delta, as described in Section 12220 of the Water Code, but that is not within either the urban limit line or sphere of influence line of any local government’s general plan or currently existing studies, as of January 1, 1992.”

The Delta Plan guides local land use decisions on development projects subject to approval by Delta counties (Contra Costa, Sacramento, San Joaquin, Yolo, and Solano). Per the Plan, should cities propose to expand into the Delta primary zone, or acquire land in the primary zone for utility or infrastructure facility development, those actions are to be carried out in conformity with the Act. General plans and projects in the Delta counties must be consistent with the Delta Plan and are subject to review by the Commission. The Commission also comments on projects in the secondary zone that have the potential to impact the primary zone. If a project in the primary zone is challenged as inconsistent with the Delta Plan, the project can be appealed to the Commission for resolution.

The following areas of the BSA are in the primary zone of the Delta: lands east of Airport Road, lands east of Liberty Island Road, the Sacramento River, and some slivers of land adjacent to the river (Figure 2; State of California 2023).

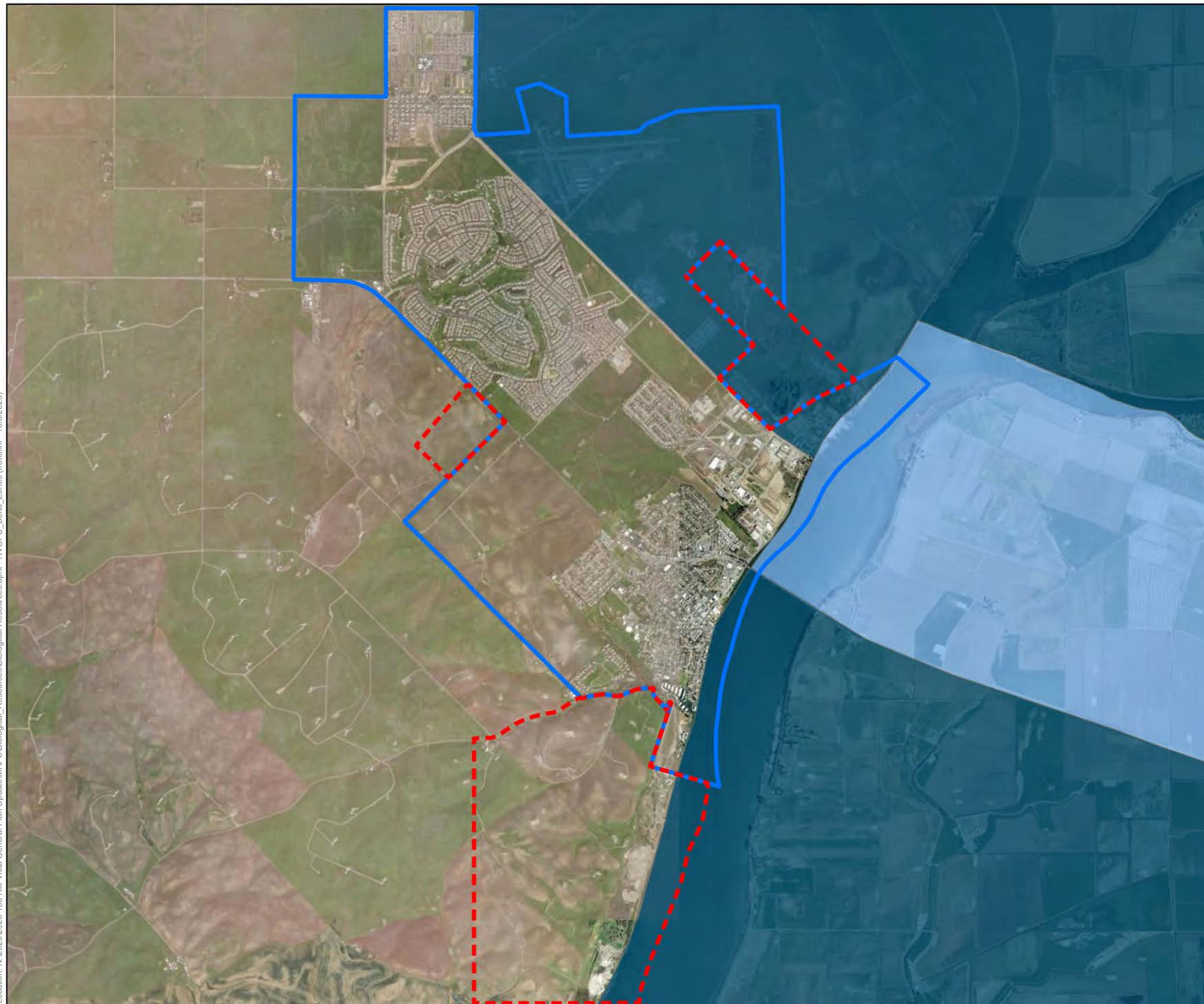
3.0 METHODS

3.1 Literature Review

ECORP biologists performed a review of existing available information for the BSA. Literature sources included current aerial imagery, topographic mapping, soil survey mapping available from the NRCS Web Soil Survey (NRCS 2023), existing vegetation mapping (CDFW 2018 and 2019; U.S. Department of Agriculture [USDA] 2015), the USFWS National Wetlands Inventory (NWI; USFWS 2017), the USFWS Critical Habitat mapper (USFWS 2023b), the NMFS Essential Fish Habitat Mapper (National Oceanic and Atmospheric Administration [NOAA] 2023), and other relevant literature as cited throughout this document. ECORP biologists reviewed the following resources to identify special-status plant and wildlife species that have been documented in or near the BSA:

- The CDFW CNDDDB data for the “Rio Vista, California” 7.5-minute quadrangle and the surrounding eight quadrangles (CDFW 2023c);

Location: N:\2023\2023-156 Rio Vista General Plan Update\MAPS\Biological Resources\aprx - RV\GPU_Delta_Zones (trtelini - 10/5/2023)



Map Contents

Biological Study Area

-  City of Rio Vista
-  City of Rio Vista Sphere of Influence

Delta Zones

-  Primary
-  Secondary

Sources: ESRI, Maxar (2022), National Resources Conservation Service



Map Date: 10/5/2023

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Scale in Feet
0 1,500 3,000



Figure 2. Delta Zones in Relation to the Biological Study Area

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- The CNPS Rare Plant Inventory data for the “Rio Vista, California” 7.5-minute quadrangle and the surrounding eight quadrangles (CNPS 2023a);
- The USFWS Information for Planning and Consultation Resource Report List for the BSA (USFWS 2023a); and
- The NMFS Resources data for the “Rio Vista, California” 7.5-minute quadrangle (NOAA 2016);

The results of the database queries are provided in Appendix A.

4.0 RESULTS

4.1 Site Characteristics and Land Use

The BSA is a mosaic of urban areas, agricultural lands, and undeveloped areas that are mostly comprised of annual grassland but also include sensitive habitats such as wetland and riparian vegetation communities and the Sacramento River Delta, which supports multiple special-status species and is designated Critical Habitat for delta smelt (*Hypomesus transpacificus*).

The BSA consists of relatively level to gently rolling terrain situated at elevations ranging from sea level at the Sacramento River to approximately 140 feet above mean sea level in the Montezuma Hills, located in the southern portion of the BSA. The BSA is within the Sacramento Valley subregion of the Great Central Valley Region of the California floristic province (Jepson eFlora 2023). This subregion comprises the northern, wetter, cooler area of the Great Valley, which is now predominantly agricultural but still supports some grasslands, marshes, vernal pools, riparian woodlands, alkali sink vegetation, and stands of valley oak (*Quercus lobata*). The average winter low temperature is 49.5 degrees Fahrenheit (°F) and the average summer high temperature is 74.6 °F; the average annual precipitation is approximately 12.60 inches at the closest weather station, which is in Oakley, California, approximately 10 miles south of the BSA (NOAA 2023).

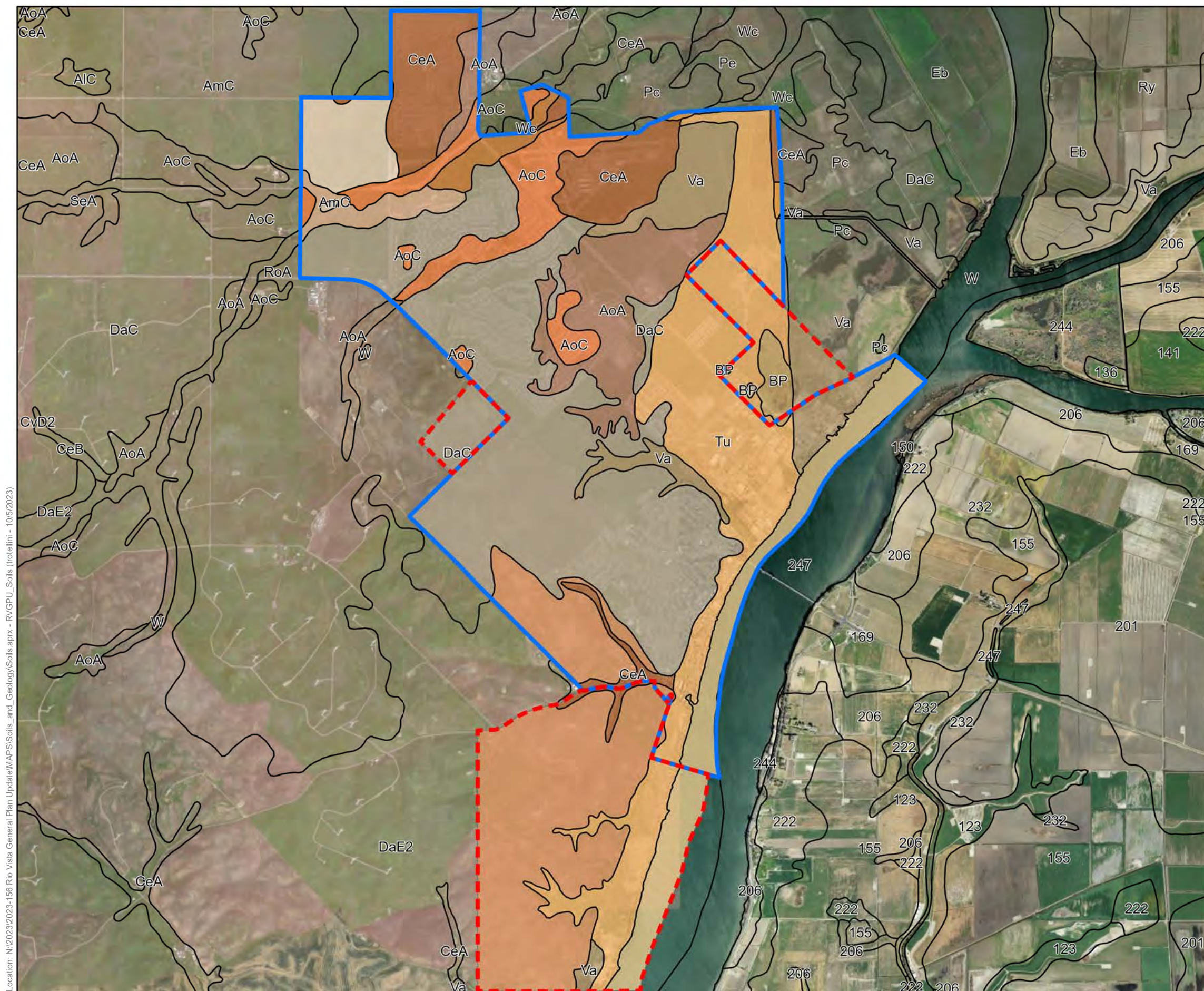
Agriculture is the primary land use surrounding the BSA. Recreational uses along the Sacramento River near the BSA include boat ramps and the Brannan Island State Recreation Area.

4.2 Soils and Geology

Soil survey mapping for the BSA was obtained from the NRCS Web Soil Survey (Figure 3; NRCS 2023). Table 1 provides an overview of the soil map units within the BSA.

Two geologic units are mapped within the BSA: Plio-Pleistocene and Pliocene loosely consolidated deposits (sedimentary, clastic) and older Quaternary alluvium and marine deposits (unconsolidated, undifferentiated). No geological units containing serpentinite are mapped within the BSA or its immediate vicinity (Horton 2017).

Location: N:\2023\2023-156 Rio Vista General Plan Update\MAPS\Soils_and_Geology\Soils.aprx - RV\GPU_Soils (trotellini - 10/5/2023)



Map Contents

Biological Study Area

- City of Rio Vista
- City of Rio Vista Sphere of Influence

Series Designation - Series Description

- 247 - Water
- AmC - Altamont-Diablo clays, 2 to 9 percent slopes
- AoA - Antioch-San Ysidro complex, 0 to 2 percent slopes
- AoC - Antioch-San Ysidro complex, 2 to 9 percent slopes
- BP - Borrow pit
- CeA - Clear Lake clay, 0 to 2 percent slopes, MLRA 17
- DaC - Diablo-Ayar clays, 2 to 9 percent slopes
- DaE2 - Diablo-Ayar clays, 9 to 30 percent slopes, eroded
- Pc - Pescadero silty clay loam, 0 percent slopes, MLRA 17
- RoA - Rincon clay loam, 0 to 2 percent slope
- Tu - Tujunga fine sand
- Va - Valdez silt loam, drained, 0 to 2 percent slopes, MLRA 16
- W - Water
- Wc - Willows clay, 0 percent slopes, MLRA 17



Table 1. Soil Map Units in the BSA

Map Unit Symbol	Map Unit Name
247	Water
AmC	Altamont-Diablo clays, 2 to 9 percent slopes
AoA	Antioch-San Ysidro complex, 0 to 2 percent slopes
BP	Borrow pit
CeA	Clear Lake clay, 0 to 2 percent slopes, MLRA 17
DaC	Diablo-Ayar clays, 2 to 9 percent slopes
DaE2	Diablo-Ayar clays, 9 to 30 percent slopes, eroded
Pc	Pescadero silty clay loam, 0 percent slopes, MLRA 17
RoA	Rincon clay loam, 0 to 2 percent slope
Tu	Tujunga fine sand
Va	Valdez silt loam, drained, 0 to 2 percent slopes, MLRA 16
W	Water
Wc	Willows clay, 0 percent slopes, MLRA 17

4.3 Vegetation

4.3.1 Vegetation Communities and Land Cover Types

General vegetation communities and land cover types within the BSA are depicted on Figure 4 and in Appendix B, as approximated from existing CNPS vegetation mapping (CDFW 2023a, 2023b) and California Vegetation Classification (USDA 2015) data, with minor changes based on aerial imagery interpretation. These general vegetation communities or land cover types are presented based on the California Wildlife Habitat Relationships (CWHR) classification, and habitats are described in detail in the associated CWHR publication (Mayer and Laudenslayer 1988). Approximate acreage of each vegetation community and land cover type within the BSA is included in Table 2.

