BIOLOGICAL RESOURCES EVALUATION

RIO VISTA WELL DEVELOPMENT PROJECT

RIO VISTA, SOLANO COUNTY, CALIFORNIA

Submitted to:

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Introduction

MESA Biological LLC (MESA) has conducted this Biological Resources Evaluation for California Resources Corporation (CRC) to support compliance with the California Environmental Quality Act (CEQA) for the Rio Vista Well Development Project. The purpose of this evaluation is to assess potential impacts on special-status biological resources associated with the project area. The evaluation specifically focuses on identifying and analyzing the potential presence of special-status species and sensitive habitats within the project area and its surrounding vicinity. Special-status species include plants and animals that are legally protected under federal, state, or local laws and regulations, as well as those considered rare, threatened, or endangered by recognized scientific organizations and resource agencies. This report encompasses species listed under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and species identified as sensitive by the California Department of Fish and Wildlife (CDFW) and other conservation bodies.

This evaluation evaluates habitat conditions for special-status plant and wildlife species documented in the region, as well as aquatic resources such as wetlands and waterways present. It also examines vegetation types, habitat conditions, and historical disturbances that could affect the occurrence of biological resources. Key components include a database review, field surveys to identify potential habitats for special-status species, and an evaluation of the presence of wetlands, riparian corridors, and other aquatic features. The evaluation also considers impacts from previous land use and identifies potential environmental constraints. Findings provide CRC with information to support development strategies that minimize and mitigate impacts on sensitive biological resources. Recommendations for conservation and mitigation measures are included to protect and manage identified resources. For clarity throughout the evaluation, the "project area" refers to the Rio Vista Well Development Project and associated pipeline routings and access roads. Individual drilling pads are referenced below by their respective County and associated island names where applicable as listed in **Table 1**. The table also outlines the proposed footprint acreage for each well pad.

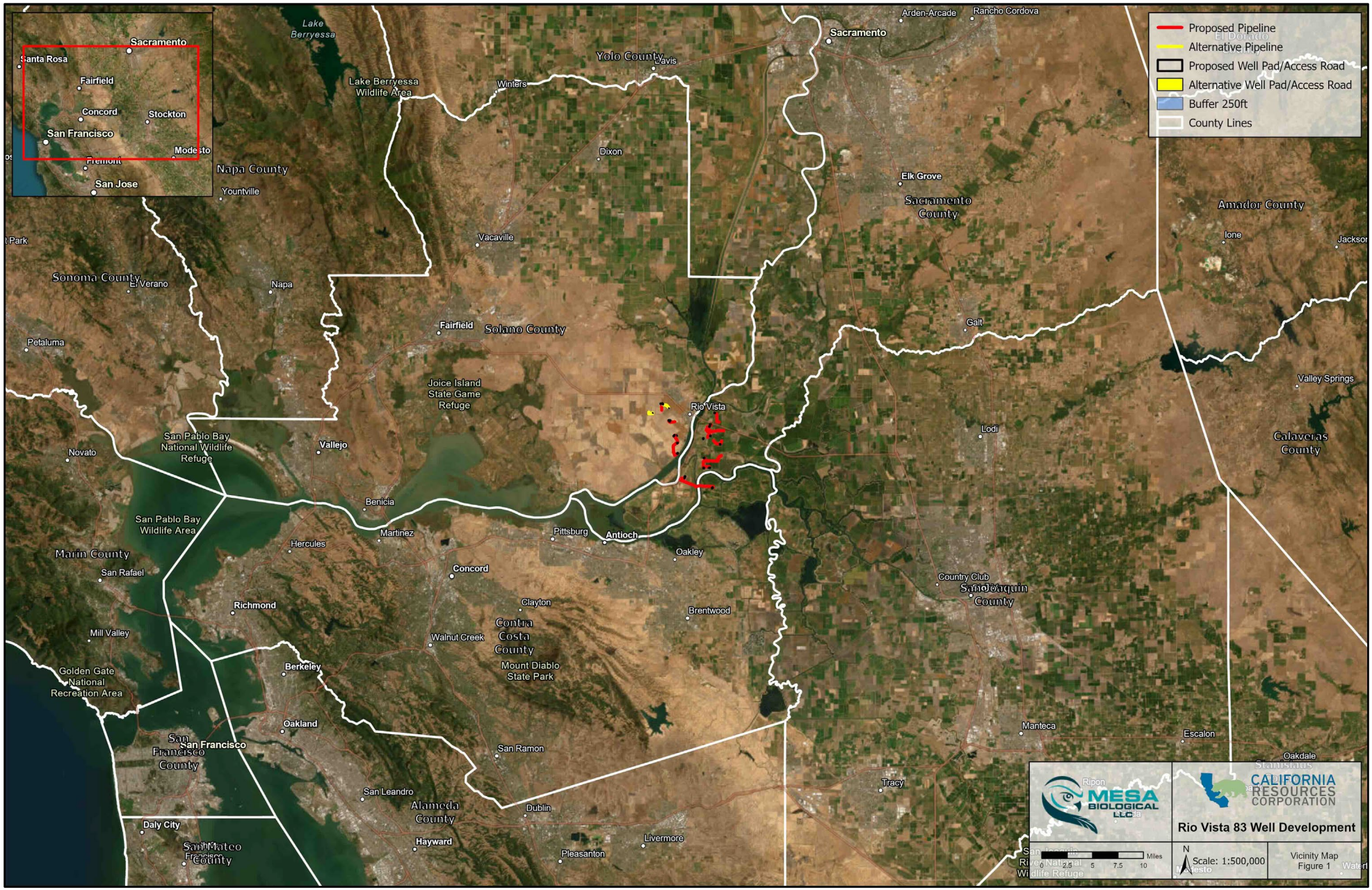
Table 1 – Well Pad Boundary Abbreviated Names and Associated Well Names

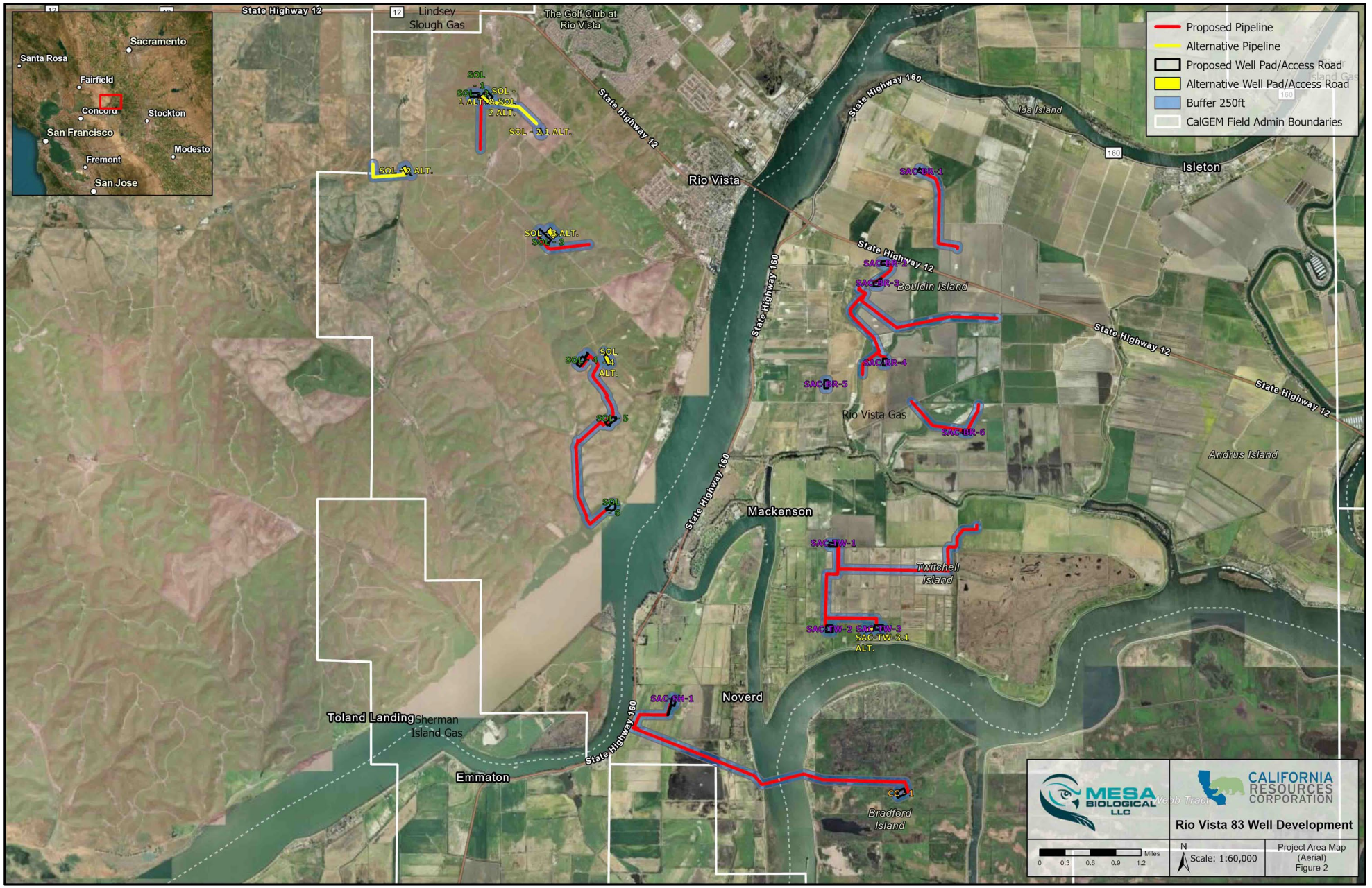
Well Pad Name	Well Pad Footprint	Number of Wells	Latitude Longitude (approx. well center)	Section, Township, Range
Solano County				
SOL-1	2.20 acres	3	38.17223535, -121.73127773	Sec 23, Twsp 4N, Range 2E, MDB&M
SOL-2	1.79 acres	2	38.17229382, -121.73359059	Sec 22, Twsp 4N, Range 2E, MDB&M
SOL-3	4.96 acres	17	38.15321187, -121.72180988	Sec 35, Twsp 4N, Range 2E, MDB&M
SOL-4	2.70 acres	5	38.13648772, -121.71522524	Sec 02, Twsp 3N, Range 2E, MDB&M
SOL-5	2.37 acres	6	38.12840501, -121.71028716	Sec 01, Twsp 3N, Range 2E, MDB&M
SOL-6	2.41 acres	6	38.11676898, -121.71014923	Sec 12, Twsp 3N, Range 2E, MDB&M
Sacramento County				
SAC-BR-1	1.27 acres	1	38.1620264, -121.65707526	Sec 33, Twsp 4N, Range 3E, MDB&M
SAC-BR-2	1.74 acres	3	38.1496564, -121.66330101	Sec 32, Twsp 4N, Range 3E, MDB&M
SAC-BR-3	2.02 acres	3	38.14648773, -121.66483642	Sec 32, Twsp 4N, Range 3E, MDB&M
SAC-BR-4	1.51 acres	3	38.13631203, -121.66338663	Sec 05, Twsp 3N, Range 3E, MDB&M
SAC-BR-5	1.56 acres	4	38.13333177, -121.67343667	Sec 05, Twsp 3N, Range 3E, MDB&M
SAC-BR-6	1.19 acres	1	38.12694518, -121.64950207	Sec 04, Twsp 3N, Range 3E, MDB&M