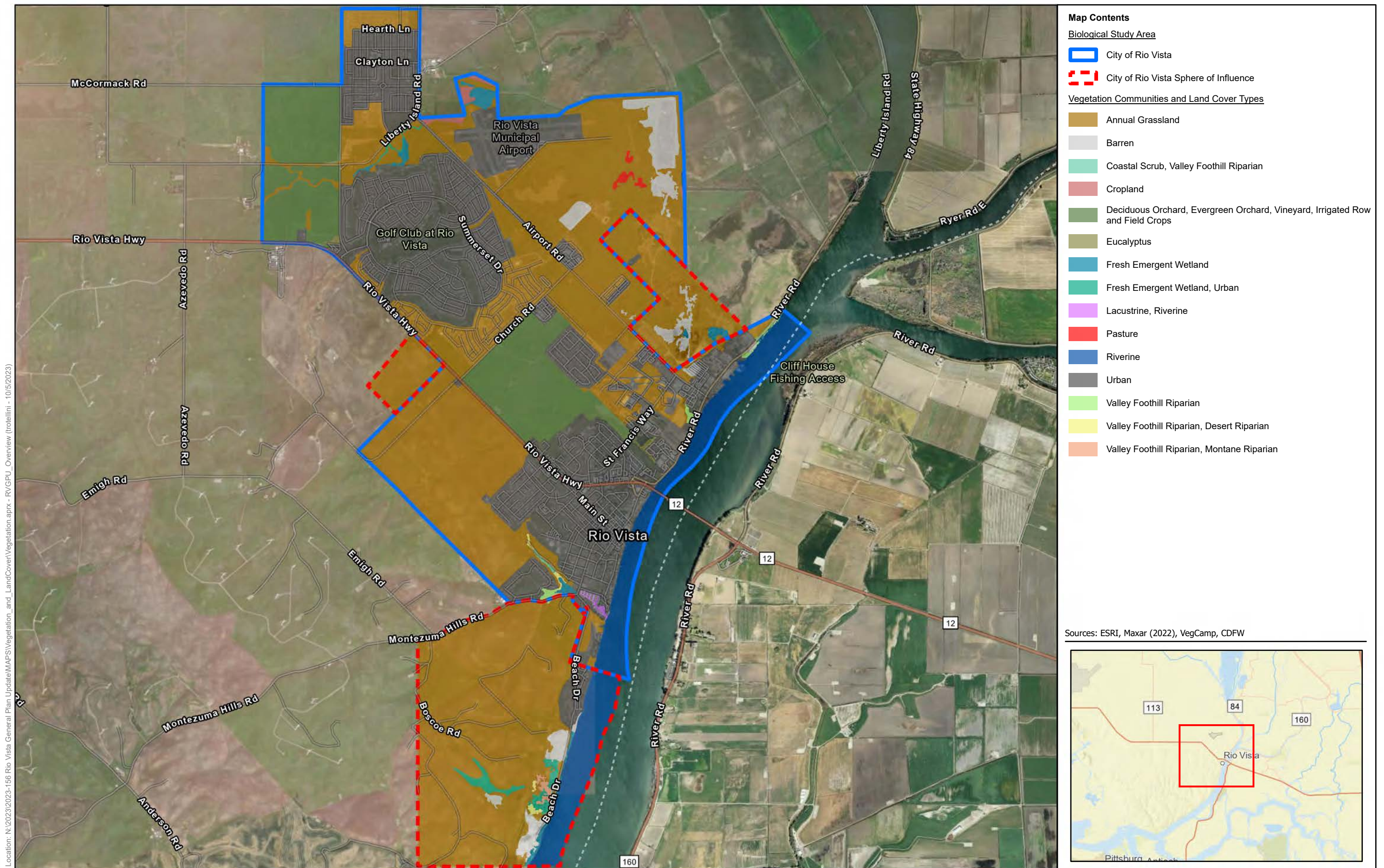


Table 2. Vegetation Communities and Land Cover Types in the BSA

Cover Type	Acreage
Annual Grassland	2,905.58
Barren	150.69
Coastal Scrub, Valley Foothill Riparian	2.13
Cropland	17.95
Deciduous Orchard, Evergreen Orchard, Vineyard, Irrigated Row and Field Crops	561.91
Eucalyptus	5.43
Fresh Emergent Wetland	39.09
Fresh Emergent Wetland, Urban	29.81
Lacustrine, Riverine	3.64
Pasture	7.43
Riverine	375.06
Urban	1,758.53
Valley Foothill Riparian	12.74
Valley Foothill Riparian, Desert Riparian	5.20
Valley Foothill Riparian, Montane Riparian	5.80

4.3.2 Oak Woodlands, Sensitive Natural Communities, and Riparian Habitat

The BSA includes oak woodlands, SNCs, and riparian habitat. Vegetation communities identified in Section 4.3.1 can be further classified into MCV vegetation alliances and associations. Valley oak woodland within the BSA is a component of the valley foothill riparian vegetation type and is considered an SNC. Table 3 summarizes all SNCs mapped within the BSA based on the available data. Additional SNCs may be present, especially within the fresh emergent wetland and valley foothill riparian communities. Riparian habitat is also a component of those communities.

Smaller inclusions of SNCs, oak woodlands, and riparian habitat may also occur within other areas of the BSA (including areas depicted as developed land cover types such as cropland and urban). Site-specific vegetation mapping would be required to determine the types and extent of SNCs, oak woodlands, and riparian habitat within specific areas of the BSA.

Table 3. Sensitive Natural Communities in the BSA

Cover Type	SNC	State Rarity Ranking
Annual Grassland	California vernal pool and grassland matrix	S2
Fresh Emergent Wetland	Hardstem and California bulrush (<i>Schoenoplectus acutus</i> , <i>californicus</i>) herbaceous alliance	S3S4
Valley Foothill Riparian	Fremont cottonwood (<i>Populus fremontii</i>) forest and woodland alliance	S3.2
	Goodding's willow (<i>Salix gooddingii</i>) - red willow (<i>Salix laevigata</i>) riparian woodland and forest	S3
	Valley oak woodland and forest	S3

4.4 Aquatic Resources

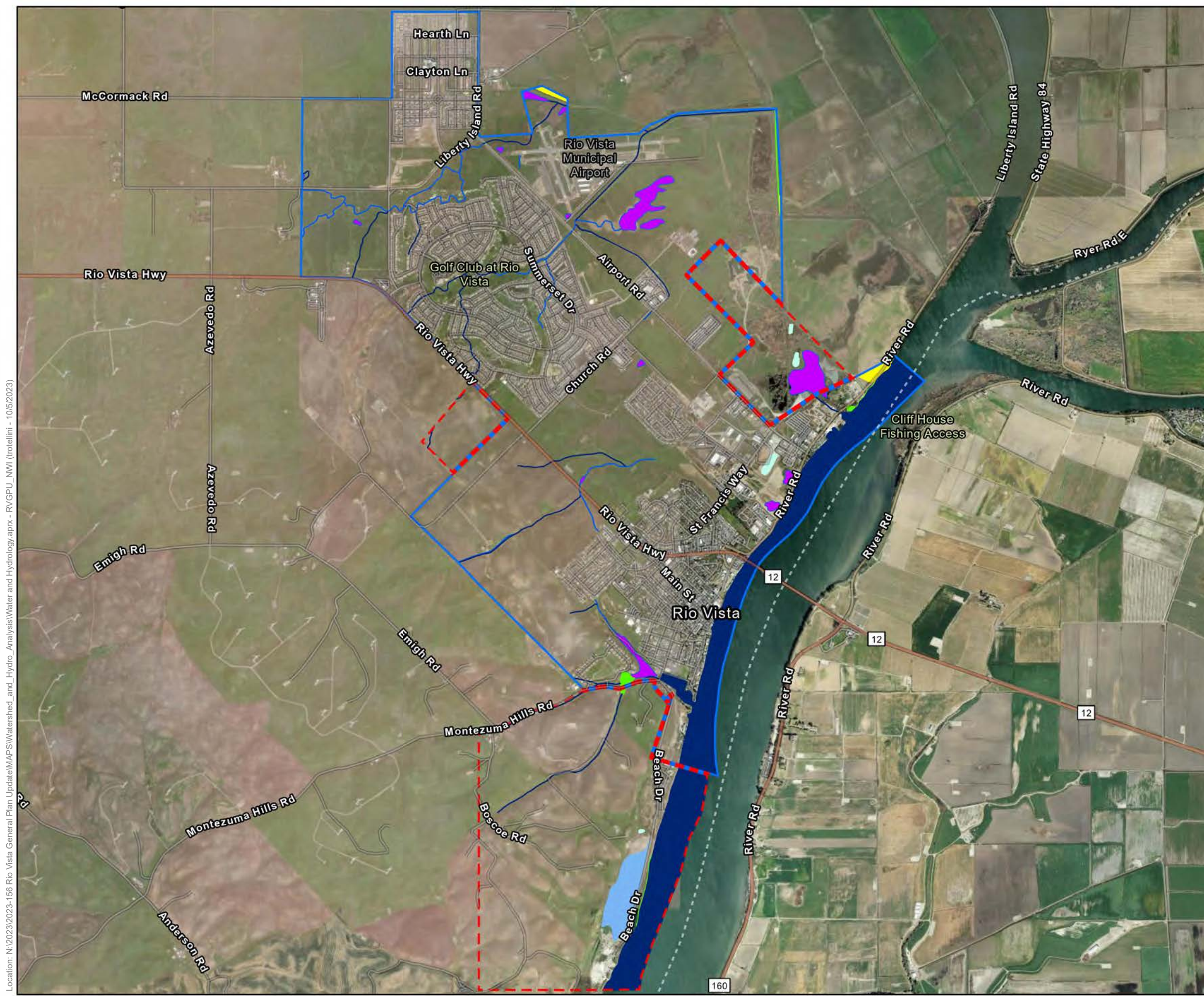
The NWI data within the BSA is depicted on Figure 5. Approximate acreage of each NWI aquatic resource type within the BSA is included in Table 4. Aquatic resources within the BSA may be considered Waters of the U.S. and/or State. The NWI maps are prepared from the analysis of high-altitude imagery that includes a margin of error. Consequently, on-the-ground delineations will likely result in deletions and/or additions, and revisions to the limits of aquatic features within the BSA. Site-specific ARDs conducted according to USACE protocol would be required to determine the specific types and extent of aquatic resources within the BSA.

Table 4. NWI Aquatic Resources in the BSA

NWI Type	Acreage
Freshwater Emergent Wetland	77.12
Freshwater Forested/Shrub Wetland	7.91
Freshwater Pond	5.58
Lake	41.27
Other	11.91
Riverine	401.86

4.5 Wildlife

The Delta region supports valuable habitat for hundreds of wildlife species. However, within the BSA much of this value has been reduced due to urban development or past and ongoing disturbance from intensive grazing and agricultural uses.



Map Contents

Biological Study Area

- City of Rio Vista
- City of Rio Vista Sphere of Influence

NWI Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Sources: ESRI, Maxar (2022), National Wetlands Inventory

Location: N:\2023\2023-156 Rio Vista General Plan Update\MAPS\Watershed_and_Hydro_Analysis\Water and Hydrology.aprx - RVGPU_NWI (trotellini - 10/5/2023)

Wildlife expected to regularly utilize the grassland areas of the BSA include California ground squirrel (*Otospermophilus beecheyi*), western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), black-tailed jackrabbit (*Lepus californicus*), and coyote (*Canis latrans*). Birds that may nest in these grassland communities include northern harrier (*Circus hudsonius*), burrowing owl (*Athene cunicularia*), western kingbird (*Tyrannus verticalis*), loggerhead shrike (*Lanius ludovicianus*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), and killdeer (*Charadrius vociferus*). Isolated trees in the grasslands support potential nesting habitat for red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and the state-threatened Swainson's hawk (*Buteo swainsoni*). The annual grasslands in this region support a significant population of wintering raptors that include golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), red-tailed hawk, rough-legged hawk (*Buteo lagopus*), short-eared owl (*Asio flammeus*), prairie falcon (*Falco mexicanus*), and merlin (*Falco columbarius*).

The riparian woodland or scrub communities in the BSA appear to be restricted to the banks of the Sacramento River and have been largely degraded or developed. Scattered trees and shrubs along the river's edge could support nesting habitat for a variety of birds including Swainson's hawk, red-tailed hawk, American crow (*Corvus brachyrhynchos*), yellow-billed magpie (*Pica nuttalli*), European starling (*Sturnus vulgaris*), and red-winged blackbird (*Agelaius phoeniceus*). Other wildlife expected to utilize the riverside communities within the BSA include American bullfrog (*Lithobates catesbeianus*), Sierran tree frog (*Pseudacris sierra*), red-eared slider (*Trachemys scripta*), valley garter snake (*Thamnophis sirtalis fitchi*), American beaver (*Castor canadensis*), river otter (*Lontra canadensis*), and muskrat (*Ondatra zibethicus*).

Emergent aquatic habitats appear to be restricted to two areas in the north and western portion of the BSA. Emergent marshes support breeding habitat for birds such as mallard (*Anas platyrhynchos*), song sparrow (*Melospiza melodius*), red-winged blackbird, and tricolored blackbird (*Agelaius tricolor*). Other wildlife likely to be found in the marsh habitats include American bullfrog, red-eared slider, northwestern pond turtle (*Actinemys marmorata*), and valley garter snake.

Wildlife expected to utilize more developed areas of the BSA include raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), domestic and feral cats (*Felis catus*), and a variety of birds such as American crow, California scrub-jay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglottos*), barn swallow (*Branta canadensis*), and house sparrow (*Passer domesticus*).

4.6 Special-Status Species

Table 5 presents the full list of special-status plant and animal species identified through the literature review (including "Rio Vista, California" 7.5-minute quadrangle and the surrounding eight quadrangles). For each species, the table provides the listing status, and a brief description of habitat requirements and/or species ecology. Species with at least one mapped CNDDDB occurrence within the BSA are indicated by footnote and included in bolded text.