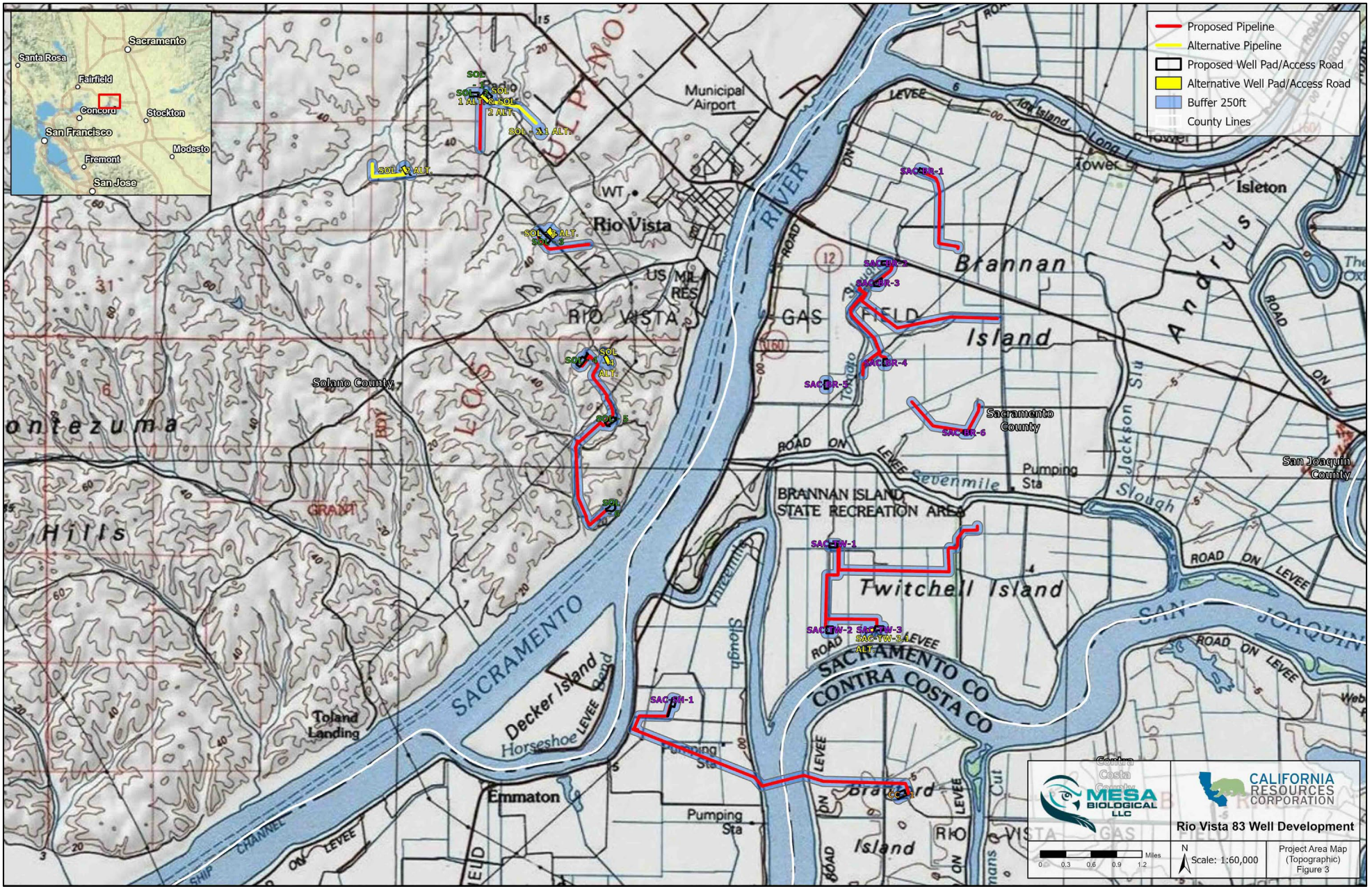
SAC-TW-1	1.65 acres	4	38.11174535, -121.67221309	Sec 08, Twsp 3N, Range 3E, MDB&M
SAC-TW-2	2.41 acres	6	38.10039418, -121.67285752	Sec 17, Twsp 3N, Range 3E, MDB&M
SAC-TW-3	1.89 acres	4	38.10061496, -121.66440932	Sec 17, Twsp 3N, Range 3E, MDB&M
SAC-SH-1	2.20 acres	4	38.09043383, -121.69967126	Sec 24, Twsp 3N, Range 2E, MDB&M
Contra Costa County				
CC-1	2.67 acres	12	38.07833074, -121.66055798	Sec 29, Twsp 3N, Range 3E, MDB&M

Project Location

The Rio Vista Well Development Project is situated in north-central California within the boundaries of Solano, Sacramento, and Contra Costa Counties, encompassing a portion of the broader Sacramento-San Joaquin River Delta region. All wells occur within the California Department of Conservation Geological Energy Management Division (CalGEM) administrative boundaries of the Rio Vista Gas Field. The project is located near the small city of Rio Vista in Solano County, with the communities of Isleton and Walnut Grove in Sacramento County lying to the northwest, and areas of Contra Costa County extending to the south. Portions of the project area occurs within the distinctive Montezuma Hills, characterized by rolling hills that transitions into the flat, expansive floodplains of the Delta. Several wells are also located on prominent islands within the Delta, including Brannan Island, Twitchell Island, Bradford Island and Sherman Island, which are integral components of the local agricultural and ecological landscape. The nearby Sacramento River forms a significant natural boundary to the west, contributing to the region's dynamic hydrology and ecological diversity. The surrounding landscape is a patchwork of agricultural fields, grasslands, and wetland habitats, intersected by drainage channels, irrigation ditches, sloughs and levee systems that manage water flow in the Delta. The broader landscape also features rural roadways and historical infrastructure corridors, reflecting the area's long history of agricultural development and resource use. **Figures 1 – 3** below illustrates the location of all 17 drilling pads, associated wells, pipelines and access roads.


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
County Lines
Rio Vista 83 Well Development
Scale: 1:500,000
Vicinity Map
Figure 1
MESA BIOLOGICAL LLC
CALIFORNIA RESOURCES CORPORATION
Sacramento
Fairfield
Concord
Stockton
San Francisco
Modesto
San Jose
Santa Rosa
Napa County
Yolo County
Solano County
Sonoma County
Sacramento County
Amador County
Calaveras County
San Joaquin County
Contra Costa County
Alameda County
Marin County
San Francisco County
San Mateo County
Lake Berryessa
Lake Berryessa Wildlife Area
Joice Island State Game Refuge
San Pablo Bay National Wildlife Refuge
San Pablo Bay Wildlife Area
Golden Gate National Recreation Area
Mount Diablo State Park
Rio Vista
Vallejo
Benicia
Martinez
Pittsburg
Antioch
Oakley
Brentwood
Clayton
Concord
Walnut Creek
Berkeley
Oakland
San Ramon
Dublin
Livermore
Pleasanton
Hayward
San Leandro
Daly City
Richmond
San Rafael
Mill Valley
Hercules
Petaluma
Novato
Napa
Vacaville
Winters
Davis
Dixon
Yountville
El Verano
Fairfield
Arden-Arcade
Rancho Cordova
Elk Grove
Galt
Lodi
Ione
Valley Springs
Country Club
Manteca
Escalon
Oakdale
Tracy


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
CalGEM Field Admin Boundaries
Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
State Highway 12
Lindsey Slough Gas
The Golf Club at Rio Vista
Rio Vista
State Highway 160
Ida Island
Isleton
Bouldin Island
Rio Vista Gas
Andrus Island
Mackenson
Twitchell Island
Noverd
Bradford Island
Toland Landing
Sherman Island Gas
Emmaton
SOL - 1
SOL - 1 ALT.
SOL - 2
SOL - 2.1 ALT.
SOL - 3
SOL - 3 ALT.
SOL - 4
SOL - 4 ALT.
SOL - 5
SOL - 6
SAC-BR-1
SAC-BR-2
SAC-BR-3
SAC-BR-4
SAC-BR-5
SAC-BR-6
SAC-TW-1
SAC-TW-2
SAC-TW-3
SAC-TW-3.1 ALT.
SAC-TW-4
MESA BIOLOGICAL LLC
CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
Miles
0 0.3 0.6 0.9 1.2
N
Scale: 1:60,000
Project Area Map (Aerial) Figure 2


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
County Lines
Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
Municipal Airport
Rio Vista
RIO VISTA GAS FIELD
Brannan Island
Isleton
Solano County
Sacramento County
San Joaquin County
BRANNAN ISLAND STATE RECREATION AREA
Twitchell Island
Decker Island
Toland Landing
Emmaton
Pumping Sta
Sevenmile Slough
Jackson Slough
SACRAMENTO
CONTRA COSTA CO
SAN JOAQUIN
SAC-BR-1
SAC-BR-2
SAC-BR-3
SAC-BR-4
SAC-BR-5
SAC-BR-6
SAC-TW-1
SAC-TW-2
SAC-TW-3
SAC-TW-3 ALT.
SOL - 1
SOL - 1 ALT.
SOL - 2
SOL - 2 ALT.
SOL - 3
SOL - 3 ALT.
SOL - 4
SOL - 4 ALT.
SOL - 5
SOL - 6
MESA BIOLOGICAL LLC
CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
Scale: 1:60,000
Project Area Map (Topographic) Figure 3

Methodology

This evaluation consists of a comprehensive literature review and a reconnaissance-level field survey conducted from March 4th to March 7th, while a supplemental evaluation was completed from March 25th through March 28th. The literature review gathered existing data on species distributions, regional ecosystems, and prior studies within the project vicinity. Using this background information, the field survey was designed to systematically assess sensitive biological resources and habitat conditions across the project area. The field survey employed both pedestrian and vehicular methods to ensure thorough area coverage. Biologists specializing in regional flora and fauna conducted the surveys, which were organized into defined observation points to maximize species and habitat detection. Pedestrian surveys allowed for close inspection of vegetation communities and microhabitats, while vehicular surveys provided a broader landscape-level perspective. At each survey location, biologists documented vegetation types, habitat features, and any observable special-status wildlife or signs of their presence, such as tracks, scat, burrows, or dens. Particular attention was given to identifying and mapping vegetation communities, land uses, and habitat features that could support or potentially support special-status species. Photographic documentation was also conducted at designated photo points to visually capture vegetation communities, habitat features, and notable species encounters. This data was compiled to create a detailed characterization of land uses, vegetation communities, and habitat features across the project area.

Database Queries

MESA conducted a comprehensive review of current and historical aerial imagery for the project area and its surrounding areas to support evaluation. The purpose of reviewing aerial imagery was to identify landscape features, habitat types, and significant environmental changes over time that could influence species distribution and habitat conditions. Key database queries included the CDFW California Natural Diversity Database (CNDDB) (CDFW 2025a) (**Attachment A**) and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants (CNPS 2025) (**Attachment B**). The review encompassed the Jersey Island and Rio Vista USGS 7.5-minute quadrangles and ten surrounding quadrangles to ensure comprehensive coverage. These surrounding quadrangles included Liberty Island, Courtland, Isleton, Bouldin Island, Woodward Island, Brentwood, Antioch South, Antioch North, Birds Landing, and Dozier. MESA also utilized the United States Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2025a) (**Attachment C**) to gather relevant federal data. These database searches produced a list of potentially occurring species, detailed in **Attachment D** Special-Status Plants Identified by Database Review and **Attachment E** Special-Status Wildlife Identified by Database Review. This attachment outlines each species' habitat requirements, listing status, and the likelihood of occurrence in the project area.

To provide a thorough overview of potential biological resources, additional data sources were consulted, including the CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2025b), the USFWS Critical Habitat Portal (USFWS 2025b), the USFWS National Wetlands Inventory (NWI) (USFWS 2025c), and the USGS National Hydrography Dataset (NHD) (USGS 2025).

Field Reconnaissance Surveys

Over a six-day period, MESA biologists conducted biological field surveys for the Rio Vista Well Development project. The primary objective was to assess the ecological conditions within the project area, including an approximate surrounding broader area to evaluate the potential for nesting raptors. The survey methodologies included a combination of pedestrian transects and stationary observation points to systematically document plant and animal species. Throughout the survey, each habitat type, land use, and land cover were recorded. Species observations were logged, noting species abundance, distribution, and potential behaviors such as foraging, nesting, and breeding. Special attention was given to identifying sensitive, threatened, or endangered species, as well as any critical habitats that may require conservation measures. Standardized data sheets and geospatial mapping tools were utilized to accurately document the locations of key observations and habitat features. The data collected provided essential insights into the biological integrity of the project area, supporting the development of mitigation strategies to minimize environmental impacts and help ensure compliance with applicable environmental regulations and conservation guidelines.