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Plants				
Ferris' milk-vetch <i>(Astragalus tener</i> var. <i>ferrisiae)</i>	–	–	1B.1	Vernally mesic meadows and seeps and in sub-alkaline flats within valley and foothill grasslands. Elevation: 5'–245' Bloom Period: April–May
Alkali milk-vetch <i>(Astragalus tener</i> var. <i>tener)</i>	–	–	1B.2	Alkaline playas and vernal pools, and alkaline adobe clay soils in valley and foothill grasslands. Elevation: 5'–195' Bloom Period: March–June
Heartscale <i>(Atriplex cordulata</i> var. <i>cordulata)</i>	–	–	1B.2	Alkaline or saline valley and foothill grasslands, meadows and seeps, and chenopod scrub communities. Elevation: 0'–1,835' Bloom Period: April–October
Crownscale <i>(Atriplex coronata</i> var. <i>coronata)</i>	–	–	4.2	Alkaline, often clay substrates in chenopod scrub, valley and foothill grassland, and vernal pools. Elevation: 5'–1,935' Bloom Period: March–October
Brittlescale <i>(Atriplex depressa)</i>	–	–	1B.2	Alkaline and clay soils within chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools. Elevation: 5'–1,050' Bloom Period: April–October
Vernal pool smallscale <i>(Atriplex persistens)</i>	–	–	1B.2	Alkaline vernal pools. Elevation: 35'–375' Bloom Period: June–October
Big tarplant <i>(Blepharizonia plumosa</i> ssp. <i>plumosa)</i>	–	–	1B.1	Valley and foothill grassland. Elevation: 100'–1,655' Bloom Period: July–October
Watershield <i>(Brasenia schreberi)</i>	–	–	2B.3	Freshwater marshes and swamps. Elevation: 100'–7,220' Bloom Period: June–September

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Bristly sedge (<i>Carex comosa</i>)	–	–	2B.1	Mesic valley and foothill grassland, coastal prairie, and lake margins of marshes and swamps. (Jepson eFlora 2023) Elevation: 0'–2,050' Bloom Period: May–September
Pappose tarplant (<i>Centromadia parryi</i> ssp. <i>parryi</i>)	–	–	1B.2	Often on alkaline soils within chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, vernal mesic valley and foothill grassland. Elevation: 0'–1,380' Bloom Period: May–November
Parry's rough tarplant (<i>Centromadia parryi</i> ssp. <i>rudis</i>)	–	–	4.2	Alkaline, vernal mesic areas, and seeps in valley and foothill grassland and vernal pools, sometimes found on roadsides. Elevation: 0'–330' Bloom Period: May–October
Soft salty bird's-beak (<i>Chloropyron molle</i> ssp. <i>molle</i>)	FE	CR	1B.2	Coastal salt marshes and swamps. Elevation: 0'–10' Bloom Period: July–November
Bolander's water-hemlock (<i>Cicuta maculata</i> var. <i>bolanderi</i>)	–	–	2B.1	Coastal, fresh, or brackish marshes and swamps. Elevation: 0'–655' Bloom Period: July–September
Small-flowering morning-glory (<i>Convolvulus simulans</i>)	–	–	4.2	Clay, serpentine seeps within chaparral, coastal scrub, and valley and foothill grassland. Elevation: 100'–2,430' Bloom Period: March–July
Dwarf downingia (<i>Downingia pusilla</i>)	–	–	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species has also been found in disturbed areas such as tire ruts and scraped depressions. (CDFW 2023c) Elevation: 5'–1,460' Bloom Period: March–May
Small spikerush (<i>Eleocharis parvula</i>)	–	–	4.3	Marshes and swamps. Elevation: 5'–9,910' Bloom Period: June–August

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Antioch Dunes buckwheat <i>(Eriogonum nudum var. psychicola)</i>	–	–	1B.1	Inland dune. Elevation: 0'–65' Bloom Period: July–October
Mt. Diablo buckwheat <i>(Eriogonum truncatum)</i>	–	–	1B.1	Sandy soils in chaparral, coastal scrub, valley and foothill grassland. Elevation: 10'–1,150' Bloom Period: April–September
Contra Costa wallflower <i>(Erysimum capitatum var. angustatum)</i>	FE	CE	1B.1	Inland dunes. Elevation: 10'–65' Bloom Period: March–July
Diamond-petaled California poppy <i>(Eschscholzia rhombipetala)</i>	–	–	1B.1	Valley and foothill grassland in alkaline and clay soils. Elevation: 0'–3,200' Bloom Period: March–April
San Joaquin spearscale² <i>(Extriplex joaquinana)</i>	–	–	1B.2	Alkaline soils in chenopod scrub, meadows seeps, playas, and valley and foothill grassland. Elevation: 5'–2,740' Bloom Period: April–October
Stinkbells <i>(Fritillaria agrestis)</i>	–	–	4.2	Clay and sometimes serpentine soils in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland. Elevation: 35'–5,100' Bloom Period: March–June
Fragrant fritillary <i>(Fritillaria liliacea)</i>	–	–	1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often on serpentine substrates. Elevation: 10'–1,345' Bloom Period: February–April
Boggs Lake hedge-hyssop <i>(Gratiola heterosepala)</i>	–	CE	1B.2	Marshes, swamps, lake margins, and vernal pools. Elevation: 35'–7,790' Bloom Period: April–August

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Hogwallow starfish (<i>Hesperovax caulescens</i>)	–	–	4.2	Mesic areas with clay soil within valley and foothill grassland, shallow vernal pools, and sometimes alkaline areas. Elevation: 0'–1,655' Bloom Period: March–June
Woolly rose-mallow ³ (<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>)	–	–	1B.2	Marshes and freshwater swamps. Often in riprap on sides of levees. Elevation: 0'–395' Bloom Period: June–September
Carquinez goldenbush (<i>Isocoma arguta</i>)	–	–	1B.1	Alkaline soils in valley and foothill grasslands. Elevation: 5'–65' Bloom Period: August–December
Alkali-sink goldfields (<i>Lasthenia chrysantha</i>)	–	–	1B.1	Alkaline vernal pools. Elevation: 0'–655' Bloom Period: February–April
Contra Costa goldfields (<i>Lasthenia conjugens</i>)	FE	–	1B.1	Mesic sites within cismontane woodland, playas with alkaline soils, valley and foothill grassland and vernal pools. Elevation: 0'–1,540' Bloom Period: March–June
Coulter's goldfields (<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>)	–	–	1B.1	Coastal marshes and swamps, playas, and vernal pools. Elevation: 5'–4,005' Bloom Period: February–June
Delta tule pea (<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>)	–	–	1B.2	Freshwater and brackish marshes and swamps. Elevation: 0'–15' Bloom Period: May–July
Legenere (<i>Legenere limosa</i>)	–	–	1B.1	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages. (USFWS 2005) Elevation: 5'–2,885' Bloom Period: April–June

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Heckard's pepper-grass (<i>Lepidium latipes</i> var. <i>heckardii</i>)	–	–	1B.2	Alkaline flats within valley and foothill grasslands. Elevation: 5'–655' Bloom Period: March–May
Mason's lilaeopsis (<i>Lilaeopsis masonii</i>)	–	–	1B.1	Brackish or freshwater marshes or swamps and riparian scrub. Elevation: 0'–35' Bloom Period: April–November
Delta mudwort (<i>Limosella australis</i>)	–	–	2B.1	Usually mud banks in freshwater or brackish marshes and swamps and riparian scrub. Elevation: 0'–10' Bloom Period: May–August
Abram's lupine (<i>Lupinus albifrons</i> var. <i>abramsii</i>)	–	–	3.2	Broadleafed upland forest, chaparral, coastal scrub, lower montane coniferous forest, and valley and foothill grassland; sometimes on serpentine substrates. Elevation: 410'–6,560' Bloom Period: April–June
Little mousetail (<i>Myosurus minimus</i> ssp. <i>apus</i>)	–	–	3.1	Mesic areas of valley and foothill grassland and alkaline vernal pools. Elevation: 65'–2,100' (USACE 2018) Bloom Period: March–June
Baker's navarretia (<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>)	–	–	1B.1	Vernal pools and mesic areas within cismontane woodlands, lower montane coniferous forests, meadows and seeps, and valley and foothill grasslands. Elevation: 15'–5,710' Bloom Period: April–July
Colusa grass (<i>Neostapfia colusana</i>)	FT	CE	1B.1	Large vernal pools with adobe soils. Elevation: 15'–655' Bloom Period: May–August
Antioch Dunes evening-primrose (<i>Oenothera deltoides</i> ssp. <i>howellii</i>)	FE	CE	1B.1	Inland dunes. Elevation: 0'–100' Bloom Period: March–September

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Bearded popcornflower (<i>Plagiobothrys hystriculus</i>)	–	–	1B.1	Often in vernal swales, and in mesic areas of valley and foothill grassland and vernal pool margins. Elevation: 0'–900' Bloom Period: April–May
Eel-grass pondweed (<i>Potamogeton zosteriformis</i>)	–	–	2B.2	Assorted freshwater marshes and swamps. Elevation: 0'–6,105' Bloom Period: June–July
California alkali grass (<i>Puccinellia simplex</i>)	–	–	1B.2	Alkaline, vernal mesic areas and sinks, flats and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools. Elevation: 5'–3,050' Bloom Period: March–May
Sanford's arrowhead (<i>Sagittaria sanfordii</i>)	–	–	1B.2	Shallow marshes and freshwater swamps. Elevation: 0'–2,135' Bloom Period: May–October
Marsh skullcap (<i>Scutellaria galericulata</i>)	–	–	2B.2	Mesic areas in lower montane coniferous forest, meadows and seeps, and marshes and swamps. Elevation: 0'–6,890' Bloom Period: June–September
Side-flowering skullcap (<i>Scutellaria lateriflora</i>)	–	–	2B.2	Mesic areas in meadows and seeps and marshes and swamps. Elevation: 0'–1,640' Bloom Period: July–September
Sweet marsh ragwort (<i>Senecio hydrophiloides</i>)	–	–	4.2	Mesic areas in lower montane coniferous forest and meadows and seeps. Elevation: 0'–9,185' Bloom Period: May–August
Keck's checkerbloom (<i>Sidalcea keckii</i>)	FE	–	1B.1	Serpentine and clay soils within cismontane woodland and valley and foothill grasslands. Elevation: 245'–2,135' Bloom Period: April–May

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Suisun Marsh aster² <i>(Symphyotrichum lentum)</i>	–	–	1B.2	Brackish and freshwater marshes and swamps. Elevation: 0'–10' Bloom Period: May–November
Saline clover <i>(Trifolium hydrophilum)</i>	–	–	1B.2	Marshes and swamps, mesic and alkaline areas in valley and foothill grassland, and vernal pools. Elevation: 0'–985' Bloom Period: April–June
Solano grass <i>(Tuctoria mucronata)</i>	FE	CE	1B.1	Vernal pools and other mesic areas of valley and foothill grasslands. Elevation: 15'–35' Bloom Period: April–August
Invertebrates				
Conservancy fairy shrimp <i>(Branchinecta conservatio)</i>	FE	–	–	Vernal pools/wetlands. Survey Period: Wet season November–April when surface water is present; dry season May–October.
Vernal pool fairy shrimp <i>(Branchinecta lynchi)</i>	FT	–	–	Vernal pools/wetlands. Survey Period: Wet season November–April when surface water is present; dry season May–October.
Vernal pool tadpole shrimp <i>(Lepidurus packardii)</i>	FE	–	–	Vernal pools/wetlands. Survey Period: Wet season November–April when surface water is present; dry season May–October.
Delta green ground beetle <i>(Elaphrus viridis)</i>	FT	–	–	Vernal pool edges. Currently found only in the greater Jepson Prairie area in south-central Solano County. Active during the first warm days of late winter/ early spring. Returns to dormant phase during the hot, dry summer months. Survey Period: April–November

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Western bumble bee <i>(Bombus occidentalis)</i>	–	CC	–	Meadows and grasslands with abundant floral resources. Primarily nests underground. Largely restricted to high elevation sites in the Sierra Nevada, although rarely detected on the California coast. Survey Period: April-November
Crotch bumble bee <i>(Bombus crotchii)</i>	–	CC	–	Primarily nests underground in open grassland and scrub habitats from the California coast east to the Sierra Cascade and south to Mexico. Survey Period: March-September
Lange's metalmark butterfly <i>(Apodemia mormo langei)</i>	FE	–	–	Requires specific sand dune habitat that is found only in Antioch Dunes National Wildlife Refuge. Reliant on a specific subspecies of naked buckwheat for its diet as well as reproduction. Survey Period: Late summer
Fish				
Green sturgeon (Southern DPS) ² <i>(Acipenser medirostris)</i>	FT	–	SSC	Anadromous; undammed cold-water rivers having relatively deep pools with large substrates.
Steelhead (CA Central Valley DPS) ² <i>(Oncorhynchus mykiss irideus)</i>	FT	–	–	Fast-flowing, well-oxygenated rivers and streams below dams in the Sacramento and San Joaquin River systems.
Delta smelt ² <i>(Hypomesus transpacificus)</i>	FT	CE	-	Sacramento-San Joaquin Delta.
Longfin smelt ² <i>(Spirinchus thaleichthys)</i>	FC	CT	SSC	Freshwater and coastal estuaries.
Sacramento splittail <i>(Pogonichthys macrolepidotus)</i>	–	–	SSC	San Francisco Bay estuary and Central Valley lakes and rivers. Spawns in upstream floodplains and backwater sloughs.

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Sacramento perch <i>(Archoplites interruptus)</i>	–	–	SSC	Ponds, rivers, backwaters, reservoirs, and lakes in the Central Valley.
Amphibians				
California tiger salamander (Central California DPS) <i>(Ambystoma californiense)</i>	FT	CT	WL	Breeds in vernal pools and seasonal wetlands in grassland or oak woodland habitats; adults are terrestrial using underground refuges such as ground squirrel or gopher burrows. Central Valley and Inner Coast Range. Survey Period: Winter-Spring.
Reptiles				
Northwestern pond turtle <i>(Actinemys marmorata)</i>	–	–	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches. Survey Period: April-September
Northern California legless lizard <i>(Anniella pulchra)</i>	–	–	SSC	The most widespread of California's <i>Anniella</i> species. Occurs in sandy or loose soils under sparse vegetation from Antioch south coastally to Ventura. Bush lupine is often an indicator plant, and two melanistic populations are known. Survey Period: Generally spring, but depends on location and conditions
California glossy snake <i>(Arizona elegans occidentalis)</i>	–	–	SSC	Occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California. Inhabits arid scrub, rocky washes, grasslands, and chaparral. (Stebbins and McGinnis 2012) Survey Period: April-October
Giant garter snake <i>(Thamnophis gigas)</i>	FT	CT	–	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range. Survey Period: April-October

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Birds				
Western grebe <i>(Aechmophorus occidentalis)</i>	–	–	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Nests on freshwater lakes and marshes with open water bordered by emergent vegetation. Nesting: June-August
Clark’s grebe <i>(Aechmophorus clarkii)</i>	–	–	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Breeds on freshwater to brackish marshes, lakes, reservoirs and ponds, with a preference for large stretches of open water fringed with emergent vegetation. Nesting: June-August
Yellow-billed cuckoo <i>(Coccyzus americanus)</i>	FT	CE	–	Breeding habitat is generally open woodland with clearings and low, dense, scrubby vegetation associated with watercourses, and includes desert riparian woodlands with willow, Fremont’s cottonwood, alder, walnut, box-elder, and dense mesquite. Nests are generally found in deciduous hardwoods with thick bushes, vines, or hedgerows providing dense foliage within 10 meters (33 feet) of ground; prefer riparian patches of at least 81 hectares (200 acres). Winters in South America. (Hughes 2020) Nesting: June 15-August 15
California black rail <i>(Laterallus jamaicensis coturniculus)</i>	–	CT	CFP	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer, El Dorado counties). Nesting: March-September

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Mountain plover (<i>Charadrius montanus</i>)	–	–	BCC, SSC	Breeds in the Great Plains/Midwestern US; winters in California, Arizona, Texas, and Mexico; wintering habitat in California includes tilled fields, heavily grazed open grassland, burned fields, and alfalfa fields. Wintering: September-March
Short-billed dowitcher (<i>Limnodromus griseus</i>)	–	–	BCC	Nests in Canada, southern Alaska; winters in coastal California south to South America; wintering habitat includes coastal mudflats and brackish lagoons. Migrant/Wintering: late-August-May
California gull (nesting colony) (<i>Larus californicus</i>)	–	–	BCC, WL	Nesting occurs in the Great Basin, Great Plains, Mono Lake, and south San Francisco Bay. Breeding colonies located on islands on natural lakes, rivers, or reservoirs. Winters along Pacific Coast from southern British Columbia south to Baja California and Mexico. In California, winters along coast and inland (Central Valley, Salton Sea). Nesting: April-August
Double-crested cormorant (<i>Nannopterum auritum</i>)	–	–	WL	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters. Nesting: April-August
White-tailed kite (<i>Elanus leucurus</i>)	–	–	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats. Nesting: March-August

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Golden eagle (<i>Aquila chrysaetos</i>)	–	–	CFP, WL	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g. windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter. Nesting: February-August Wintering in Central Valley: October-February
Swainson's hawk² (<i>Buteo swainsoni</i>)	–	CT	–	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures. Nesting: March-August
Burrowing owl (<i>Athene cunicularia</i>)	–	–	BCC, SSC	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g., prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds. Nesting: February-August
Nuttall's woodpecker (<i>Dryobates nuttallii</i>)	–	–	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands. Nesting: April-July

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
American peregrine falcon² <i>(Falco peregrinus anatum)</i>	De-listed	De-listed	CFP	In California, breeds in coastal region, northern California, and Sierra Nevada. Nesting habitat includes cliff ledges and human-made ledges on towers and buildings. Wintering habitat includes areas where there are large concentrations of shorebirds, waterfowl, pigeons or doves. CA Residents nest in February-June
Grasshopper sparrow <i>(Ammodramus savannarum)</i>	–	–	BCC, SSC	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental. Nesting: May-August
Belding's savannah sparrow <i>(Passerculus sandwichensis beldingi)</i>	–	CE	BCC	Resident coastally from Point Conception south into Baja California; coastal salt marsh. Year-round resident; nests March-August
Song sparrow "Modesto"² <i>(Melospiza melodia heermanni)</i>	–	–	SSC	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat. Nesting: April-June
Suisun song sparrow <i>(Melospiza melodia maxillaris)</i>	–	–	SSC	Resident of brackish marshes of Suisun Bay. Year-round resident; nests March-July
Bullock's oriole <i>(Icterus bullockii)</i>	–	–	BCC	Breeding habitat includes riparian and oak woodlands. Nesting: March-July

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
Tricolored blackbird <i>(Agelaius tricolor)</i>	–	CT	BCC, SSC	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta counties south to San Bernardino, Riverside and San Diego counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields. (Beedy et al. 2020) Nesting: March-August
Saltmarsh common yellowthroat <i>(Geothlypis trichas sinuosa)</i>	–	–	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County. Nesting: March-July
Mammals				
Western red bat <i>(Lasiurus frantzii)</i>	–	–	SSC	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores). (Western Bat Working Group 2023) Survey Period: April-September
Salt-marsh harvest mouse <i>(Reithrodontomys raviventris)</i>	FE	CE	CFP	Saline emergent marsh. Survey Period: Any season

Table 5. Special-Status Species Documented in or Near the BSA

Common Name (Scientific Name)	Status			Habitat Description/Species Ecology ¹
	FESA	CESA/ NPPA	Other	
American badger <i>(Taxidea taxus)</i>	–	–	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Survey Period: Any season

Notes:

¹ Habitat descriptions for plant species are from the CNPS Rare Plant Inventory (CNPS 2023a), unless otherwise stated.² Species has at least one mapped CNDDDB occurrence within the BSA (CDFW 2023c).

Status Codes:

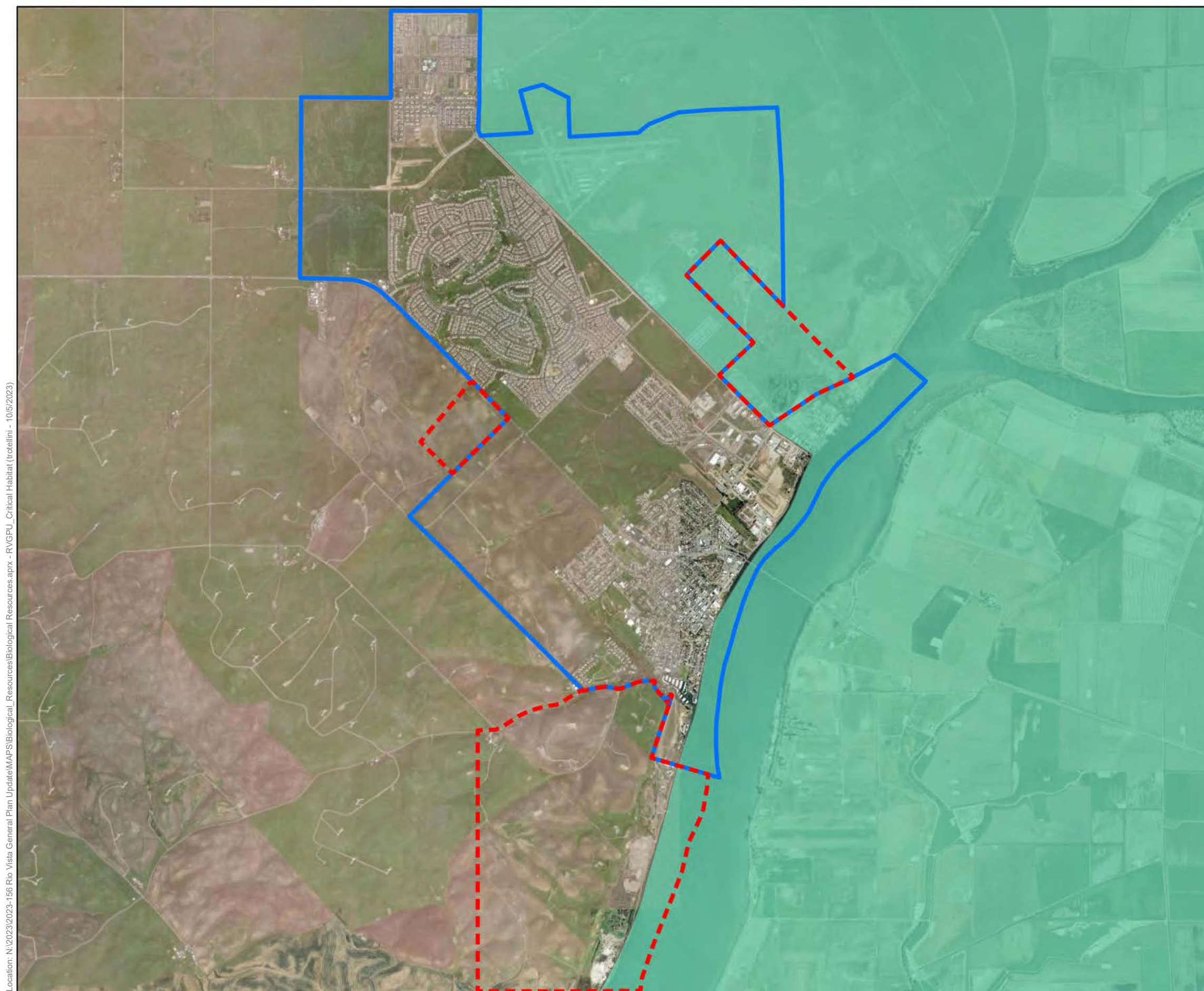
FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered
FT	FESA listed, Threatened
FC	Candidate for FESA listing as Threatened or Endangered
BCC	USFWS Bird of Conservation Concern (USFWS 2021)
CE	CESA- or NPPA-listed, Endangered.
CT	CESA- or NPPA-listed, Threatened.
CR	CESA- or NPPA-listed, Rare
CC	Candidate for CESA listing as Endangered or Threatened
CFP	California Fish and Game Code Fully Protected Species (Sections 3511-birds, 4700-mammals, and 5 050-reptiles/amphibians).
SSC	CDFW Species of Special Concern
WL	CDFW Watch List
1B	CRPR/Rare or Endangered in California and elsewhere.
2B	CRPR/Plants rare, threatened, or endangered in California but more common elsewhere.
3	CRPR/Plants About Which More Information is Needed – A Review List.
4	CRPR/Plants of Limited Distribution – A Watch List.
0.1	Threat Rank/Seriously threatened in California (more than 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Delisted	Formally Delisted

4.7 Critical Habitat or Essential Fish Habitat

The Delta within the BSA is designated Critical Habitat for delta smelt (Figure 6; USFWS 2023b).

Based on the literature review, anadromous fish Critical Habitat and EFH for Chinook salmon (Central Valley Spring Run, Sacramento River Winter Run), steelhead (Central Valley Distinct Population Segment [DPS]), and green sturgeon (southern DPS), may be present within the “Rio Vista, California” 7.5-minute quadrangle (NOAA 2016).

Location: N:\2023\2023-156 Rio Vista General Plan Update\MAPS\Biological Resources\aprx - RVGFPU_Critical Habitat (trdellin) - 10/5/2023



Map Contents

Biological Study Area

-  City of Rio Vista
-  City of Rio Vista Sphere of Influence

Critical Habitat

-  Delta smelt

Sources: ESRI, Maxar (2022), National Resources Conservation Service



The Sacramento River within the BSA contains EFH for groundfish, which refers to more than 90 different species of roundfish, flatfish, rockfish, sharks, and skates off the West Coast. All Chinook salmon habitat within the BSA is considered EFH for Chinook salmon (NOAA 2023b).

4.8 Wildlife Movement Corridors and Nursery Sites

The Sacramento River and Delta within the BSA provides an important migratory corridor for migratory birds of the Pacific Flyway and many fish species, including steelhead (CDFW 2023c). The remainder of the BSA is more limited in suitability for wildlife due to urban development or past and ongoing disturbance from intensive grazing and agricultural uses.

The Essential Connectivity Areas map identifies larger, relatively natural habitat blocks that support native biodiversity and areas essential for connectivity between them. The BSA does not fall within a natural habitat block (CDFW 2023d) or an Essential Habitat Connectivity area (CDFW 2023e). However, the BSA includes small natural areas that could support ecological value (CDFW 2023f) and movement corridors for native resident and migratory wildlife.

The Sacramento River within the BSA provides important spawning grounds for the bay-delta population of longfin smelt and delta smelt, rearing habitat for juvenile green sturgeons, and migration habitat for spawning green sturgeon (CDFW 2023c). Many other habitats within the BSA have potential to support nursery sites for common and special-status species.

5.0 REFERENCES

- Beedy, E. C., W. J. Hamilton, III, R. J. Meese, D. A. Airola, and P. Pyle. 2020. Tricolored Blackbird (*Agelaius tricolor*), version 1.0. In *Birds of the World* (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.tribla.01>.
- California Department of Fish and Wildlife (CDFW). 2023a. Biogeographic Information and Observation System. Vegetation - Delta Vegetation and Land Use Update - 2016 [ds2855]. Last updated December 18, 2019. Available online: <https://wildlife.ca.gov/data/BIOS>. Accessed September 2023.
- _____. 2023b. Biogeographic Information and Observation System. Vegetation - Great Valley Ecoregion [ds2632]. Last updated October 15, 2018. Available online: <https://wildlife.ca.gov/data/BIOS>. Accessed September 2023.
- _____. 2023c. RareFind 5. Online Version, commercial version dated: September 1, 2023. California Natural Diversity Database. The Resources Agency, Sacramento. Available online: <https://wildlife.ca.gov/data/BIOS>. Accessed September 19, 2023.
- _____. 2023d. Biogeographic Information and Observation System. Natural Landscape Blocks - California Essential Habitat Connectivity (CEHC) [ds621]. Publication date: 2017-09-13. Available online: <https://wildlife.ca.gov/data/BIOS>. Accessed September 2023.
- _____. 2023e. Biogeographic Information and Observation System. California Department of Fish and Wildlife (CDFW). 2023. Biogeographic Information and Observation System. Essential Connectivity Areas - California Essential Habitat Connectivity (CEHC) [ds620]. DS0620_20140109. Publication date: 2010-03-01. Available online: <https://wildlife.ca.gov/data/BIOS>. Accessed September 2023.
- _____. 2023f. Biogeographic Information and Observation System. Natural Areas Small - California Essential Habitat Connectivity (CEHC) [ds1073]. Publication date: 2010-03-01. Available online: <https://wildlife.ca.gov/data/BIOS>. Accessed September 2023.
- _____. 2022. California Natural Community List. Available online at: <https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities>.
- _____. 2019. VegCAMP. Vegetation – Delta Vegetation and Land Use Update – 2016 [ds2855]. Geographic Information Center, Chico Research Foundation. Last updated in BIOS: December 18, 2019. Available <https://map.dfg.ca.gov/metadata/ds2632.html>. Accessed September 2023.
- _____. 2018. VegCAMP. Vegetation – Great Valley Ecoregion [ds2632]. Geographic Information Center, Chico Research Foundation. Last updated in BIOS: October 15, 2018. Available <https://map.dfg.ca.gov/metadata/ds2632.html>. Accessed September 2023.
- California Native Plant Society (CNPS). 2023a. Rare Plant Inventory (online edition, v9.5). California Native Plant Society. Sacramento, CA. Available online: <http://www.rareplants.cnps.org/>. Accessed September 19, 2023.