Results and Findings

Land Cover, Land Use and Vegetation Types

The Montezuma Hills, Rio Vista area, Brannan Island, Sherman Island, Twitchell Island, and Bradford Island, located within California's Sacramento–San Joaquin River Delta region, exhibit a diverse range of land uses and land cover types. The Montezuma Hills are characterized by rolling terrains used for dryland farming, sheep grazing, and wind energy production, with numerous wind turbines benefiting from favorable wind conditions. Brannan Island features the Brannan Island State Recreation Area, comprising waterways, islands, and marshes that provide habitats for wildlife and recreational opportunities like boating, fishing, and camping. Sherman Island is primarily used for pastureland and agricultural activities, including the cultivation of corn, grains, and alfalfa, while also supporting wetland restoration projects to enhance wildlife habitats and recreational uses. Twitchell Island, traditionally agricultural, has shifted toward wetland restoration and subsidence reversal, with notable initiatives such as a 15-acre pilot wetland, a 600-acre rice research facility, and a 750-acre restored wetland aimed at rebuilding soil levels. Bradford Island, a reclaimed peat wetland, remains predominantly agricultural, supporting wheat farming, cattle grazing, and natural gas extraction as part of the Rio Vista Gas Field. Collectively, these regions form a complex mosaic of agricultural, energy, recreational, and conservation land uses, contributing significantly to the ecological and economic fabric of the Delta.

Given that the project spans a large area across three counties, the study area has been divided into five sub-regions to assist in describing the land uses and vegetation communities present. These sub-regions include Rio Vista-Montezuma Hills, Brannan Island, Sherman Island, Twitchell Island, and Bradford Island.

Solano County Wells (Rio Vista – Montezuma Hills)

Of the 17 proposed well pads, six are located within a two-mile radius southwest of Rio Vista, California, in the Montezuma Hills region. This area is characterized by a mix of land uses and land cover types. Agricultural activities dominate the landscape, with farming, crop production, and livestock grazing being the primary practices. The land cover primarily consists of cultivated fields, fallow grasslands, and actively farmed croplands.

Vegetation communities in the Montezuma Hills are typical of disturbed agricultural environments, dominated by non-native annual grasses and forbs, with occasional patches of remnant native grasses. Some areas, particularly along drainage channels and low-lying zones, support riparian vegetation composed of species such as willows and cottonwoods. Additionally, the landscape features existing wind energy infrastructure, with wind turbines scattered throughout the surrounding area.

Field surveys indicate that all six proposed drilling pad locations are situated within areas previously disturbed by historical agricultural use. Signs of past cultivation, including visible furrow lines, were noted at several sites. Some locations remain actively managed for crop production, while others have been left fallow and are currently used for livestock grazing. Observations during surveys revealed very little evidence of small fossorial species, aside from occasional California ground squirrels and gophers, suggesting that habitat suitability for most fossorial wildlife species is limited across the project area. A representative photograph has been provided for each proposed drilling pad to help depict the conditions found in and around the Rio Vista – Montezuma Hills sub-region.

SOL-1: The proposed pad is located almost entirely within an existing gravel pad and access road, both of which support natural gas production infrastructure. The area is enclosed by a barbed wire fence, indicating restricted access and past industrial use. Surrounding the pad are actively cultivated agricultural lands, primarily consisting of barley fields. This setting reflects a blend of former energy development and ongoing agricultural operations.



SOL-2: The proposed pad is situated directly north of Emigh Road, within an actively cultivated barley field. This portion of Emigh Road has a gravel base, and its edges are lined with a mix of non-native grasses and ruderal (weedy) vegetation. These species are typical of disturbed areas and are well-adapted to roadside conditions, indicating regular exposure to vehicle traffic, maintenance, and other ground disturbances.



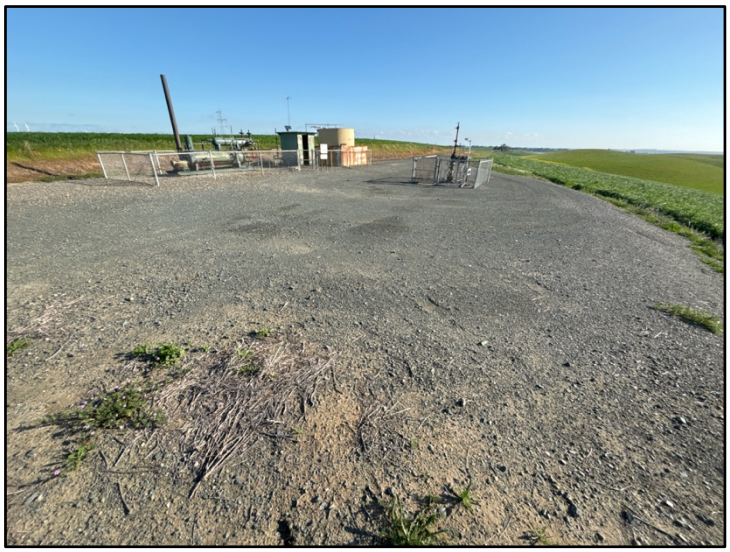
SOL-3 The proposed pad is located parallel to, and just south of, Emigh Road. The well pad is primarily covered with non-native grasses, which show clear signs of cattle grazing, and historical cultivation. Additionally, the perimeter of the field has been more recently cultivated to create a fire break, indicating active land management for fire prevention.



SOL-4: The existing gravel access road and well pad will be expanded to accommodate a larger drilling pad. The current pad contains existing gas producing infrastructure. The surrounding area consists of actively farmed; frequently cultivated land currently planted with barley. An overgrown access road, now dominated by weedy vegetation, still shows traces of its original gravel sub-base, indicating previous use. The pad expansion will extend beyond the current gravel footprint into the adjacent barley field, temporarily converting a portion of the cultivated farmland for drilling activities.



SOL-5: Similar to the SOL-4 well pad, the SOL-5 pad will be expanded from its current configuration to accommodate the development of new wells. Access to the site will be provided via an existing gravel-based ranch road, which connects directly to the pad. The current SOL-5 pad includes remnants of natural gas production infrastructure, indicating previous energy development at the site. The planned expansion will extend into the surrounding agricultural field, which is actively cultivated and currently planted with barley. Portions of the existing pad are sparsely vegetated and support a mix of weedy plant species typical of disturbed, unmaintained areas.



SOL-6 The proposed drilling pad will be expanded from an existing gravel pad that currently supports natural gas production infrastructure. The perimeter of the existing pad is enclosed with barbed wire fencing, which serves to keep cattle from interfering with on-site equipment and operations. The expansion will primarily extend eastward into adjacent non-native grasslands that are actively used for cattle grazing. This area is characterized by open, vegetated terrain with signs of ongoing grazing activity. Once expanded, the eastern edge of the pad will be located approximately 250 feet from the western bank of the Sacramento River, reducing the buffer between the drilling activity and the river corridor.



Sacramento County Wells (Brannan Island, Sherman Island and Twitchell Island)

Brannan Island, Sherman Island, and Twitchell Island, located within the Sacramento-San Joaquin Delta, are characterized by a mix of agricultural, conservation, and restoration land uses. A significant portion of these islands are designated as "croplands" under the National Vegetation Classification System (NVCS). These croplands are actively cultivated for agricultural production, including crops such as corn, grains, and other row crops. The land has been extensively modified through consistent agricultural practices, including plowing, planting, and harvesting, which have replaced or altered natural vegetation communities. All 10 drilling pads are situated within these cropland areas, reflecting the dominant land use across these locations. Field surveys conducted within and surrounding the drilling pads revealed a low to non-existent presence of small fossorial species California ground squirrels and gophers were the primary species present likely due to the continuous agricultural disturbance that reduces suitable habitat for these species.

SAC-BR-1: The proposed pad is situated almost entirely within an existing gravel pad and access road, both of which currently support natural gas production infrastructure. An irrigation canal runs parallel to the southern edge of the pad, marking a clear boundary. The immediate perimeter of the gravel pad is dominated by ruderal, weedy plant species typical of disturbed areas. Beyond this zone, the surrounding landscape consists of actively managed agricultural fields that are frequently cultivated for crop production.



SAC-BR-2: The site is located primarily within a frequently cultivated agricultural field planted with alfalfa. Along the southern edge of the proposed pad, an existing gravel access road and an inactive irrigation canal run parallel to the proposed drilling pad. The shoulder of the gravel road supports a mix of weedy, disturbance-tolerant plant species commonly found along agricultural margins. The irrigation canal, though not currently in use, contains a variety of hydrophytic weedy plants. These include species adapted to periodic moisture and saturated soils, such as sedges, rushes, and other herbaceous vegetation typically associated with wet or seasonally moist conditions.



SAC-BR-3: The proposed pad will involve the expansion of an existing gravel pad that currently supports natural gas production infrastructure. The new portions of the pad will extend into an actively cultivated agricultural field, converting farmland for drilling operations. To the northwest of the existing pad, an irrigation canal is present, bordered by weedy, ruderal vegetation. This canal appears to be inactive and is lined with typical disturbance-tolerant plant species adapted to periodically moist conditions and human-modified landscapes. The expansion will result in the partial encroachment of these agricultural areas.



SAC-BR-4: As with other wells in the area, the proposed pad involves a slight expansion of an existing gravel pad that currently supports natural gas production infrastructure. The pad will be extended eastward, encroaching slightly into the adjacent agricultural field, which is frequently cultivated and currently planted with alfalfa. An irrigation canal runs directly parallel and adjacent to the eastern edge of the pad, forming a clear boundary. Vegetation in the area consists primarily of alfalfa within the cultivated field, while the edges of the gravel access road and irrigation canal support a variety of weedy, disturbance-tolerant plant species typical of heavily managed or previously disturbed landscapes.



SAC-BR-5: This location will also involve the expansion of an existing pad into an adjacent agricultural field that is currently cultivated but temporarily bare of vegetation, appearing to be recently planted. The expansion will extend into this open farmland to accommodate additional infrastructure. A gravel access road provides entry to the site and runs alongside an irrigation canal, both of which parallel the pad. The edges of the access road and canal are lined with ruderal plant species—hardy, weedy vegetation adapted to disturbed soils—indicating regular maintenance, vehicle use, and prior land disturbance in the area.



SAC-TW-1: The existing gravel pad, which currently supports natural gas production infrastructure, will be expanded eastward into an adjacent cultivated agricultural field. This field is actively farmed, although it may be temporarily fallow depending on the cropping cycle. The proposed pad runs parallel to an irrigation canal along its southern edge. The canal contains a variety of hydrophytic plant species, suggesting it retains moisture or experiences periodic water flow. Surrounding the perimeter of the gravel pad is a mix of weedy, ruderal vegetation typical of disturbed sites, particularly those with ongoing agricultural activity. These plants are well-adapted to compacted soils and fluctuating moisture levels.



SAC-TW-2: The existing gravel-based pad at SAC-TW-2 is planned for expansion westward into a fallow agricultural field, which currently shows no active crop growth and is likely between planting cycles. The proposed pad is bordered by multiple irrigation canals located directly to the north, east, and west. These canals support a range of hydrophytic (water-loving) vegetation, indicating the presence of moisture or periodic water flow. The perimeter of the existing gravel pad is lined with weedy, disturbance-tolerant plant species typical of areas subjected to regular vehicle use and soil compaction. Additionally, a few mature trees and large shrubs are present in close proximity to the pad, providing some vertical structure and habitat diversity in the otherwise open agricultural landscape.



SAC-TW-3: The SAC-TW-3 pad will be connected to an existing pad to accommodate the development of four natural gas wells. The proposed expansion will extend into a fallow agricultural field, which is currently not under active cultivation but shows signs of prior farming activity. As observed at the other well sites, the existing gravel access road and pad are bordered by weedy, ruderal plant species, which are common in disturbed areas with compacted soil and limited maintenance. An irrigation canal runs parallel to the northern edge of the proposed pad and contains hydrophytic vegetation, indicating periodic or residual moisture. Additionally, a few large shrubs are present near the pad, offering limited structural vegetation in an otherwise open landscape.



SAC-SH-1: The SAC-SH-1 drilling pad is planned to be constructed within a currently unused agricultural field. Similar to other wells located in agricultural areas, the proposed drilling pad will be bordered by an existing irrigation canal along its western edge. To provide access to the site, a new access road will be constructed, extending from the nearest gravel road to the southern boundary of the drilling pad. This road will serve as the primary route for equipment, vehicles, and personnel during construction and drilling operations.



Contra Costa County Wells (Bradford Island)

Bradford Island, located in the Sacramento-San Joaquin Delta, features a mix of land uses, land cover types, and diverse vegetation communities. The island is predominantly characterized by agricultural land use, with crops such as corn, alfalfa, and other row crops being cultivated due to the fertile delta soils. The land cover primarily consists of cultivated fields, interspersed with patches of natural vegetation and levee systems that protect the island from flooding. Vegetation communities include riparian habitats along the levee edges, consisting of willows, cottonwoods, and various grasses that help stabilize the soil. Some areas may also support wetland vegetation, including tule reeds and cattails, especially in zones near waterways or areas prone to seasonal flooding. Additionally, Bradford Island is part of the Rio Vista Gas Field, one of California's major natural gas-producing regions. The island hosts some current gas extraction infrastructure, contributing to its industrial land use alongside agriculture.

CC-1: The CC-1 drilling pad is planned to be constructed within an area characterized by non-native grasses, surrounded by agricultural fields, pasturelands, and seasonally flooded wetlands. Similar to other wells situated in rural landscapes, the proposed drilling pad will be bordered by existing agricultural features and drainage infrastructure typical of the island's land use. To facilitate access to the site, the pad is situated in on an existing access road. This road will serve as the primary route for equipment, vehicles, and personnel during the construction and drilling operations.



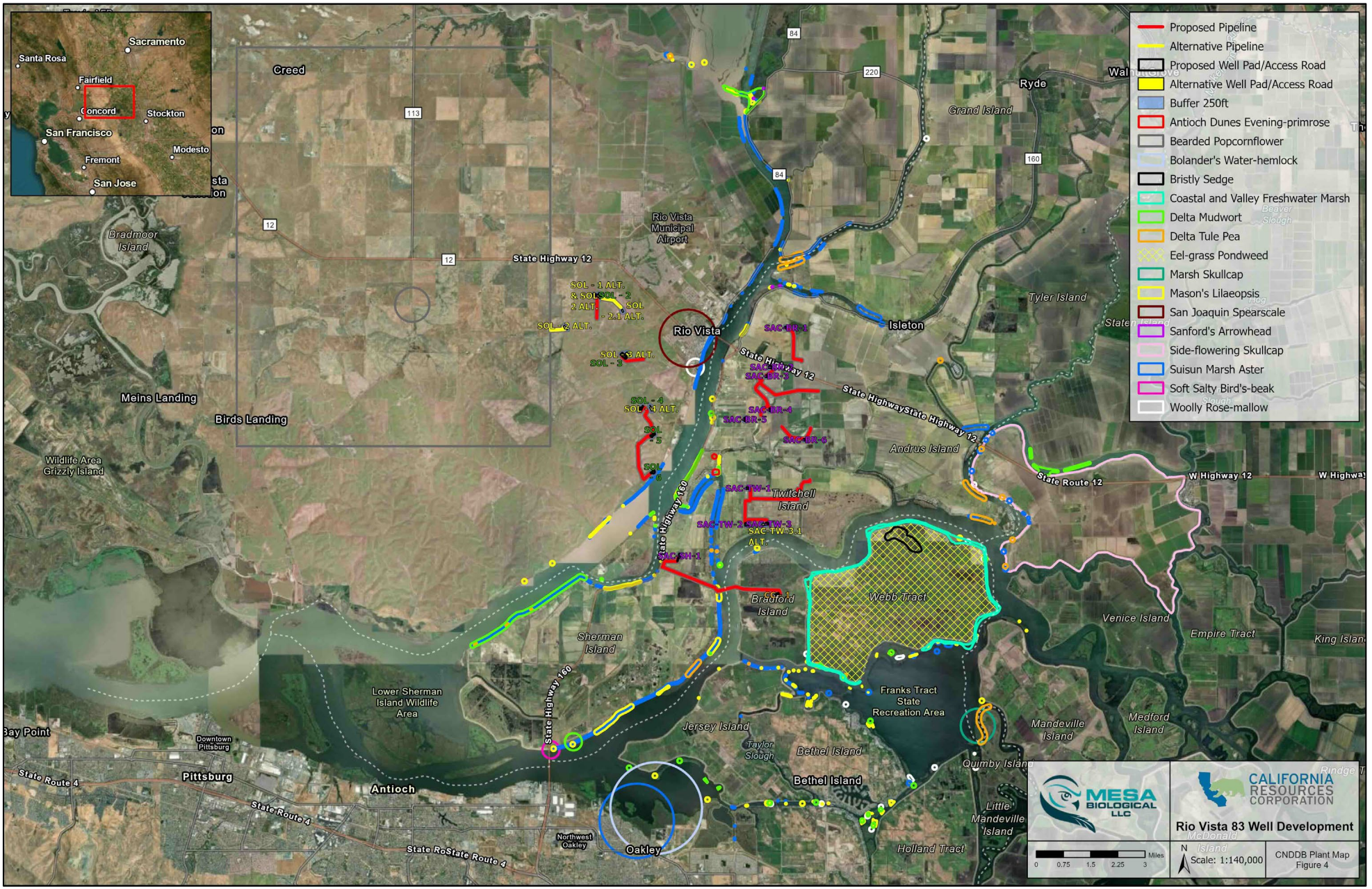
Special-Status Plants Species and Sensitive Vegetation Communities

Under the CEQA, special-status plants typically evaluated include those listed under the federal Endangered Species Act and the California Endangered Species Act, as well as species with a California Rare Plant Rank (CRPR) of 1B or 2. CRPR 1B plants are considered rare, threatened, or endangered in California and elsewhere, while CRPR 2 plants are rare, threatened, or endangered in California but more common elsewhere. These rankings are critical because CEQA requires consideration of plant species that could be significantly impacted by proposed projects. Evaluating CRPR 1B and 2 species ensures that potential impacts to rare and sensitive botanical resources are appropriately addressed during the environmental review process.

The results of the database query identified a total of 57 special-status plant species that are either protected under the federal Endangered Species Act and/or the California Endangered Species Act or have a California Rare Plant Rank (CRPR) of 1B or 2 and are known or have the potential to occur within the region. The potential for each of these plant species to occur within the project area was evaluated based primarily on the presence of suitable habitat, as determined

during the reconnaissance-level field survey. In addition, proximity to documented occurrences recorded in the CNDDB was considered in the evaluation. **Figure 4** shows the locations of historical CNDDB records for sensitive plant species near the project area. No special-status plant species were detected within the project area during the reconnaissance survey; however, the survey was conducted outside the optimal blooming period for many of these species. **Attachment A** – Special-Status Plant Species Identified by Database Review provides a summary discussing the potential for occurrence for each species identified through the database query.

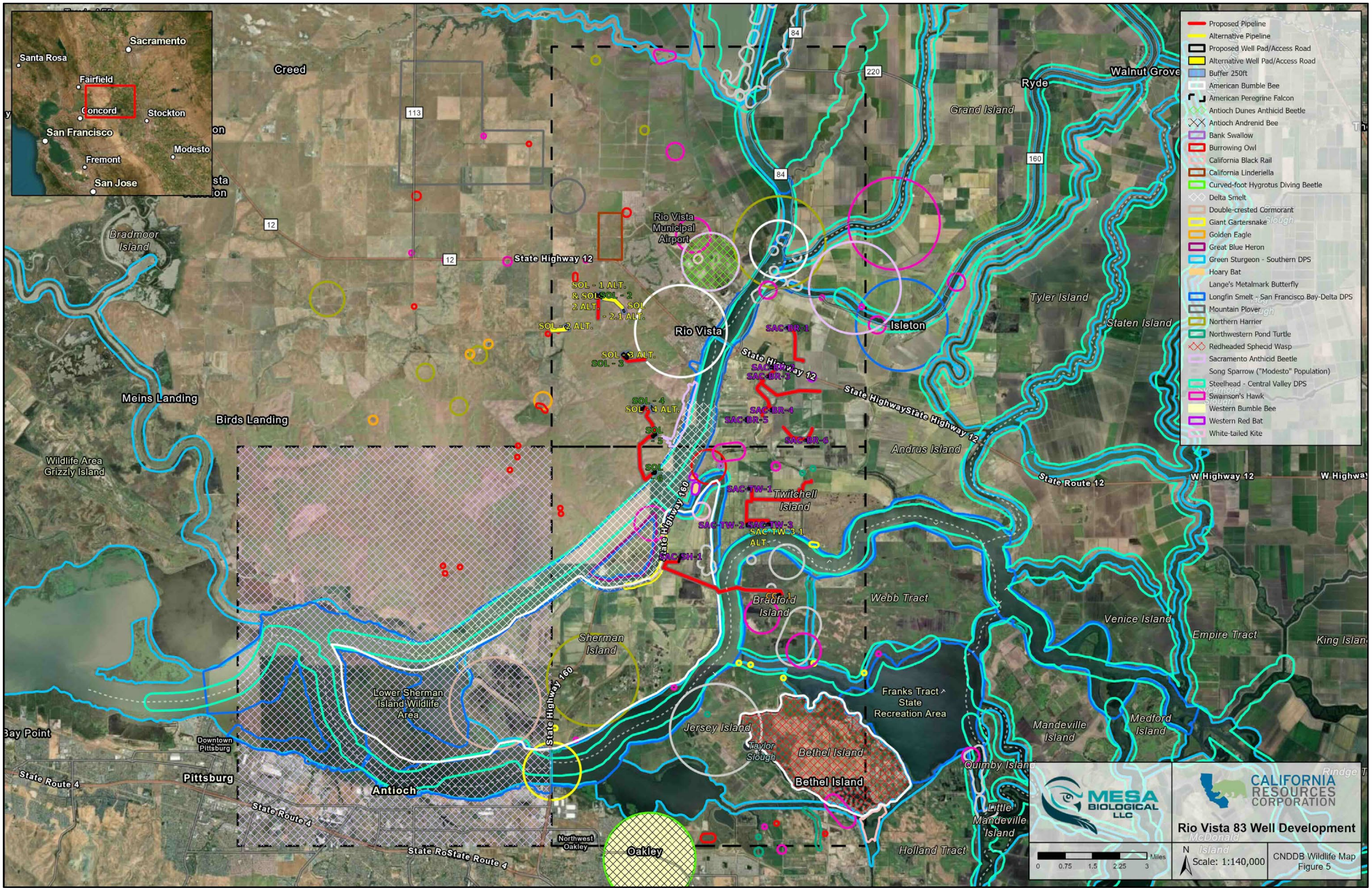
Species classified as "none" were determined to have no potential to occur due to a complete absence of suitable habitat, incompatible environmental conditions, highly degraded landscape features, and/or the project area being located outside the species' known range. Species classified as "not expected" were those for which only limited or marginal habitat features were present, environmental conditions were suboptimal, and there were few or no recent records of occurrence nearby, making the species' presence unlikely but not impossible. Species classified as "possible" were those where habitat characteristics matched known requirements for the species, the project area was within the known or historic range, and/or CNDDB records documented occurrences within the surrounding region, making occasional, seasonal, or sporadic use plausible. Species were classified as "occurs" when direct evidence—such as visual observation, vocalization, or sign—was documented during field surveys.


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
Antioch Dunes Evening-primrose
Bearded Popcornflower
Bolander's Water-hemlock
Bristly Sedge
Coastal and Valley Freshwater Marsh
Delta Mudwort
Delta Tule Pea
Eel-grass Pondweed
Marsh Skullcap
Mason's Lilaeopsis
San Joaquin Spearscale
Sanford's Arrowhead
Side-flowering Skullcap
Suisun Marsh Aster
Soft Salty Bird's-beak
Woolly Rose-mallow
Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
Creed
Rio Vista Municipal Airport
State Highway 12
Rio Vista
Isleton
Ryde
Grand Island
Tyler Island
Bradmoor Island
Meins Landing
Birds Landing
Wildlife Area
Grizzly Island
Andrus Island
Twitchell Island
Webb Tract
Bradford Island
Venice Island
Empire Tract
Sherman Island
Lower Sherman Island Wildlife Area
Franks Tract State Recreation Area
Jersey Island
Taylor Slough
Bethel Island
Mandeville Island
Medford Island
Quimby Island
Little Mandeville Island
Holland Tract
Bay Point
Downtown Pittsburg
Pittsburg
Antioch
Northwest Oakley
Oakley
State Route 4
State Highway 160
State Route 12
W Highway 12
SOL - 1 ALT.
SOL - 2
SOL - 2 ALT.
SOL - 3
SOL - 3 ALT.
SOL - 4
SOL - 4 ALT.
SOL - 5
SOL - 6
SAC-BR-1
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SAC-BR-3
SAC-BR-4
SAC-BR-5
SAC-BR-6
SAC-TW-1
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MESA BIOLOGICAL LLC
CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
0 0.75 1.5 2.25 3 Miles
N
Scale: 1:140,000
CNDDB Plant Map
Figure 4

Special Status Wildlife Species

Special-status wildlife includes species that are listed, proposed for listing, or designated as candidates for listing as threatened or endangered under the Federal Endangered Species Act (FESA) by the USFWS. It also includes species listed or considered candidates for listing as rare, threatened, or endangered under the California Endangered Species Act (CESA) by the CDFW, as well as species designated by CDFW as “Species of Special Concern” (SSC) or “Fully Protected” under the California Fish and Game Code (CFGC).