- _____. 2023b. *A Manual of California Vegetation, Online Edition*. California Native Plant Society, Sacramento, CA. Available: <https://vegetation.cnps.org/>. Accessed September 2023.
- Delta Protection Commission. 2010. Land Use and Resource Management Plan for the Primary Zone of the Delta. Available: https://delta.ca.gov/wp-content/uploads/2019/12/Land-Use-and-Resource-Management-Plan-2.25.10_-m508.pdf.
- Horton, J. D. 2017. 0818, The State Geologic Map Compilation (SGMC) Geodatabase of the Conterminous United States: U.S. Geological Survey data release DOI: 10.5066/F7WH2N65, U.S. Geological Survey, Denver, CO. Available <https://doi.org/10.5066/F7WH2N65>.
- Hughes, J. M. 2020. Yellow-billed Cuckoo (*Coccyzus americanus*), version 1.0. In *Birds of the World* (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bow.yebcuc.01>.
- Jepson eFlora. 2023. Jepson Flora Project (eds.). Available: <https://ucjeps.berkeley.edu/eflora/>.
- Mayer, K.E., W.F. Laudenslayer, Jr. 1988. *A Guide to Wildlife Habitats in California*. California Statewide Habitat Relationships System, California Department of Fish and Game, Sacramento, California. Available <https://wildlife.ca.gov/Data/CWHR/Wildlife-Habitats>.
- National Oceanic and Atmospheric Administration (NOAA). 2023a. National Climatic Data Center 1991-2020 Climate Normals for Antioch Pumping Plt#3, CA US. Available online: <https://www.ncei.noaa.gov/maps/normals/>. Accessed September 28, 2023.
- _____. 2023b. NOAA Fisheries Species Directory. West Coast Groundfish. Last updated August 22, 2023. Last Updated March 10, 2021. Available <https://www.fisheries.noaa.gov/species/west-coast-groundfish>. Accessed October 4, 2023.
- _____. 2021. Essential Fish Habitat Mapper. Nationwide Data Set. Last Updated March 10, 2021. Available <https://www.habitat.noaa.gov/application/efhinventory/index.html>. Accessed October 4, 2023.
- _____. 2016. Intersection of USGS 7.5" Topographic Quadrangles with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data within California. National Marine Fisheries Service, West Coast Regions, California. Accessed September 2023.
- Natural Resources Conservation Service (NRCS). 2023. Web Soil Survey. Available online: <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Accessed April 2023.
- Natural Resources Conservation Service (NRCS), U.S. Geological Survey (USGS), and U.S. Environmental Protection Agency. 2016. Watershed Boundary Dataset for California. Available online: <http://datageteway.nrcs.usda.gov>.
- State of California. 2023. California Department of Water Resources. Open Data. I03 Delta PrimarySecondary Zones dataset. Last updated September 20, 2023. Available <https://sandbox.data.ca.gov/dataset/i03-delta-primarysecondary-zones>.

- Stebbins, R. C. and S. M. McGinnis. 2012. Field Guide to Amphibians and Reptiles of California (revised edition). University of California Press, Berkeley.
- U.S. Army Corps of Engineers (USACE). 2018. National Wetland Plant List, version 3.4. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. Available <http://wetland-plants.usace.army.mil/>.
- U.S. Department of Agriculture (USDA). 2015. Existing Vegetation – CALVEG. [ESRI personal geodatabase]. EvegTile03B_99_04_v2. McClellan, CA: United States Forest Service. Mid Region 5 Central Valley.
- U.S. Fish and Wildlife Service (USFWS). 2023a. USFWS Resource Report List. Information for Planning and Conservation. Available <https://ecos.fws.gov/ipac>. Accessed September 2023.
- _____. 2023b. Online Critical Habitat Mapper. Available <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>. Accessed September 2023.
- _____. 2021. Birds of Conservation Concern 2021. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. Arlington, Virginia. Available <https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>.
- _____. 2017. National Wetlands Inventory. Last modified October 1, 2020. Available online <https://fws.gov/wetlands/data/Mapper.html>.
- _____. 2005. Recovery plan for vernal pool ecosystems of California and Southern Oregon. Portland, OR. Dated December 15, 2005. http://ecos.fws.gov/docs/recovery_plan/060614.pdf.
- U.S. Geological Survey (USGS). 1978, photorevised 1993. "Rio Vista, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.
- Western Bat Working Group (WBWG). 2023. Western Bat Species Accounts. <http://wbwg.org/western-bat-species/>.

LIST OF APPENDICES

Appendix A – Results of Database Queries

Appendix B – Vegetation Communities and Land Cover Types (Sheets 1-5)



Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Isleton (3812125) OR Rio Vista (3812126) OR Liberty Island (3812136) OR Courtland (3812135) OR Bouldin Island (3812115) OR Jersey Island (3812116) OR Dozier (3812137) OR Antioch North (3812117) OR Birds Landing (3812127))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAA01181	<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	Threatened	Threatened	G2G3T3	S3	WL
ABNFD01020	<i>Nannopterum auritum</i> double-crested cormorant	None	None	G5	S4	WL
ABNGA04010	<i>Ardea herodias</i> great blue heron	None	None	G5	S4	
ABNGA04040	<i>Ardea alba</i> great egret	None	None	G5	S4	
ABNKC06010	<i>Elanus leucurus</i> white-tailed kite	None	None	G5	S3S4	FP
ABNKC19070	<i>Buteo swainsoni</i> Swainson's hawk	None	Threatened	G5	S4	
ABNKD06071	<i>Falco peregrinus anatum</i> American peregrine falcon	Delisted	Delisted	G4T4	S3S4	
ABNME03041	<i>Lateralus jamaicensis coturniculus</i> California black rail	None	Threatened	G3T1	S2	FP
ABNNB03100	<i>Charadrius montanus</i> mountain plover	None	None	G3	S2	SSC
ABNRB02022	<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	Threatened	Endangered	G5T2T3	S1	
ABNSB10010	<i>Athene cunicularia</i> burrowing owl	None	None	G4	S2	SSC
ABPAU08010	<i>Riparia riparia</i> bank swallow	None	Threatened	G5	S3	
ABPBX1201A	<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	None	None	G5T3	S3	SSC
ABPBXA0020	<i>Ammodramus savannarum</i> grasshopper sparrow	None	None	G5	S3	SSC
ABPBXA3013	<i>Melospiza melodia pop. 1</i> song sparrow ("Modesto" population)	None	None	G5T3?Q	S3?	SSC
ABPBXA301K	<i>Melospiza melodia maxillaris</i> Suisun song sparrow	None	None	G5T3	S2	SSC
ABPBXB0020	<i>Agelaius tricolor</i> tricolored blackbird	None	Threatened	G1G2	S2	SSC
AFCAA01031	<i>Acipenser medirostris pop. 1</i> green sturgeon - southern DPS	Threatened	None	G2T1	S1	
AFCHA0209K	<i>Oncorhynchus mykiss irideus pop. 11</i> steelhead - Central Valley DPS	Threatened	None	G5T2Q	S2	



Selected Elements by Element Code
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Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AFCHB01040	<i>Hypomesus transpacificus</i> Delta smelt	Threatened	Endangered	G1	S1	
AFCHB03010	<i>Spirinchus thaleichthys</i> longfin smelt	Candidate	Threatened	G5	S1	
AFCJB34020	<i>Pogonichthys macrolepidotus</i> Sacramento splittail	None	None	G3	S3	SSC
AFCQB07010	<i>Archoplites interruptus</i> Sacramento perch	None	None	G1	S1	SSC
AMACC05032	<i>Lasiurus cinereus</i> hoary bat	None	None	G3G4	S4	
AMACC05080	<i>Lasiurus frantzii</i> western red bat	None	None	G4	S3	SSC
AMAFF02040	<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	Endangered	Endangered	G1G2	S3	FP
AMAJF04010	<i>Taxidea taxus</i> American badger	None	None	G5	S3	SSC
ARAAD02030	<i>Emys marmorata</i> western pond turtle	None	None	G3G4	S3	SSC
ARACC01020	<i>Anniella pulchra</i> Northern California legless lizard	None	None	G3	S2S3	SSC
ARADB01017	<i>Arizona elegans occidentalis</i> California glossy snake	None	None	G5T2	S2	SSC
ARADB36150	<i>Thamnophis gigas</i> giant gartersnake	Threatened	Threatened	G2	S2	
CTT23100CA	<i>Stabilized Interior Dunes</i> Stabilized Interior Dunes	None	None	G1	S1.1	
CTT42110CA	<i>Valley Needlegrass Grassland</i> Valley Needlegrass Grassland	None	None	G3	S3.1	
CTT44120CA	<i>Northern Claypan Vernal Pool</i> Northern Claypan Vernal Pool	None	None	G1	S1.1	
CTT52200CA	<i>Coastal Brackish Marsh</i> Coastal Brackish Marsh	None	None	G2	S2.1	
CTT52410CA	<i>Coastal and Valley Freshwater Marsh</i> Coastal and Valley Freshwater Marsh	None	None	G3	S2.1	
ICBRA03010	<i>Branchinecta conservatio</i> Conservancy fairy shrimp	Endangered	None	G2	S2	
ICBRA03030	<i>Branchinecta lynchi</i> vernal pool fairy shrimp	Threatened	None	G3	S3	
ICBRA03150	<i>Branchinecta mesovallensis</i> midvalley fairy shrimp	None	None	G2	S2S3	
ICBRA06010	<i>Linderiella occidentalis</i> California linderiella	None	None	G2G3	S2S3	



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ICBRA10010	<i>Lepidurus packardii</i> vernal pool tadpole shrimp	Endangered	None	G3	S3	
IICOL36010	<i>Elaphrus viridis</i> Delta green ground beetle	Threatened	None	G1	S1	
IICOL38030	<i>Hygrotus curvipes</i> curved-foot hygrotus diving beetle	None	None	G2	S2	
IICOL49010	<i>Anthicus sacramento</i> Sacramento anthicid beetle	None	None	G4	S4	
IICOL49020	<i>Anthicus antiochensis</i> Antioch Dunes anthicid beetle	None	None	G3	S3	
IICOL4A020	<i>Coelus gracilis</i> San Joaquin dune beetle	None	None	G1	S1	
IICOL5V010	<i>Hydrochara rickseckeri</i> Ricksecker's water scavenger beetle	None	None	G2?	S2?	
IIDIP05010	<i>Rhaphiomidas trochilus</i> San Joaquin Valley giant flower-loving fly	None	None	G1	S1	
IIDIP06010	<i>Cophura hurdi</i> Antioch cophuran robberfly	None	None	GX	SX	
IIDIP07010	<i>Efferia antiochi</i> Antioch efferian robberfly	None	None	G1G2	S1S2	
IIDIP08010	<i>Metapogon hurdi</i> Hurd's metapogon robberfly	None	None	G1G2	S1S2	
IIHYM01021	<i>Perdita hirticeps luteocincta</i> yellow-banded andrenid bee	None	None	GNRTX	SX	
IIHYM01031	<i>Perdita scitula antiochensis</i> Antioch andrenid bee	None	None	G1T1	S2	
IIHYM15010	<i>Myrmosula pacifica</i> Antioch multilid wasp	None	None	GH	SH	
IIHYM18010	<i>Eucerceris ruficeps</i> redheaded sphecid wasp	None	None	G1G3	S2	
IIHYM20010	<i>Philanthus nasalis</i> Antioch specid wasp	None	None	G2	S2	
IIHYM24252	<i>Bombus occidentalis</i> western bumble bee	None	Candidate Endangered	G3	S1	
IIHYM24260	<i>Bombus pensylvanicus</i> American bumble bee	None	None	G3G4	S2	
IIHYM24480	<i>Bombus crotchii</i> Crotch bumble bee	None	Candidate Endangered	G2	S2	
IIHYM35030	<i>Andrena blennospermatis</i> Blennosperma vernal pool andrenid bee	None	None	G2	S1	
IIHYM78010	<i>Sphecodogastra antiochensis</i> Antioch Dunes halcitid bee	None	None	G1	S1	



Selected Elements by Element Code

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Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
IILEPH7012	<i>Apodemia mormo langei</i> Lange's metalmark butterfly	Endangered	None	G5T1	S1	
IIORT31010	<i>Idiostatus middlekauffi</i> Middlekauff's shieldback katydid	None	None	G1G2	S1	
IMBIV19010	<i>Gonidea angulata</i> western ridged mussel	None	None	G3	S2	
PDAP10M051	<i>Cicuta maculata var. bolanderi</i> Bolander's water-hemlock	None	None	G5T4T5	S2?	2B.1
PDAP119030	<i>Lilaeopsis masonii</i> Mason's lilaeopsis	None	Rare	G2	S2	1B.1
PDAST1C011	<i>Blepharizonia plumosa</i> big tarplant	None	None	G1G2	S1S2	1B.1
PDAST4R0P2	<i>Centromadia parryi ssp. parryi</i> pappose tarplant	None	None	G3T2	S2	1B.2
PDAST57050	<i>Isocoma arguta</i> Carquinez goldenbush	None	None	G1	S1	1B.1
PDAST5L030	<i>Lasthenia chrysantha</i> alkali-sink goldfields	None	None	G2	S2	1B.1
PDAST5L040	<i>Lasthenia conjugens</i> Contra Costa goldfields	Endangered	None	G1	S1	1B.1
PDAST5L0A1	<i>Lasthenia glabrata ssp. coulteri</i> Coulter's goldfields	None	None	G4T2	S2	1B.1
PDASTE8470	<i>Symphyotrichum lentum</i> Suisun Marsh aster	None	None	G2	S2	1B.2
PDBOR0A190	<i>Cryptantha hooveri</i> Hoover's cryptantha	None	None	GH	SH	1A
PDBOR0V0H0	<i>Plagiobothrys hystriculus</i> bearded popcornflower	None	None	G2	S2	1B.1
PDBRA16052	<i>Erysimum capitatum var. angustatum</i> Contra Costa wallflower	Endangered	Endangered	G5T1	S1	1B.1
PDBRA1M0K1	<i>Lepidium latipes var. heckardii</i> Heckard's pepper-grass	None	None	G4T1	S1	1B.2
PDCAB01010	<i>Brasenia schreberi</i> watershield	None	None	G5	S3	2B.3
PDCAM060C0	<i>Downingia pusilla</i> dwarf downingia	None	None	GU	S2	2B.2
PDCAM0C010	<i>Legenere limosa</i> legenere	None	None	G2	S2	1B.1
PDCHE040B0	<i>Atriplex cordulata var. cordulata</i> heartscale	None	None	G3T2	S2	1B.2
PDCHE041F3	<i>Extriplex joaquinana</i> San Joaquin spearscale	None	None	G2	S2	1B.2