To evaluate the potential for special-status species to occur within the project area, the same four standardized potential-to-occur classifications used for special-status plants were utilized: none, not expected, possible, and occurs. Additional factors considered in the evaluation included the quality and extent of available habitat, the degree of habitat connectivity to nearby natural areas, habitat fragmentation, disturbance levels, seasonal timing of surveys relative to species’ life cycles, and the presence or absence of critical habitat features such as host plants, nesting substrates, aquatic conditions, or prey availability. A search of the CNDDB was conducted in a five-mile radius around the project area to identify documented occurrences of special-status species and to assess proximity and relevance to the project area. Together, field observations, habitat evaluations, and regional occurrence data were integrated to assign the appropriate potential-to-occur classification for each special-status species evaluated. **Attachment B** – Special-Status Wildlife Species Identified by Database Review provides a summary discussing the potential for occurrence for each species identified through the database query while Figure 5 illustrates the CNDDB recorded observations within a 5-mile radius of the project area.

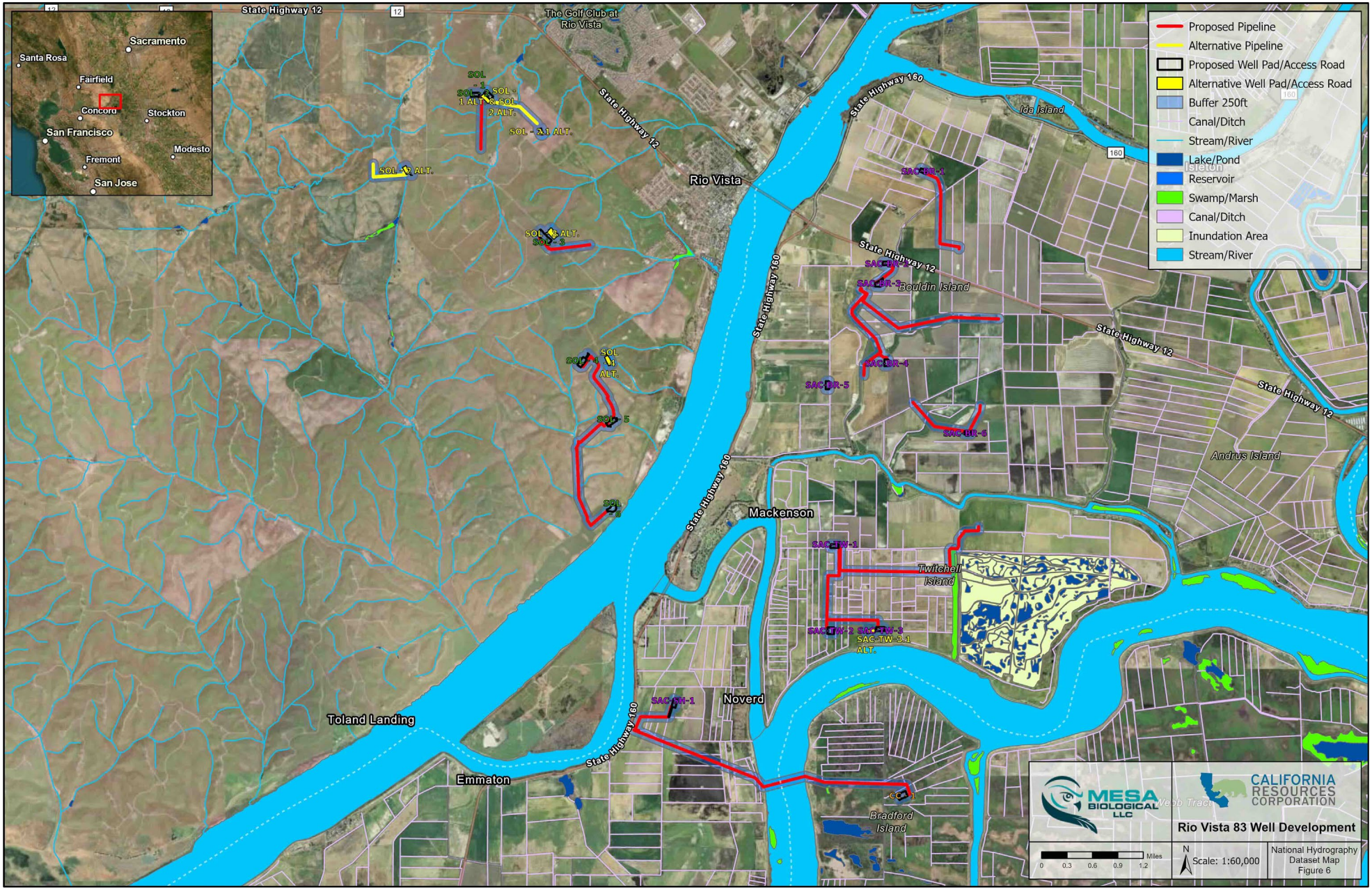

Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
Creed
Bradmoor Island
Rio Vista Municipal Airport
State Highway 12
Rio Vista
Isleton
Grand Island
Ryde
Walnut Grove
Tyler Island
Staten Island
Meins Landing
Birds Landing
Wildlife Area Grizzly Island
Andrus Island
Twitchell Island
Bradford Island
Webb Tract
Venice Island
Empire Tract
Sherman Island
Lower Sherman Island Wildlife Area
Jersey Island
Bethel Island
Franks Tract State Recreation Area
Mandeville Island
Medford Island
Quimby Island
Little Mandeville Island
Holland Tract
Bay Point
Downtown Pittsburg
Pittsburg
Antioch
Northwest Oakley
Oakley
State Route 4
State Highway 160
State Route 12
W Highway 12
Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
American Bumble Bee
American Peregrine Falcon
Antioch Dunes Anthicid Beetle
Antioch Andrenid Bee
Bank Swallow
Burrowing Owl
California Black Rail
California Linderiella
Curved-foot Hygrotus Diving Beetle
Delta Smelt
Double-crested Cormorant
Giant Gartersnake
Golden Eagle
Great Blue Heron
Green Sturgeon - Southern DPS
Hoary Bat
Lange's Metalmark Butterfly
Longfin Smelt - San Francisco Bay-Delta DPS
Mountain Plover
Northern Harrier
Northwestern Pond Turtle
Redheaded Sphecid Wasp
Sacramento Anthicid Beetle
Song Sparrow ("Modesto" Population)
Steelhead - Central Valley DPS
Swainson's Hawk
Western Bumble Bee
Western Red Bat
White-tailed Kite
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CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
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Scale: 1:140,000
CNDDB Wildlife Map
Figure 5

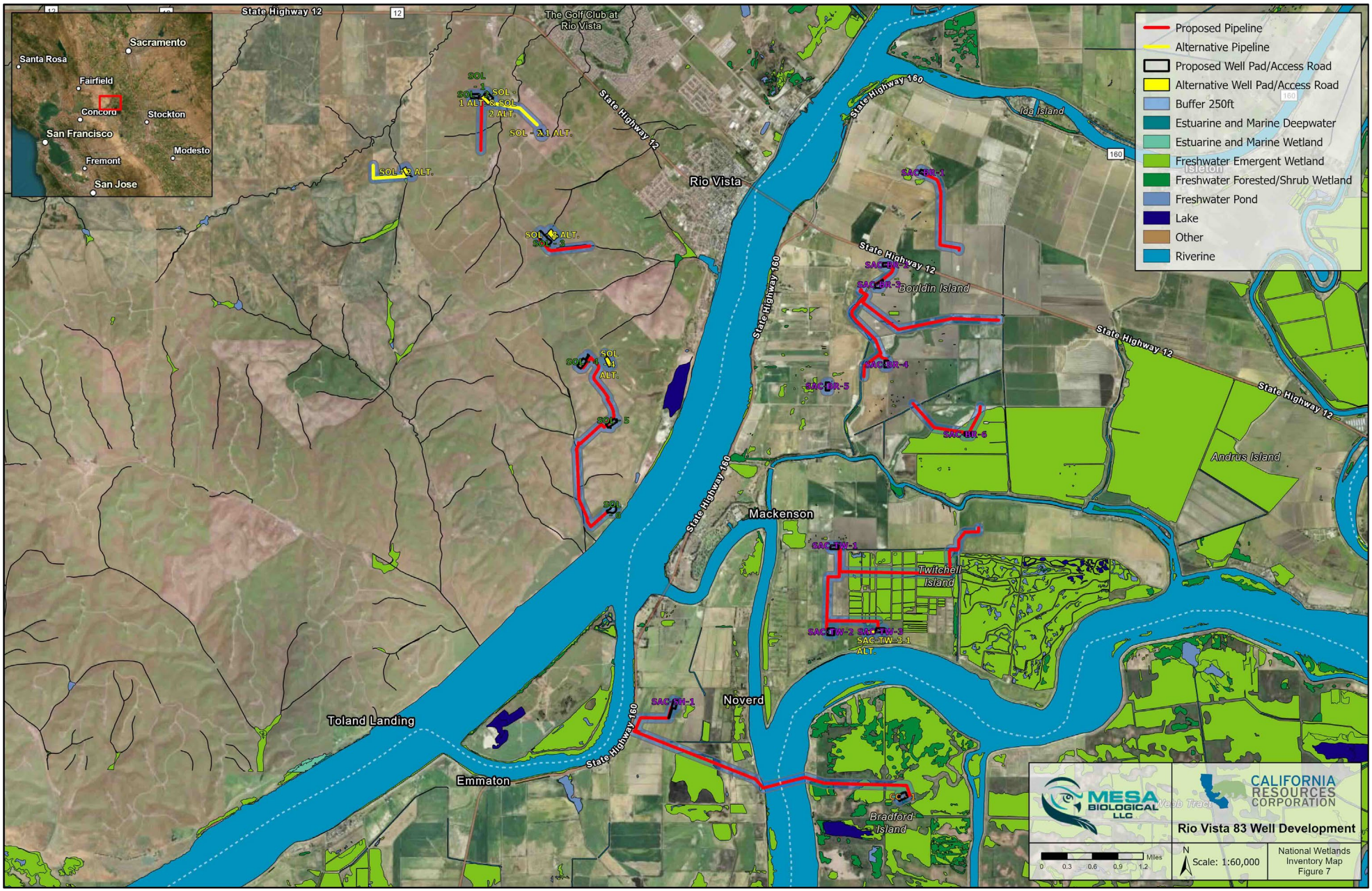
Wetlands and Waterways

Prior to field surveys, MESA biologists reviewed the USFWS National Wetlands Inventory (NWI) (USFWS 2024c) and the USGS National Hydrography Dataset (NHD) (USGS 2024). Results from this review are displayed in **Figure 6 and 7**, providing a reference for further evaluation during the field surveys.

Under federal regulations, a river, stream, wetland, or other waterbody may be considered jurisdictional if it meets criteria under the Clean Water Act and other federal guidelines. Generally, a stream must have a "significant nexus" to navigable waters of the United States, meaning it should contribute flow, sediment, or biological connectivity to larger water systems. Key factors for this qualification include whether the stream supports interstate or foreign commerce, has continuous or seasonal flow, or contributes to the ecological health of navigable waters. The U.S. Army Corps of Engineers and the Environmental Protection Agency assess each stream's physical, chemical, and biological connections to determine federal jurisdiction. Even intermittent or ephemeral streams, which only flow in response to rainfall, may qualify if they significantly impact downstream navigable waters, highlighting federal protections for broader watersheds in California.

In California, a wetland or waterway may also be considered jurisdictional under state law if it meets specific ecological, hydrological, and regulatory criteria. The CDFW primarily oversees these determinations, guided by the CFGC and the California Code of Regulations. These regulations define jurisdictional waters, with CDFW designating areas for protection to prevent habitat degradation and support sustainable management. California's approach to managing and preserving wetlands and waterways is guided by a combination of hydrology, vegetation, soil characteristics, ecological function, and regulatory definitions to ensure the conservation of the state's aquatic resources


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
Canal/Ditch
Stream/River
Lake/Pond
Reservoir
Swamp/Marsh
Canal/Ditch
Inundation Area
Stream/River
Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
State Highway 12
The Golf Club at Rio Vista
Rio Vista
State Highway 160
Ida Island
Bouldin Island
Andrus Island
Mackenson
Twitchell Island
Noverd
Toland Landing
Emmaton
Bradford Island
SOL - 1
SOL - 1 ALT.
SOL - 2
SOL - 2 ALT.
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SOL - 3
SOL - 3 ALT.
SOL - 4
SOL - 4 ALT.
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SAC-BR-6
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CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
Miles
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N
Scale: 1:60,000
National Hydrography Dataset Map
Figure 6


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
State Highway 12
The Golf Club at Rio Vista
Rio Vista
State Highway 160
Ida Island
Bouldin Island
Andrus Island
Mackenson
Twitchell Island
Noverd
Bradford Island
Toland Landing
Emmaton
SOL - 1
SOL - 1 ALT. & SOL - 2 ALT.
SOL - 2.1 ALT.
SOL - 2 ALT.
SOL - 3 ALT.
SOL - 3
SOL - 4
SOL - 4 ALT.
SOL - 5
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SAC-BR-5
SAC-BR-6
SAC-TW-1
SAC-TW-2
SAC-TW-3
SAC-TW-3.1 ALT.
SAC-TW-1
CA-1
MESA BIOLOGICAL LLC
CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
Miles
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Scale: 1:60,000
National Wetlands Inventory Map
Figure 7

Nesting Birds

CFGC Section 3503 and the federal Migratory Bird Treaty Act (MBTA) both contain protections for bird species, especially during nesting and breeding periods. Under CFGC Section 3503, it is illegal to destroy or disturb active bird nests and eggs, with the goal of ensuring that nesting birds are shielded from harm during reproductive activities. While this protection excludes certain non-native species, it generally applies to most native birds in California. This regulation often plays a role in environmental reviews, such as those required by the CEQA, where a project must take steps to avoid harming active nests during construction or land modification. The CFGC includes several important protections aimed specifically at conserving raptor species and their habitats. Under Section 3503.5, it is illegal to take, possess, or destroy any raptor nest or egg, safeguarding these birds—such as hawks, eagles, falcons, and owls—during critical breeding and nesting periods. Section 3513 provides further protections by aligning with the federal MBTA, making it unlawful to "take" (kill, harm, or possess) migratory raptors without a permit. This ensures that California's regulations are consistent with federal laws designed to protect migratory birds of prey.

At the federal level, the MBTA, first enacted in 1918, prohibits the "take" (defined as killing, harming, or possessing) of migratory birds, their nests, or eggs without a specific permit. Covering more than 1,000 migratory bird species, the MBTA is enforced by the USFWS and is designed to protect these birds throughout their life cycles, including during migration and nesting. Both regulations have significant implications for land development and project planning, requiring that activities avoid disturbing active nests, especially during nesting seasons, and sometimes necessitating pre-activity surveys or seasonal restrictions. Non-compliance can lead to penalties and project delays, highlighting the need for measures that mitigate potential impacts to bird populations. Together, CDFC Section 3503 and the MBTA contribute to broader conservation efforts, helping to preserve bird populations by limiting disturbances during critical reproductive times.

Much of the project area contains opportunity for a vast amount of possible nesting birds that occur within the region. The project area provides suitable nesting habitat for cavity nests, ground nests, tree and shrub nests. There is also opportunity for larger raptors to nest within power poles or within some of taller trees in the project area. The site also provides opportunity for below ground nests for species such as the western burrowing owl (*Athene cunicularia*) who rely on burrows constructed by other species and modify them to meet their needs.

Discussion and Recommendations

This report has been prepared to evaluate biological resources within the project area in support of environmental review under the CEQA. Surveys conducted for the project confirmed the presence of four special-status wildlife species, while a total of 20 species were evaluated as occurring or having the potential to occur. The project area also provides suitable habitat for various nesting bird species and may impact potentially jurisdictional wetlands and waterways. In evaluating special-status plant species, the report considers the agricultural setting, characterized

by cultivated lands and previously disturbed conditions. These factors have significantly reduced the potential for special-status plant species to occur, as the ongoing agricultural activities and historical disturbances have likely eliminated or significantly degraded suitable habitat. The following discussion outlines targeted measures and recommendations to address the sensitive biological resources identified within the project area, with separate considerations for special-status plant species, wildlife, nesting birds, and potentially jurisdictional wetlands.

Special-Status Plants Species

A review of the CNDDB, CNPS and USFWS IPaC identified 57 special-status plant species with the potential to occur within the region. However, field surveys and habitat evaluations determined that the potential for these species to occur onsite is significantly reduced due to the extensive and ongoing disturbances associated with historical and current agricultural practices. The project area is primarily composed of cultivated lands and previously disturbed soils, which have been subjected to repeated agricultural operations such as soil tilling, crop planting, irrigation, herbicide application, mechanical disturbance, and the harvesting of hay. These activities have significantly altered soil structure, removed native vegetation, disrupted native seed banks, and degraded or eliminated the specific habitat features required by many of the identified species. Many of the proposed pad location will occur or expand on existing well pads that currently contain a gravel base.

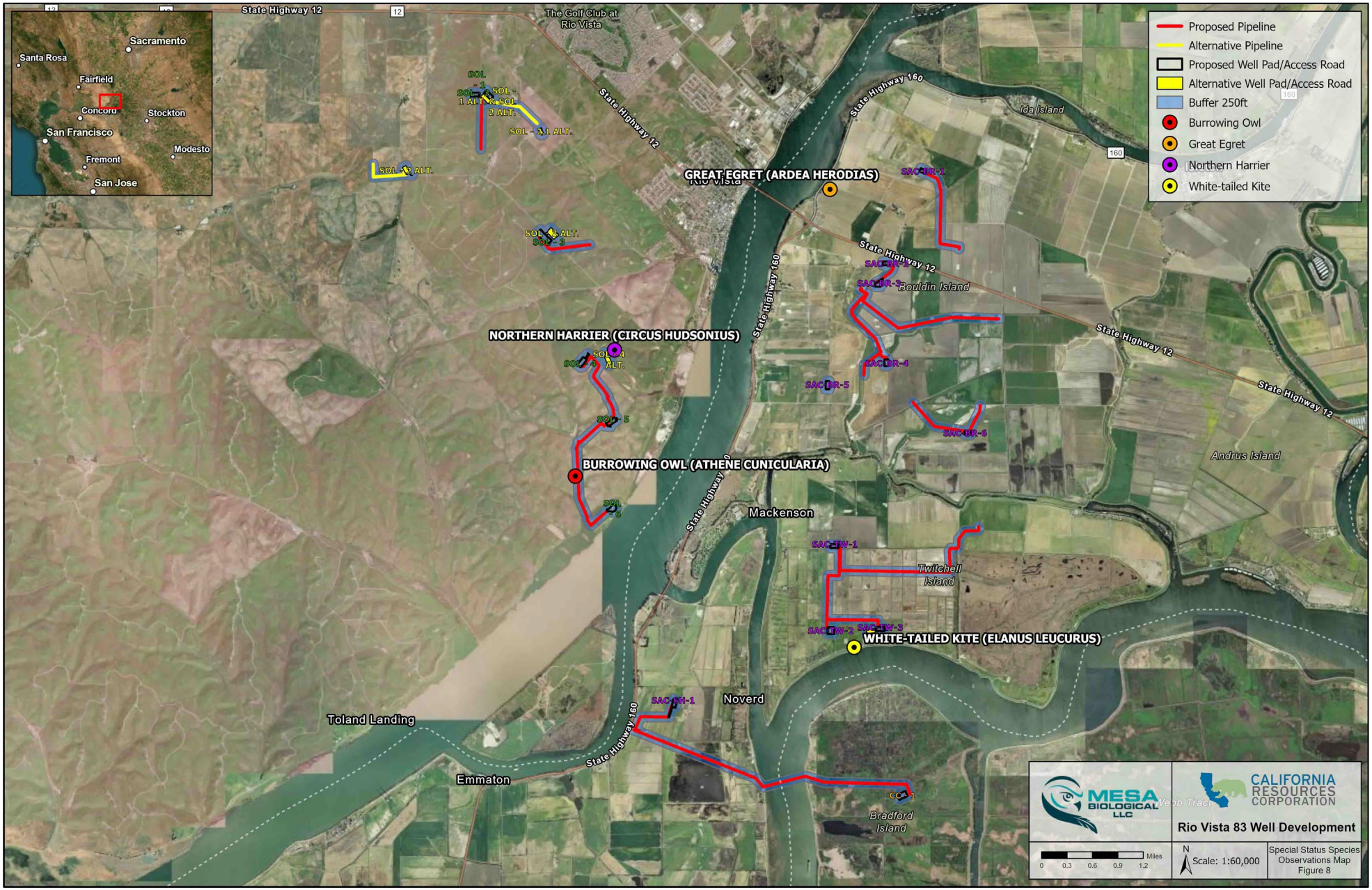
Given the heavily disturbed condition of the project area and the lack of suitable habitat to support the growth and reproduction of special-status plant species, protocol-level botanical surveys are not considered warranted. Standard practice under regulatory guidelines typically requires protocol-level surveys when suitable habitat is present and the potential for occurrence possible. In this case, the ongoing intensive agricultural use has substantially compromised habitat integrity to the extent that the likelihood of detecting special-status plant species is extremely low. Therefore, additional focused or protocol-level botanical surveys are not recommended.

Special-Status Wildlife Species

Database queries also identified a total of 76 special-status wildlife species with potential to occur in the region surrounding the project area. Of these, 17 species were assessed as having the potential to occur within the project footprint based on habitat suitability and known regional distributions. Field surveys directly observed four special-status species within the project area, confirming their presence onsite. The species observed during surveys include the burrowing owl, great egret (*Ardea herodias*), northern harrier (*Circus hudsonius*), and white-tailed kite (*Elanus leucurus*).

In addition to the species observed, several other special-status wildlife species were evaluated as possibly occurring within the project area based on habitat conditions and regional occurrence data. These species include the American peregrine falcon (*Falco peregrinus anatum*), double-crested cormorant (*Nannopterum auritum*), golden eagle (*Aquila chrysaetos*), grasshopper sparrow (*Ammodramus savannarum*), great blue heron (*Ardea herodias*), loggerhead shrike (*Lanius ludovicianus*), song sparrow (“Modesto” population) (*Melospiza melodia*), Swainson’s

hawk (*Buteo swainsoni*), American badger (*Taxidea taxus*), hoary bat (*Lasiurus cinereus*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus frantzii*), American bumblebee (*Bombus pensylvanicus*), Crotch's bumblebee (*Bombus crotchii*), western bumblebee (*Bombus occidentalis*), and yellow-banded andrenid bee (*Perdita hirticeps luteocincta*). These determinations were based on a combination of field observations, habitat evaluations, and review of available regional occurrence data. The following discussion presents a detailed overview of each special-status wildlife species identified as potentially occurring within the project area, together with the corresponding recommended mitigation measures developed in accordance with the requirements of the CEQA. Each species' status, description, and recommendations to minimize and avoid potential impacts within the project area are discussed in detail below and the location of the four special status wildlife species observations are shown on **Figure 8**.


Proposed Pipeline
Alternative Pipeline
Proposed Well Pad/Access Road
Alternative Well Pad/Access Road
Buffer 250ft
Burrowing Owl
Great Egret
Northern Harrier
White-tailed Kite
GREAT EGRET (ARDEA HERODIAS)
NORTHERN HARRIER (CIRCUS HUDSONIUS)
BURROWING OWL (ATHENE CUNICULARIA)
WHITE-TAILED KITE (ELANUS LEUCURUS)
State Highway 12
State Highway 160
The Golf Club at Rio Vista
Ida Island
Bouldin Island
Andrus Island
Twitchell Island
Bradford Island
Mackenson
Noverd
Toland Landing
Emmaton
Sacramento
Santa Rosa
Fairfield
Concord
Stockton
San Francisco
Modesto
Fremont
San Jose
MESA BIOLOGICAL LLC
CALIFORNIA RESOURCES CORPORATION
Rio Vista 83 Well Development
Scale: 1:60,000
Special Status Species Observations Map
Figure 8

American Peregrine Falcon (*Falco peregrinus anatum*)
Federally Delisted (still protected under MBTA)

Discussion:
The American peregrine falcon is a medium-sized raptor known for its incredible speed, reaching diving speeds of over 200 miles per hour when hunting prey. Adult peregrine falcons have a distinctive appearance, with a dark slate-gray back, barred white and black undersides, and a black "helmet" pattern on their heads that includes a dark mustache mark extending below each eye. They are found across a wide range of open habitats, often favoring cliffs, tall trees, and increasingly, tall urban structures for nesting. Historically, peregrine falcons nested primarily on high, inaccessible cliffs near water sources; however, they have adapted to nesting on tall buildings, bridges, and other man-made structures in urban environments.