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Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDCHE042L0	<i>Atriplex depressa</i> brittlescale	None	None	G2	S2	1B.2
PDCHE042P0	<i>Atriplex persistens</i> vernal pool smallscale	None	None	G2	S2	1B.2
PDFAB0F8R1	<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	None	None	G2T1	S1	1B.2
PDFAB0F8R3	<i>Astragalus tener</i> var. <i>ferrisiae</i> Ferris' milk-vetch	None	None	G2T1	S1	1B.1
PDFAB250D2	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tule pea	None	None	G5T2	S2	1B.2
PDFAB400R5	<i>Trifolium hydrophilum</i> saline clover	None	None	G2	S2	1B.2
PDLAM1U0J0	<i>Scutellaria galericulata</i> marsh skullcap	None	None	G5	S2	2B.2
PDLAM1U0Q0	<i>Scutellaria lateriflora</i> side-flowering skullcap	None	None	G5	S2	2B.2
PDMAL0H0R3	<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> woolly rose-mallow	None	None	G5T3	S3	1B.2
PDMAL110D0	<i>Sidalcea keckii</i> Keck's checkerbloom	Endangered	None	G2	S2	1B.1
PDONA0C0B4	<i>Oenothera deltoides</i> ssp. <i>howellii</i> Antioch Dunes evening-primrose	Endangered	Endangered	G5T1	S1	1B.1
PDPAP0A0D0	<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	None	None	G1	S1	1B.1
PDPGN0849Q	<i>Eriogonum nudum</i> var. <i>psychicola</i> Antioch Dunes buckwheat	None	None	G5T1	S1	1B.1
PDPGN085Z0	<i>Eriogonum truncatum</i> Mt. Diablo buckwheat	None	None	G1	S1	1B.1
PDPLM0C0E1	<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	None	None	G4T2	S2	1B.1
PDSCR0J0D2	<i>Chloropyron molle</i> ssp. <i>molle</i> soft salty bird's-beak	Endangered	Rare	G2T1	S1	1B.2
PDSCR0R060	<i>Gratiola heterosepala</i> Boggs Lake hedge-hyssop	None	Endangered	G2	S2	1B.2
PDSCR10030	<i>Limosella australis</i> Delta mudwort	None	None	G4G5	S2	2B.1
PMALI040Q0	<i>Sagittaria sanfordii</i> Sanford's arrowhead	None	None	G3	S3	1B.2
PMCYP032Y0	<i>Carex comosa</i> bristly sedge	None	None	G5	S2	2B.1
PMLIL0V0C0	<i>Fritillaria liliacea</i> fragrant fritillary	None	None	G2	S2	1B.2



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PMPOA4C010	<i>Neostapfia colusana</i> Colusa grass	Threatened	Endangered	G1	S1	1B.1
PMPOA53110	<i>Puccinellia simplex</i> California alkali grass	None	None	G2	S2	1B.2
PMPOA6N020	<i>Tuctoria mucronata</i> Crampton's tuctoria or Solano grass	Endangered	Endangered	G1	S1	1B.1
PMPOT03160	<i>Potamogeton zosteriformis</i> eel-grass pondweed	None	None	G5	S3	2B.2

Record Count: 107



Search Results

52 matches found. Click on scientific name for details

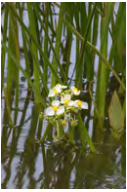
Search Criteria: 9-Quad include [3812125:3812126:3812136:3812135:3812115:3812116:3812137:3812117:3812127]

CA RARE												
▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	None	None	G2T1	S1	1B.1	Yes	1994-01-01	No Photo Available
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex coronata var. coronata	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	Yes	1994-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	 © 2009 Zoya Akulova
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	Jul-Oct	None	None	G1G2	S1S2	1B.1	Yes	1994-01-01	No Photo Available
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	G5	S3	2B.3		2010-10-27	 ©2014 Kirsten Bovee

<u>Carex comosa</u>	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	None	None	G5	S2	2B.1			1994-01-01	 Dean Wm. Taylor 1997
<u>Centromadia parryi ssp. parryi</u>	pappose tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.2	Yes		2004-01-01	 © 2016 John Doyen
<u>Centromadia parryi ssp. rudis</u>	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	Yes		2007-05-22	 © 2019 John Doyen
<u>Chloropyron molle ssp. molle</u>	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	1B.2	Yes		1974-01-01	No Photo Available
<u>Cicuta maculata var. bolanderi</u>	Bolander's water-hemlock	Apiaceae	perennial herb	Jul-Sep	None	None	G5T4T5	S2?	2B.1			1974-01-01	 © 2007 Doreen L Smith
<u>Convolvulus simulans</u>	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2			1994-01-01	No Photo Available
<u>Cryptantha hooveri</u>	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	Yes		1974-01-01	No Photo Available
<u>Downingia pusilla</u>	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2			1980-01-01	 © 2013 Aaron Arthur
<u>Eleocharis parvula</u>	small spikerush	Cyperaceae	perennial herb	(Apr)Jun-Aug(Sep)	None	None	G5	S3	4.3			1980-01-01	 ©2018 Ron Vanderhoff
<u>Eriogonum nudum var. psychicola</u>	Antioch Dunes buckwheat	Polygonaceae	perennial herb	Jul-Oct	None	None	G5T1	S1	1B.1	Yes		2010-06-21	No Photo Available
<u>Eriogonum truncatum</u>	Mt. Diablo buckwheat	Polygonaceae	annual herb	Apr-Sep(Nov-Dec)	None	None	G1	S1	1B.1	Yes		1974-01-01	No Photo Available
<u>Erysimum capitatum var. angustatum</u>	Contra Costa wallflower	Brassicaceae	perennial herb	Mar-Jul	FE	CE	G5T1	S1	1B.1	Yes		1974-01-01	No Photo Available

<i>Eschscholzia rhombipetala</i>	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
<i>Extriplex joaquinana</i>	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
<i>Fritillaria agrestis</i>	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	 © 2016 Aaron Schusteff
<i>Fritillaria liliacea</i>	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2004 Carol W. Witham
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	 ©2004 Carol W. Witham
<i>Hesperevax caulescens</i>	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2017 John Doyen
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	Yes	1974-01-01	 © 2020 Steven Perry
<i>Isocoma arguta</i>	Carquinez goldenbush	Asteraceae	perennial shrub	Aug-Dec	None	None	G1	S1	1B.1	Yes	1994-01-01	No Photo Available
<i>Lasthenia chrysantha</i>	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	Yes	2019-09-30	 © 2009 California State University, Stanislaus
<i>Lasthenia conjugens</i>	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	FE	None	G1	S1	1B.1	Yes	1974-01-01	 © 2013 Neal Kramer
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1		1994-01-01	 © 2013 Keir Morse

<u>Lathyrus jepsonii</u> <u>var. jepsonii</u>	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	None	None	G5T2	S2	1B.2	Yes	1974-01-01	 © 2003 Mark Fogiel
<u>Legenere limosa</u>	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 ©2000 John Game
<u>Lepidium latipes</u> <u>var. heckardii</u>	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G4T1	S1	1B.2	Yes	1994-01-01	 2018 Jennifer Buck
<u>Lilaeopsis masonii</u>	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	None	CR	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
<u>Limosella australis</u>	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S2	2B.1		1994-01-01	 © 2020 Richard Sage
<u>Lupinus albifrons</u> <u>var. abramsii</u>	Abrams' lupine	Fabaceae	perennial herb	Apr-Jun	None	None	G5T3? Q	S3?	3.2	Yes	1974-01-01	No Photo Available
<u>Myosurus minimus</u> ssp. <u>apus</u>	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980-01-01	No Photo Available
<u>Navarretia leucocephala</u> ssp. <u>bakeri</u>	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G4T2	S2	1B.1	Yes	1994-01-01	 © 2018 Barry Rice
<u>Neostapfia colusana</u>	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
<u>Oenothera deltoides</u> ssp. <u>howellii</u>	Antioch Dunes evening-primrose	Onagraceae	perennial herb	Mar-Sep	FE	CE	G5T1	S1	1B.1	Yes	1974-01-01	No Photo Available
<u>Plagiobothrys hystriculus</u>	bearded popcornflower	Boraginaceae	annual herb	Apr-May	None	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
<u>Potamogeton zosteriformis</u>	eel-grass pondweed	Potamogetonaceae	annual herb (aquatic)	Jun-Jul	None	None	G5	S3	2B.2		1994-01-01	No Photo Available
<u>Puccinellia simplex</u>	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available

<u>Sagittaria sanfordii</u>	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	 ©2013 Debra L. Cook
<u>Scutellaria galericulata</u>	marsh skullcap	Lamiaceae	perennial rhizomatous herb	Jun-Sep	None	None	G5	S2	2B.2		1994-01-01	 © 2021 Scot Loring
<u>Scutellaria lateriflora</u>	side-flowering skullcap	Lamiaceae	perennial rhizomatous herb	Jul-Sep	None	None	G5	S2	2B.2		1994-01-01	No Photo Available
<u>Senecio hydrophiloides</u>	sweet marsh ragwort	Asteraceae	perennial herb	May-Aug	None	None	G5	S3	4.2		1984-01-01	 © 2021 Scot Loring
<u>Sidalcea keckii</u>	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
<u>Symphyotrichum lentum</u>	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
<u>Trifolium hydrophilum</u>	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	2001-01-01	 © 2005 Dean Wm Taylor
<u>Tuctoria mucronata</u>	Crampton's tuctoria or Solano grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available

Showing 1 to 52 of 52 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website <https://www.rareplants.cnps.org> [accessed 19 September 2023].

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sacramento and Solano counties, California



Local offices

San Francisco Bay-Delta Fish And Wildlife

☎ (916) 930-5603

📅 (916) 930-5654

650 Capitol Mall

USFWS Sacramento

Suite 8-300

Sacramento, CA 95814

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📅 (916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

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1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. [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.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
California Clapper Rail <i>Rallus longirostris obsoletus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4240	Endangered

Reptiles

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

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
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Delta Smelt *Hypomesus transpacificus*

Threatened

Wherever found

There is **final** critical habitat for this species. Your location overlaps the critical habitat.

<https://ecos.fws.gov/ecp/species/321>

Longfin Smelt *Spirinchus thaleichthys*

Proposed Endangered

No critical habitat has been designated for this species.

Insects

NAME

STATUS

Delta Green Ground Beetle *Elaphrus viridis*

Threatened

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/2319>

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

Valley Elderberry Longhorn Beetle *Desmocerus*

Threatened

californicus dimorphus

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/7850>

Crustaceans

NAME

STATUS

Conservancy Fairy Shrimp *Branchinecta conservatio*

Endangered

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/8246>

Vernal Pool Fairy Shrimp *Branchinecta lynchi***Threatened**

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/498>

Vernal Pool Tadpole Shrimp *Lepidurus packardii***Endangered**

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/2246>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Delta Smelt <i>Hypomesus transpacificus</i> https://ecos.fws.gov/ecp/species/321#crithab	Final

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of

presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

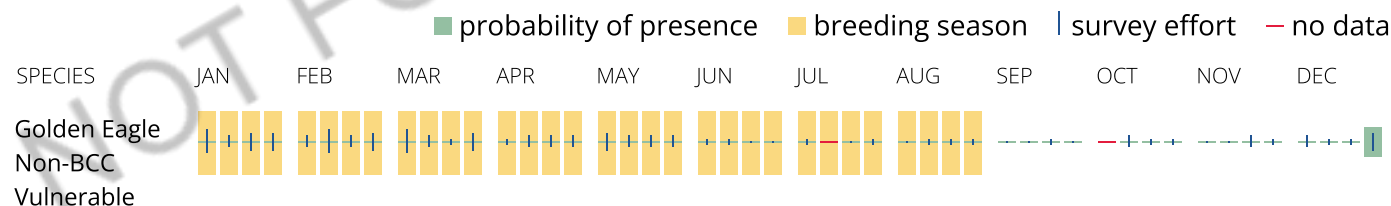
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how

this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Belding's Savannah Sparrow <i>Passerculus sandwichensis beldingi</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole <i>Icterus bullockii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat <i>Geothlypis trichas sinuosa</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

Golden Eagle *Aquila chrysaetos*

Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Nuttall's Woodpecker *Picoides nuttallii*

Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9410>

Short-billed Dowitcher *Limnodromus griseus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Tricolored Blackbird *Agelaius tricolor*

Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3910>

Western Grebe *aechmophorus occidentalis*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6743>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

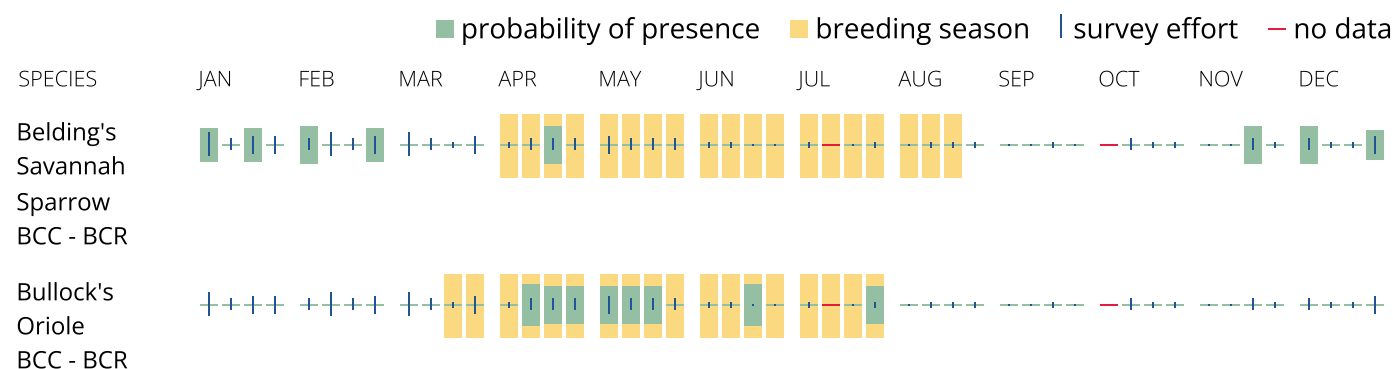
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