Peregrine falcons primarily hunt other birds, capturing prey in mid-air with dramatic, high-speed dives. Their diet typically consists of medium-sized birds such as pigeons, doves, shorebirds, and waterfowl. Suitable foraging habitat includes open landscapes such as wetlands, agricultural fields, coastal regions, and riparian corridors where prey species are abundant and accessible.
The American peregrine falcon was removed from the federal Endangered Species List in 1999 due to successful recovery efforts but remains protected under the MBTA and the CFGC.

Within the project area, suitable foraging habitat exists in the form of fallow agricultural fields, open scrubland, and nearby wetlands that support an abundant prey base of smaller birds. While no suitable nesting substrate such as cliffs or tall structures was observed within the immediate project area, the proximity to open foraging areas suggests that peregrine falcons could use the site for hunting activities. Peregrine falcons are known to range widely while foraging and could intermittently hunt within the project vicinity, especially if prey concentrations are present.

Recommendation:
Although no American peregrine falcons or active nesting sites were observed during field surveys, the project area does provide foraging opportunities that may be used intermittently by this species. Due to the peregrine falcon’s protected status under the CFGC and the MBTA, any project activities that could disturb nesting falcons or interfere with their foraging behavior during the breeding season (typically February 1 through August 31) must be carefully evaluated and avoided.

According to CNDDB records, American peregrine falcons have been documented nesting on bridge structures over open water in the region. While the availability of optimal nesting habitat in the project area is considered marginal, there remains a possibility that falcons could nest in the vicinity. If construction or other disruptive activities are planned during the breeding season, pre-construction surveys for nesting raptors, including peregrine falcons, should be conducted. Surveys should thoroughly inspect the project site and a 0.5-mile surrounding buffer for signs of active nests, focusing on large trees, transmission towers, bridges, and other structures suitable for nesting. If an active nest is found within this buffer, appropriate avoidance measures such as

establishing a no-disturbance buffer in coordination with the CDFW would be required. This buffer should remain in place until the young have successfully fledged.

Burrowing Owl (*Athene cunicularia*)
CDFW Candidate; CDFW Species of Special Concern; Protected under MBTA and CFGC

Discussion:
The western burrowing owl is a small, ground-dwelling owl easily recognized by its long legs, short tail, rounded head with no ear tufts, and white eyebrows that give it a distinctive facial expression. Its plumage is mottled brown and white, providing effective camouflage in open environments. Unlike most owl species, burrowing owls are often active during the day, particularly in the early morning and late afternoon.

Burrowing owls inhabit open, treeless areas such as grasslands, deserts, agricultural fields, and pastures where they rely on underground burrows for nesting and shelter. These burrows are often created by other animals such as ground squirrels, but burrowing owls are also capable of excavating their own in softer soils. Their diet consists mainly of insects and small mammals, and they require open areas with low vegetation for effective hunting and predator detection.

The burrowing owl is currently designated as a Candidate species under the CESA. As a Candidate, the burrowing owl is afforded the same legal protections as a listed threatened or endangered species during the candidacy period. This includes prohibitions against "take" defined as actions that could kill, harm, or harass the species without proper authorization from the CDFW. Any project activities with the potential to impact burrowing owls or their habitat must undergo careful evaluation, and avoidance, minimization, and mitigation measures must be implemented as necessary to ensure compliance with CESA requirements.

During field surveys for the project, one individual burrowing owl and one active burrow were identified adjacent to the access road to the SOL-6 drilling pad. Suitable habitat for burrowing owls was found within fallow agricultural fields, and along the berms of road cuts, irrigation canals and abandoned reservoirs. These areas provide the low-growing vegetation, burrow availability, and prey resources essential for the species' survival and breeding activities.

Recommendation:
Given the confirmed occurrence of burrowing owls within the project area, targeted protection measures are necessary to avoid significant impacts. Prior to any construction or ground-disturbing activities, burrowing owl survey should be conducted by a qualified biologist following the CDFW Staff Report on Burrowing Owl Mitigation guidelines. Surveys should cover the project area and a 500-foot buffer to detect all burrows and owl activity.

If occupied burrows are confirmed during surveys, CDFW typically requires the establishment of a no-disturbance buffer, often 160 feet for non-breeding season occupancy (September 1 through January 31) and up to 250 feet during the breeding season (February 1 through August 31). Buffer distances may be adjusted based on site-specific conditions and consultation with CDFW.

If project activities are anticipated to result in impacts to burrowing owls or their habitat that cannot be fully avoided, formal consultation with the CDFW would be required. As a Candidate species under the CESA, the burrowing owl is afforded full legal protection against unauthorized take. Pursuant to Section 2081(b) of the CFGC, an Incidental Take Permit (ITP) would be necessary to authorize any take that is incidental to an otherwise lawful activity. Issuance of an ITP would require the development and implementation of measures to minimize and fully mitigate impacts to the species, to the extent feasible, as well as to ensure that the continued existence of the species is not jeopardized. Early engagement with CDFW is strongly recommended to facilitate the permitting process, clarify applicable requirements, and integrate appropriate conservation measures into the project design.

Double-crested Cormorant (*Nannopterum auritum*)
CDFW Watch List; Protected under MBTA

Discussion:
The double-crested cormorant is a large waterbird recognized by its long neck, dark plumage, and orange-yellow facial skin. Adults have a characteristic double crest of black or white feathers on either side of their head during the breeding season, which gives the species its name. Their plumage is primarily black with a slight greenish or bronze sheen, and they have a hooked bill suited for catching fish. Cormorants are highly aquatic and are often observed swimming low in the water, diving frequently to catch fish, or perched with wings spread to dry.

Double-crested cormorants inhabit a variety of aquatic environments including freshwater lakes, rivers, estuaries, and coastal shorelines. They forage almost exclusively in aquatic habitats, diving below the surface to pursue fish. Nesting colonies are typically found in trees, shrubs, or on the ground on islands, rocky ledges, or near water bodies, often in areas isolated from human disturbance. Nest sites are constructed from sticks, vegetation, and other available materials and are usually situated in close proximity to abundant foraging resources.

The double-crested cormorant is protected under the MBTA and designated as a Species of Special Concern by the CDFW due to localized population declines and sensitivity to disturbance at nesting colonies. Major threats include human disturbance, habitat loss, and entanglement in fishing gear.

Within the project area, there is no suitable nesting habitat for double-crested cormorants, as the area lacks large trees, rocky outcrops, or aquatic nesting platforms typically required by the species. However, the proximity of the project area to irrigation canals, wetlands, and open water sources could provide suitable foraging habitat. Cormorants may intermittently forage within the project vicinity, particularly in areas where fish populations are concentrated.

Recommendation:
No double-crested cormorants or active nesting sites were observed within the project area during field surveys. However, given the potential for foraging use in nearby aquatic features, and the

species' sensitivity during the breeding season (typically March through August), pre-construction surveys for nesting waterbirds should be conducted if construction or ground-disturbing activities are scheduled during this period.

Surveys should encompass the project area and a minimum 500-foot buffer to identify any active cormorant nests or nesting colonies. If active nests are located, appropriate avoidance measures, such as establishing species-specific no-disturbance buffers, should be implemented in coordination with CDFW until the conclusion of the breeding season or until the young have fledged. Survey findings and any recommended mitigation or avoidance measures should be fully documented in a biological survey report to support CEQA compliance and avoid potential impacts to protected avian species.

Golden Eagle (*Aquila chrysaetos*)
CDFW Fully Protected; CDFW Watch List; Protected under MBTA

Discussion:
The golden eagle is one of North America's largest and most iconic raptors, easily recognized by its dark brown plumage, golden feathers on the back of the head and neck, and a wingspan that can exceed seven feet. Juveniles often have distinctive white patches at the base of the tail and on the underside of the wings. Golden eagles are highly territorial and require large expanses of open or semi-open habitat for hunting and breeding. Preferred habitats include rolling foothills, mountainous regions, open grasslands, shrublands, and deserts, although they can also be found in agricultural areas and rangelands where prey is abundant.

Golden eagles primarily prey on small to medium-sized mammals such as rabbits, ground squirrels, and hares, but they will also take birds and carrion when available. They often hunt by soaring at high altitudes, using their keen eyesight to detect prey over wide areas. Nesting typically occurs on rugged cliffs, steep escarpments, or large trees, where pairs build massive stick nests that they reuse and add to year after year. Nests are often positioned to offer wide visibility and minimal disturbance from human activities.

The golden eagle is federally protected under the MBTA and the Bald and Golden Eagle Protection Act (BGEPA), both of which strictly prohibit the take, disturbance, or destruction of eagles, their nests, or eggs without a permit. In California, the golden eagle is also listed as a Fully Protected Species under the California Fish and Game Code and designated as a Species of Special Concern due to ongoing threats such as habitat loss, collisions with wind turbines and power lines, and reduced prey availability.

Within the project area, suitable foraging habitat for golden eagles is present in the form of open agricultural fields, fallow lands, and adjacent grassland areas, which could support prey populations such as ground squirrels and rabbits. No suitable cliff faces or large, isolated trees were observed within the immediate project footprint to support nesting, although nesting could occur in nearby foothill or undisturbed areas within foraging range. Golden eagles are known to maintain large territories, and adults may travel several miles from nest sites to forage.

Recommendation:
Although no golden eagles or active nests were observed within the project area during field surveys, the presence of suitable foraging habitat warrants consideration of this species during project planning and implementation. Regional CNDDB records indicate that golden eagles have been documented nesting in the Montezuma Hills area, utilizing Eucalyptus trees and electrical pole/tower structures. Similar trees and powerline structures occur within the project area, indicating a potential, though low, risk of nesting activity.

To avoid potential impacts during the breeding season (typically January 1 through August 31), pre-construction surveys should be conducted by a qualified biologist if project activities are scheduled during this period. Surveys should include a reconnaissance-level evaluation of the project area and a 1-mile buffer to identify any active golden eagle nests. If an active nest is detected, consultation with the CDFW and the USFWS would be required to determine appropriate avoidance and minimization measures. Standard protective measures typically include establishing a no-disturbance buffer — commonly 0.5 mile or greater depending on topography, activity type, and site-specific conditions — around occupied nests until fledging is complete.

Grasshopper Sparrow (*Ammodramus savannarum*)
CDFW Species of Special Concern; Protected under MBTA

Discussion:
The grasshopper sparrow is a small, secretive songbird recognized by its flat head, short tail, and muted coloring, featuring a buffy breast, fine streaking on the back, and a distinctive orange-buff wash across the face. Named for its insect-like, buzzing song, the grasshopper sparrow is typically associated with extensive, open grasslands containing a mix of native and non-native grasses, scattered forbs, and patches of bare ground. This species nests on the ground, constructing well-concealed nests in dense clumps of grass and relies on thick herbaceous vegetation for cover and nesting success.

Populations of grasshopper sparrows have declined throughout much of California due to habitat loss, fragmentation, changes in grassland management, and agricultural intensification. As a result, the species is designated as a California Species of Special Concern and is protected under the MBTA. Conservation of large, intact grassland habitats is critical for maintaining breeding populations. Although grasshopper sparrows were not directly observed during field surveys, and were not identified within the region by CNDDB, the presence of marginally suitable habitat in the form of fallow agricultural fields containing non-native grasses indicates that the project area could support nesting or foraging activities for this species during the breeding season.

Recommendation:
If project activities are scheduled during the grasshopper sparrow breeding season (typically April 1 through August 15), a qualified biologist should conduct pre-construction nesting bird surveys.