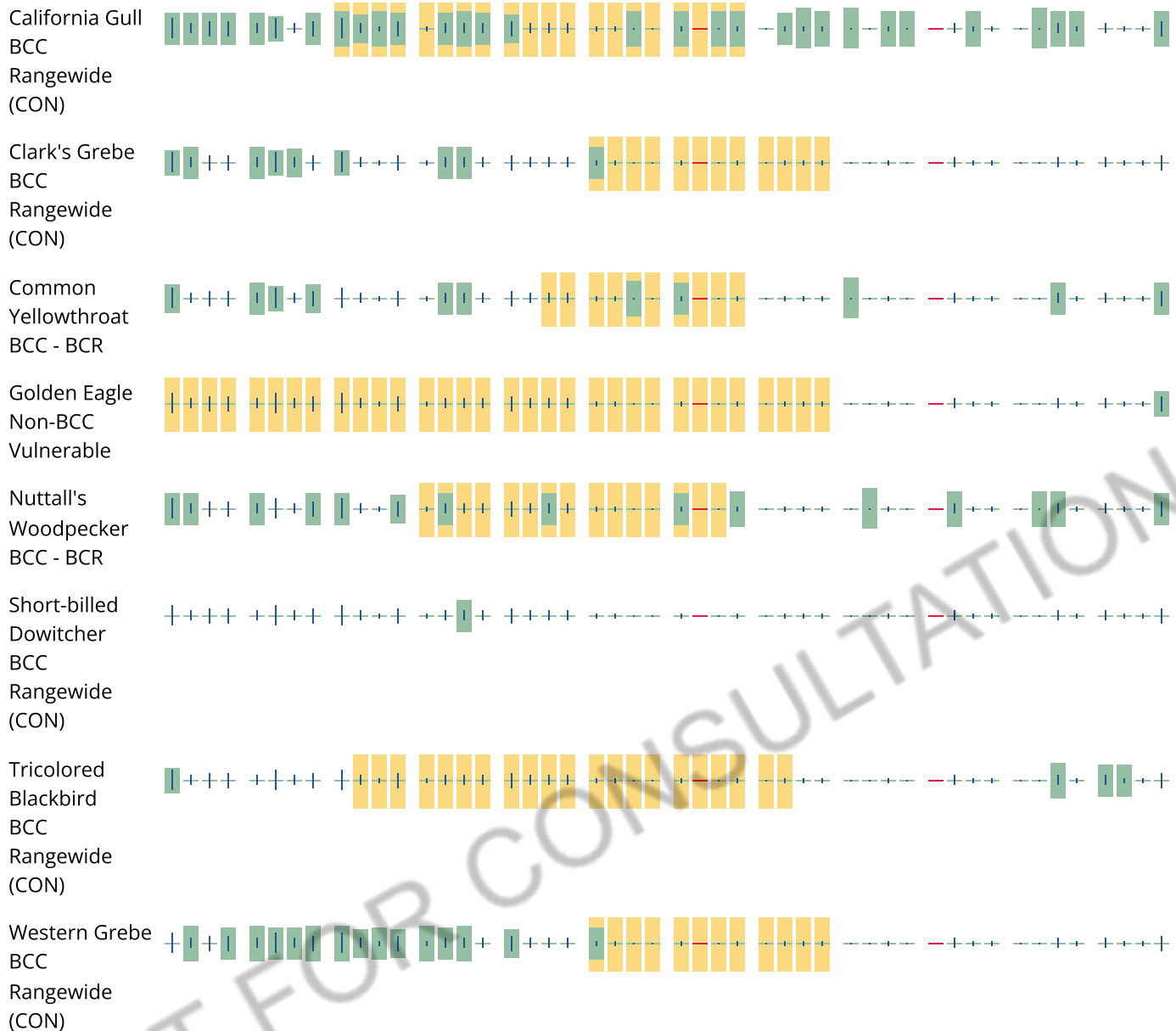
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1A](#)

[PEM1C](#)

[PEM1F](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PSSC](#)

[PSSR](#)

FRESHWATER POND

[PUBFx](#)

[PUSC](#)

[PUBF](#)

LAKE

[L2UBFh](#)

OTHER

[Pf](#)

RIVERINE

[R1UBV](#)[R4SBC](#)[R1UBVx](#)[R2UBHx](#)[R4SBCx](#)[R4SBA](#)[R5UBFx](#)[R5UBF](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local

government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

National Marine Fisheries Service – West Coast Region – California

December 2016 (Accessed September 19, 2023)

Intersection of USGS 7.5" Quadrangles with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data within California

An "X" following a listed feature indicates it may be present. Identified resources may be present throughout the entire quadrangle or only a portion of it.

Quad Name **Rio Vista**

Quad Number **38121-B6**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) -

CC Chinook Salmon ESU (T) -

CVSR Chinook Salmon ESU (T) - **X**

SRWR Chinook Salmon ESU (E) - **X**

NC Steelhead DPS (T) -

CCC Steelhead DPS (T) -

SCCC Steelhead DPS (T) -

SC Steelhead DPS (E) -

CCV Steelhead DPS (T) - **X**

Eulachon (T) -

sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat -

CC Chinook Salmon Critical Habitat -

CVSR Chinook Salmon Critical Habitat - **X**

SRWR Chinook Salmon Critical Habitat - **X**

NC Steelhead Critical Habitat -

CCC Steelhead Critical Habitat -

SCCC Steelhead Critical Habitat -

SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat - **X**

Eulachon Critical Habitat -

sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH - **X**
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

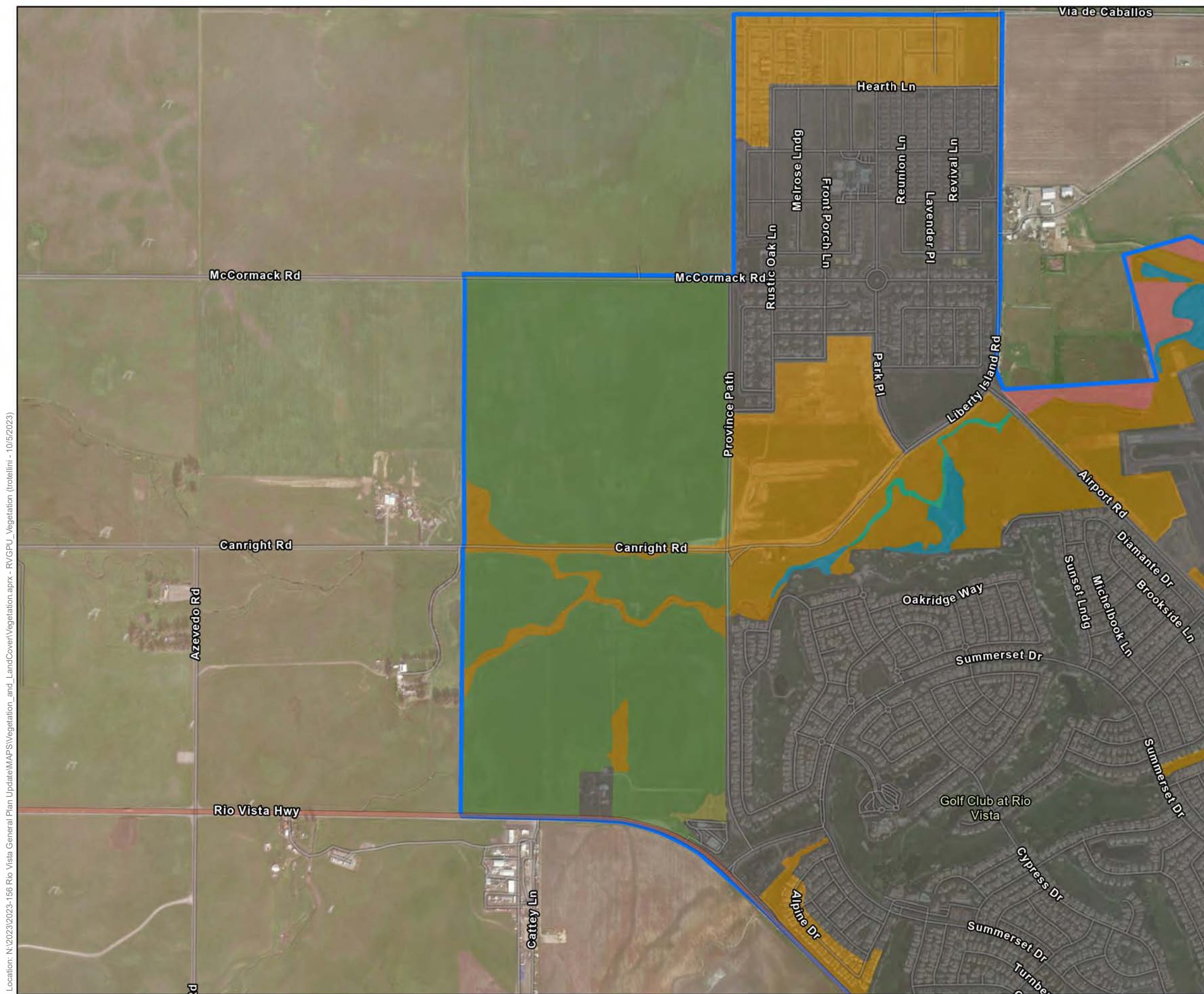
ESA and MMPA Cetaceans/Pinnipeds

**See list at left and consult the NMFS Long Beach office
562-980-4000**

MMPA Cetaceans -
MMPA Pinnipeds -

APPENDIX B

Vegetation Communities and Land Cover Types (Sheets 1-5)



Map Contents

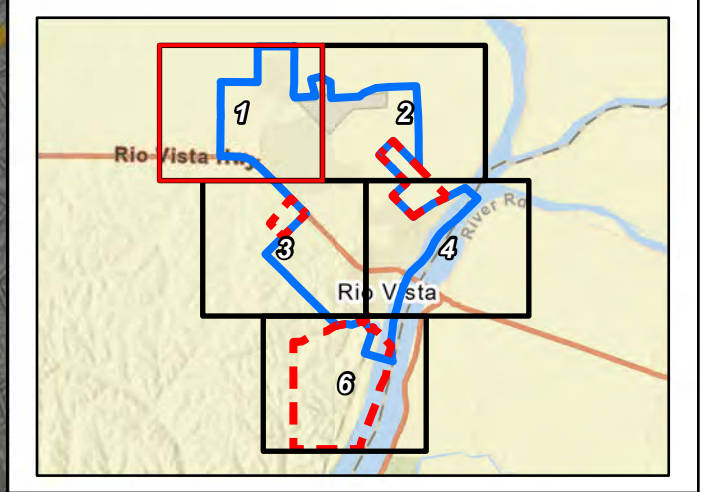
Biological Study Area

City of Rio Vista

Vegetation Communities and Land Cover Types

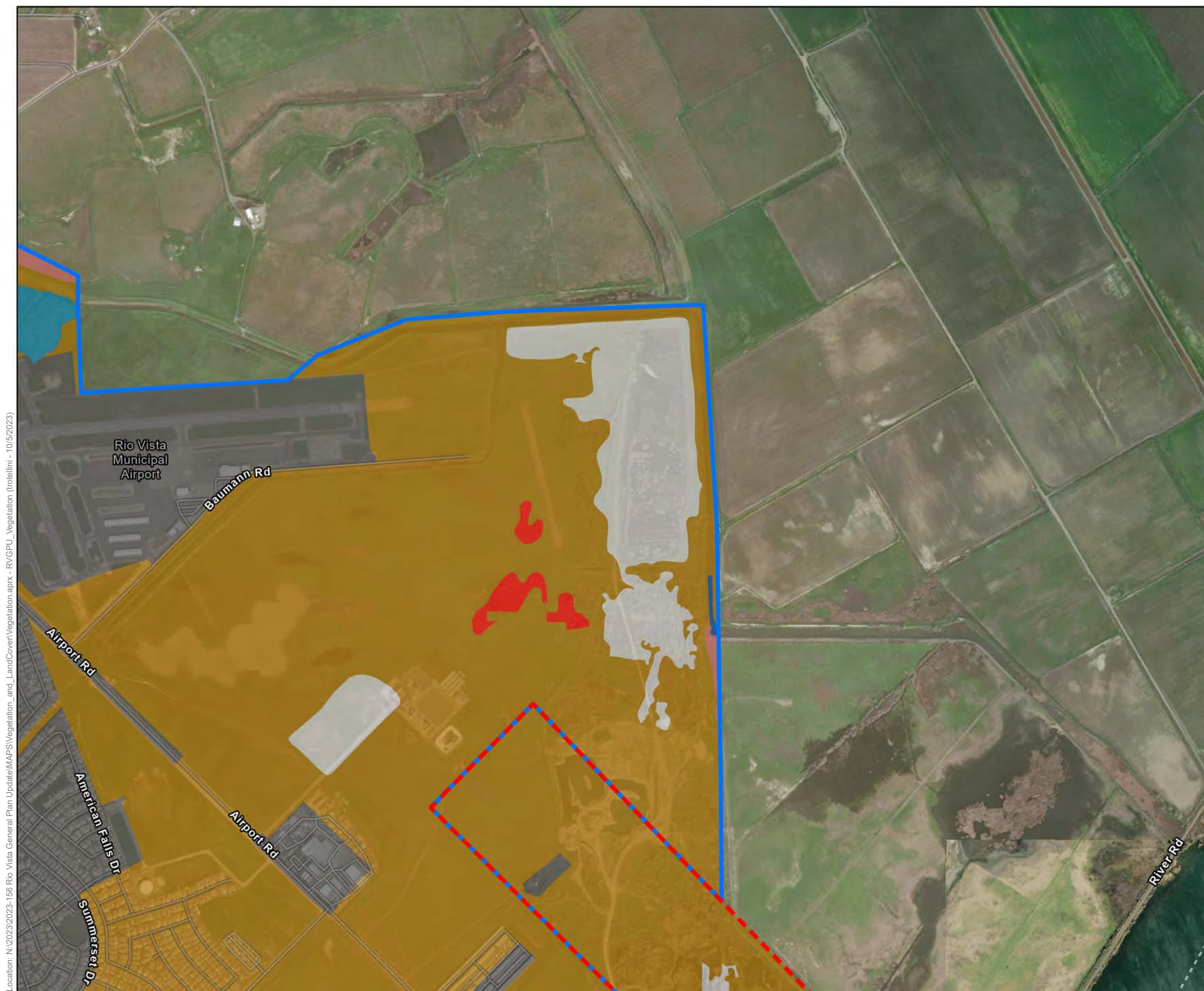
- Annual Grassland
- Cropland
- Deciduous Orchard, Evergreen Orchard, Vineyard, Irrigated Row and Field Crops
- Eucalyptus
- Fresh Emergent Wetland
- Fresh Emergent Wetland, Urban
- Urban

Sources: ESRI, Maxar (2022), VegCamp, CDFW



Location: N:\2023\2023-156 Rio Vista General Plan Update\MAPS\Vegetation_and_LandCover\Vegetation.aprx - RV\GPU_Vegetation (trotellini - 10/5/2023)





Map Contents

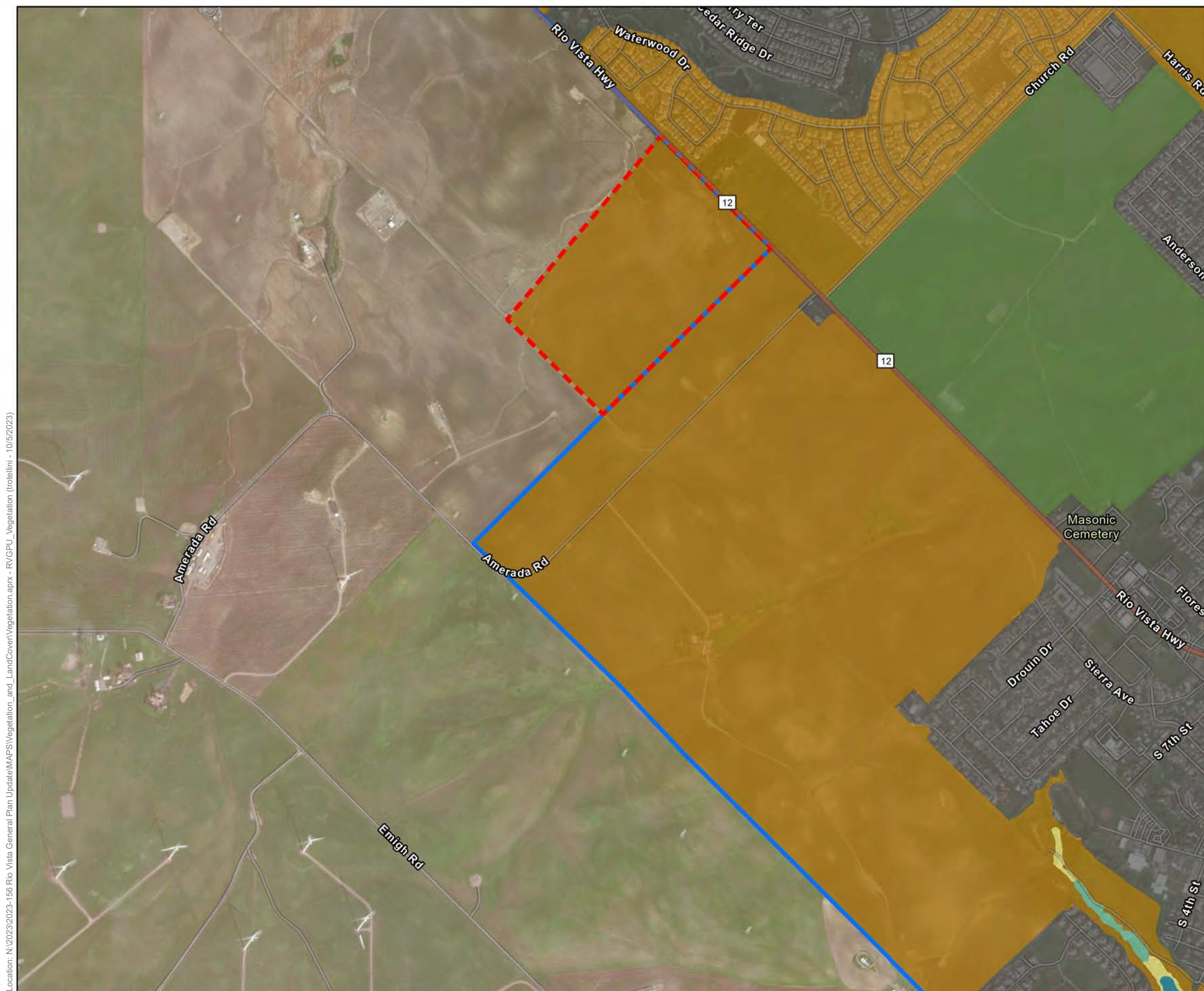
Biological Study Area

- City of Rio Vista
- City of Rio Vista Sphere of Influence

Vegetation Communities and Land Cover Types

- Annual Grassland
- Barren
- Cropland
- Fresh Emergent Wetland
- Pasture
- Riverine
- Urban

Sources: ESRI, Maxar (2022), VegCamp, CDFW



Map Contents

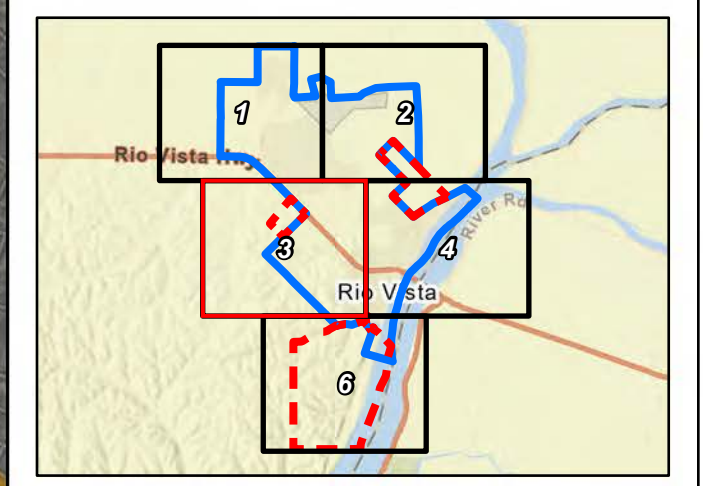
Biological Study Area

- City of Rio Vista
- City of Rio Vista Sphere of Influence

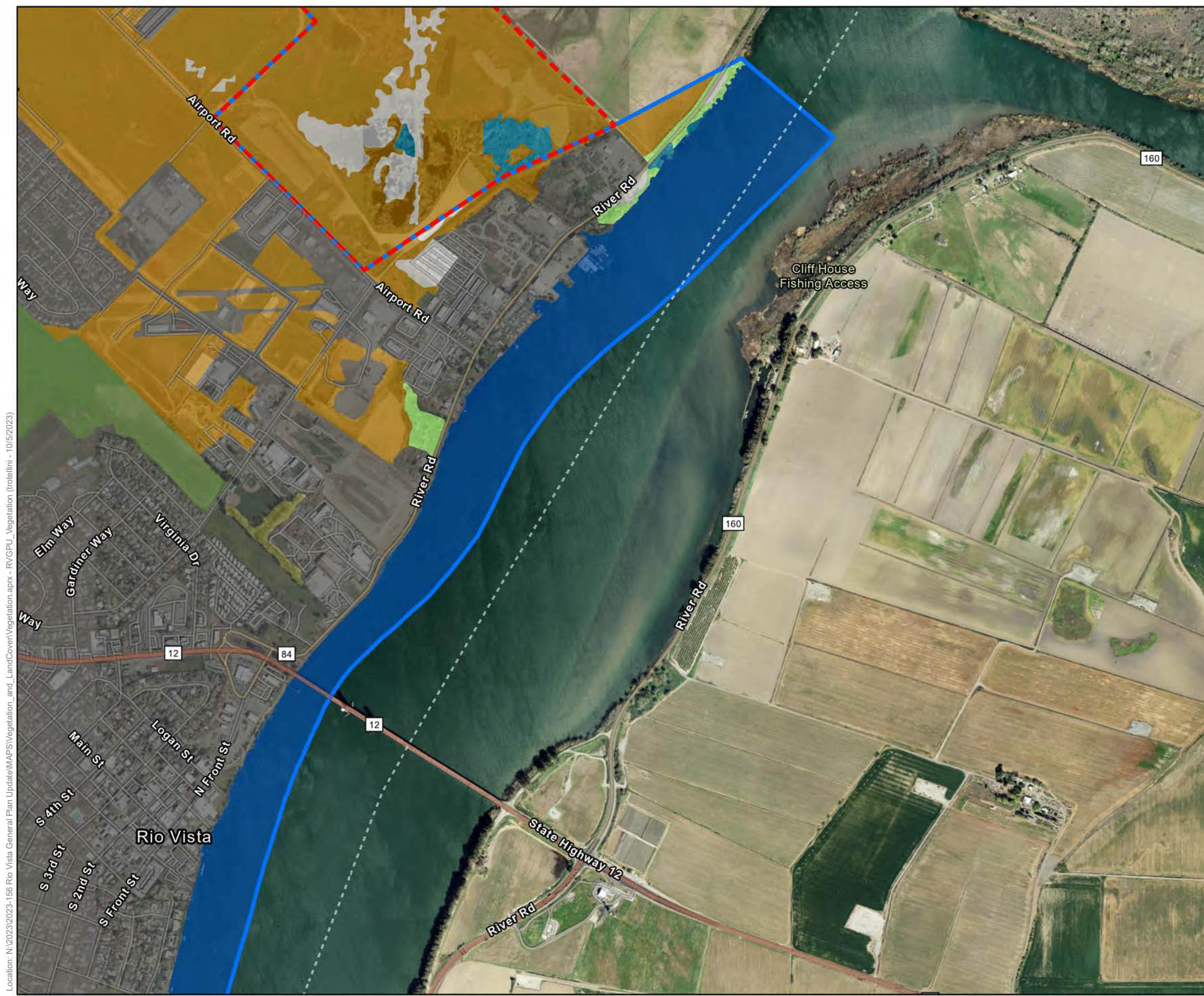
Vegetation Communities and Land Cover Types

- Annual Grassland
- Coastal Scrub, Valley Foothill Riparian
- Deciduous Orchard, Evergreen Orchard, Vineyard, Irrigated Row and Field Crops
- Fresh Emergent Wetland
- Urban
- Valley Foothill Riparian, Desert Riparian

Sources: ESRI, Maxar (2022), VegCamp, CDFW



Location: N:\2023\2023-156 Rio Vista General Plan Update\MAPS\Vegetation_and_LandCover\Vegetation.aprx - RV\GPU_Vegetation (trotellini - 10/5/2023)



Map Contents

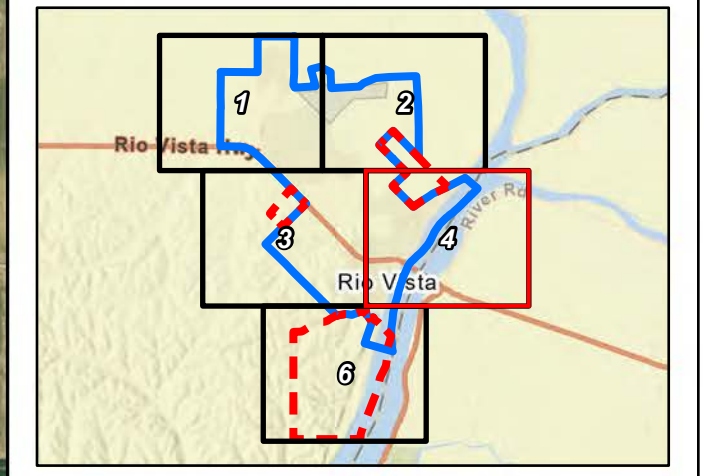
Biological Study Area

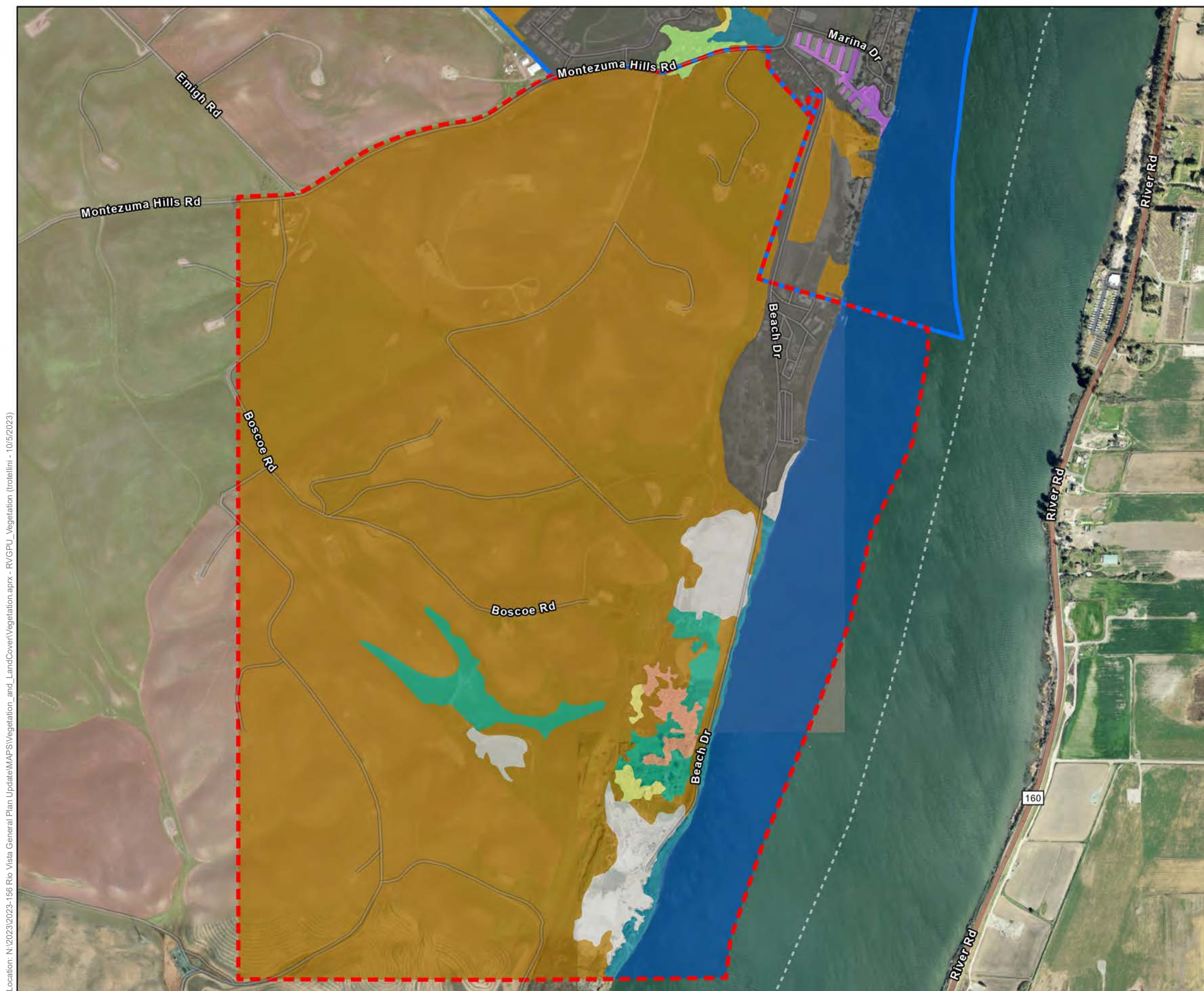
- City of Rio Vista
- City of Rio Vista Sphere of Influence

Vegetation Communities and Land Cover Types

- Annual Grassland
- Barren
- Deciduous Orchard, Evergreen Orchard, Vineyard, Irrigated Row and Field Crops
- Eucalyptus
- Fresh Emergent Wetland
- Riverine
- Urban
- Valley Foothill Riparian

Sources: ESRI, Maxar (2022), VegCamp, CDFW





Map Contents
Biological Study Area

City of Rio Vista
 City of Rio Vista Sphere of Influence

Vegetation Communities and Land Cover Types

Annual Grassland
 Barren
 Fresh Emergent Wetland
 Fresh Emergent Wetland, Urban
 Lacustrine, Riverine
 Riverine
 Urban
 Valley Foothill Riparian
 Valley Foothill Riparian, Desert Riparian
 Valley Foothill Riparian, Montane Riparian

Sources: ESRI, Maxar (2022), VegCamp, CDFW