Surveys should include the project area and an appropriate buffer (generally at least 250 feet) to detect active nests. If an active grasshopper sparrow nest is identified, a no-disturbance buffer should be established around the nest site, with the size of the buffer determined based on-site conditions and consultation with the CDFW if needed. Survey results, methods, and recommended avoidance measures should be fully documented to ensure compliance with CEQA and MBTA requirements.

Great Blue Heron (*Ardea herodias*)
Protected under MBTA

Discussion:
The great blue heron is the largest heron species in North America, standing up to four and a half feet tall with a wingspan of over six feet. It is easily recognized by its slate-gray body, long legs, sinuous neck, and dagger-like yellow bill. Adults have a distinctive black stripe that extends from above the eye to plumes on the back of the head. In flight, they exhibit slow, deliberate wingbeats and fly with their necks tucked in a tight “S” shape, distinguishing them from cranes.

Great blue herons inhabit a variety of wetland environments including freshwater and saltwater marshes, riparian corridors, lakes, rivers, estuaries, and even agricultural waterways. They are highly adaptable foragers, hunting primarily by wading slowly or standing motionless in shallow water to ambush fish, amphibians, reptiles, small mammals, and invertebrates. They typically forage alone but often nest colonially in "rookeries" composed of dozens to hundreds of nests in tall trees near water bodies.

While widespread and relatively common, great blue herons are highly sensitive to disturbance during the breeding season. Nesting colonies, or rookeries, are critical to maintaining local populations, and significant disturbances near active nests can cause nest abandonment. As such, the species is protected under the MBTA, which prohibits the take or disturbance of individuals, their nests, or eggs without authorization.

Within the project area, suitable foraging habitat for great blue herons exists along irrigation canals, agricultural ditches, wetlands, and adjacent open water features. However, no active nesting colonies or large stands of trees suitable for rookery establishment were observed within the immediate project footprint. According to CNDDB records, a rookery site was documented in 1992 along the Sacramento River, adjacent to State Highway 160, approximately 1 mile west of the proposed SAC-TW-1 drilling pad and directly east across the Sacramento River from the SOL-6 drilling pad.

Recommendation:
Although no active great blue heron nests or rookeries were identified during the field surveys, the potential for the species to forage within the project area suggests that protective measures may still be necessary during project activities, particularly if work occurs near aquatic habitats during the breeding season (typically February 15 through August 15).

If project activities are scheduled during this period and occur within 500 feet of wetlands, waterways, or other open water features, pre-construction nesting bird surveys should be conducted by a qualified biologist. Surveys should assess the project area and a 500-foot buffer for evidence of active nests or rookeries. Should active nests be located, an appropriate no-disturbance buffer (generally 300 to 500 feet, depending on site conditions) should be established and maintained until the young have fledged, as determined by a qualified biologist in coordination with the CDFW if needed. Survey findings, methodologies, and any mitigation recommendations should be compiled into a biological resources report to document compliance with CEQA and MBTA protections.

Great Egret (*Ardea alba*)
Protected under MBTA

Discussion:
The great egret is a large, elegant wading bird distinguished by its entirely white plumage, long black legs, yellow bill, and graceful neck that forms a characteristic “S” shape in flight. Standing approximately 3 to 3.5 feet tall with a wingspan reaching up to 5.5 feet, the great egret is an iconic species often associated with wetland and aquatic environments. During the breeding season, adults develop long, delicate plumes on their backs, which historically made them a target of the plume trade.

Great egrets inhabit a wide range of aquatic habitats, including freshwater and saltwater marshes, rivers, lakes, ponds, estuaries, and agricultural fields with standing water. They forage primarily by wading slowly or standing motionless in shallow water, where they spear fish, amphibians, reptiles, insects, and small mammals with rapid thrusts of their sharp bills. Great egrets typically nest in colonies, often with other wading birds such as herons and cormorants, using trees or dense vegetation near water sources for nesting sites.

Although the great egret population has rebounded since the early 20th century due to protection measures, it remains sensitive to disturbance during the breeding season. Colonies can be abandoned if they are subjected to excessive noise, human activity, or habitat degradation. The great egret is protected under the MBTA, which prohibits the take, possession, or destruction of individuals, their nests, or eggs without authorization.

Within the project area, suitable foraging habitat for great egrets is present in irrigation canals, agricultural ditches, wetlands, and nearby open water bodies. However, no active nesting colonies or rookeries were observed within the immediate project area during the field surveys. Despite the lack of nesting habitat onsite, the availability of foraging opportunities suggests that great egrets may intermittently utilize the site for feeding activities.

Recommendation:
Although no great egret nests or rookeries were observed during field surveys, the project area offers suitable foraging habitat, and nearby aquatic features could support breeding colonies. If construction or other disruptive activities are scheduled during the breeding season (typically

February 15 through August 15), pre-construction nesting bird surveys should be conducted by a qualified biologist.

Surveys should include an evaluation of the project area and a minimum 500-foot buffer around potential nesting habitat to identify active nests or colonies. If active great egret nests are detected, a no-disturbance buffer, generally between 300 and 500 feet depending on site conditions and project activities should be established and maintained until fledging is complete, as determined by a qualified biologist in coordination with the CDFW if necessary.

Loggerhead Shrike (*Lanius ludovicianus*)
CDFW Species of Special Concern; Protected under MBTA

Discussion:
The loggerhead shrike is a medium-sized songbird often referred to as the "butcher bird" due to its distinctive hunting behavior of impaling prey on thorns, barbed wire, or sharp twigs for later consumption. It is easily recognized by its gray back, white underparts, black wings and tail, and a conspicuous black mask extending from the beak through the eyes. Although technically a songbird, its hooked bill and predatory habits are more reminiscent of raptors.

Loggerhead shrikes prefer open habitats that combine short vegetation for hunting with scattered shrubs, trees, or other perches used for scanning for prey. Suitable habitats include grasslands, savannas, pasturelands, fallow fields, desert scrub, and open agricultural areas with hedgerows or fencing. Their diet consists mainly of insects, small mammals, reptiles, amphibians, and occasionally small birds.

In California, loggerhead shrike populations have declined due to habitat loss, fragmentation, pesticide use, and reduction of suitable nesting sites, leading to its designation as a Species of Special Concern. The species is also protected under the MBTA, which prohibits the take, possession, or destruction of individuals, nests, or eggs without authorization. Within the project area, suitable habitat for loggerhead shrikes is present in the form of fallow agricultural fields, scattered shrubs, fencelines, and open scrubland. These features provide appropriate hunting grounds as well as potential nesting substrates, such as thorny bushes, small trees, or barbed wire fencing. While no individuals were observed during field surveys, habitat conditions suggest that the project area could support both nesting and foraging activities for this species during the breeding season.

Recommendation:
Although loggerhead shrikes were not directly observed during the field surveys or identified in the region by the CNDDB, the presence of suitable nesting and foraging habitat within the project area warrants precautionary measures during the breeding season (generally March 1 through August 31).

If project activities are scheduled to occur during the breeding season, a pre-construction nesting bird survey should be conducted by a qualified biologist to detect any active loggerhead shrike

nests. The survey should encompass the project area and an appropriate buffer (typically at least 250 feet) to ensure that potential nest sites are adequately identified. If an active nest is located, a no-disturbance buffer should be established around the nest, with the size of the buffer determined based on-site conditions, species behavior, and consultation with the CDFW if necessary. The buffer should be maintained until the young have fledged.

Northern Harrier (*Circus hudsonius*)
CDFW Species of Special Concern; Protected under MBTA

Discussion:
The northern harrier is a medium-sized raptor easily recognized by its long wings and tail, slender body, and distinctive low, coursing flight style over open habitats. Adults exhibit sexual dimorphism, with males having a pale gray back and whitish underside, while females and juveniles are brown with streaked underparts. A key identifying feature for all northern harriers is the prominent white rump patch visible in flight.

Northern harriers prefer open landscapes such as grasslands, marshes, agricultural fields, and wetlands where they hunt primarily by flying low over the ground and capturing small mammals, birds, reptiles, and insects. Their foraging style depends heavily on both sight and hearing, aided by their owl-like facial disc that enhances auditory perception. Nests are typically built on the ground in dense vegetation, often in marshes or extensive grasslands with low human disturbance.

The northern harrier has experienced population declines throughout parts of its range due to the loss and degradation of wetland and grassland habitats. In California, it is designated as a Species of Special Concern and is protected under the MBTA, which prohibits the take, possession, or destruction of individuals, nests, or eggs without proper authorization.

During field surveys for the project, one northern harrier was observed foraging within the project area adjacent to the SOL-4 drilling pad. CNDDB records of nesting activity have been reported in the area. Suitable habitat for northern harriers exists within fallow agricultural fields, grassland patches, and along wetland edges and irrigation canals. These open habitats provide both the necessary cover for ground nesting and an abundant prey base for foraging activities.

Recommendation:
Given the confirmed presence of northern harriers foraging onsite and the availability of suitable nesting and foraging habitat, focused pre-construction nesting bird surveys should be conducted if construction or ground-disturbing activities are scheduled during the breeding season (generally March 1 through August 31). Surveys should encompass the project area and an appropriate buffer (typically at least 500 feet) to detect any active northern harrier nests, particularly ground nests within open fields or marshy areas. If an active nest is detected, a no-disturbance buffer should be established around the nest site. Buffer distances generally range from 500 to 600 feet but may be adjusted based on specific site conditions, nesting behavior, and coordination with the CDFW.

If construction must occur during the breeding season and active nests are found, work should be postponed until the young have fledged unless a qualified biologist determines that impacts can be avoided through other protective measures.

Song Sparrow ("Modesto" population) (*Melospiza melodia*)
CDFW Species of Special Concern; Protected under MBTA

Discussion:
The song sparrow is a medium-sized, streaky brown songbird recognized by its broad, rounded tail, heavy breast streaking, and a distinctive central breast spot. It is known for its rich, melodious song, often heard from exposed perches during the breeding season. The "Modesto" population of song sparrow, a subspecies endemic to California's Central Valley, is characterized by slightly paler and less heavily streaked plumage compared to coastal populations.

This subspecies relies on dense riparian vegetation, wetlands, and adjacent moist grasslands for nesting and foraging. Typical habitat includes thickets of willow, blackberry, wild rose, and other dense shrubs near permanent or seasonal water sources. Song sparrows build cup-shaped nests low in shrubs or tall grasses and forage on the ground for seeds, insects, and other invertebrates. Access to dense vegetation for cover and a steady supply of insects during the breeding season are critical to the species' survival.

Due to extensive loss and modification of riparian and wetland habitats in the Central Valley, the "Modesto" population of song sparrow has experienced significant declines, leading to its designation as a California Species of Special Concern. The species is also protected under the MBTA, which prohibits the take, disturbance, or destruction of individuals, their nests, or eggs without authorization.

Within the project area, suitable habitat for the "Modesto" song sparrow is marginal. Irrigation canals with patches of emergent vegetation, agricultural drainage features, and scattered riparian shrubs may provide limited nesting and foraging opportunities. However, the highly disturbed and agricultural nature of much of the project area reduces the overall habitat quality compared to more intact riparian areas. Nonetheless, the potential for nesting or foraging use by the species cannot be entirely ruled out.

Recommendation:
Although no song sparrows of the "Modesto" population were observed during field surveys, CNDDB records indicate that this species has been documented to nest in the region. Nest sites have been recorded on Bradford Island, Jersey Island, and Sherman Island. The presence of marginally suitable nesting and foraging habitat in parts of the project area warrants precautionary measures during the breeding season (generally March 1 through August 31).

Prior to the start of any construction or ground-disturbing activities during this period, pre-construction nesting bird surveys should be conducted by a qualified biologist. Surveys should

cover the project footprint and an appropriate surrounding buffer (typically at least 100 to 250 feet) to detect active nests. If active nests of the "Modesto" song sparrow are found, a no-disturbance buffer should be established around the nest site. The size of the buffer should be determined based on site-specific conditions and project activities and may be modified through consultation with the CDFW if necessary.

Swainson's Hawk (*Buteo swainsoni*)
CDFW Threatened; Protected under MBTA

Discussion:
The Swainson's hawk is a large, slender-bodied raptor distinguished by its broad wings, long pointed wingtips, and characteristic flight silhouette. Adults have a dark brown back and upper wings, a pale or whitish underside, and a contrasting dark chest band. When soaring, Swainson's hawks display a two-toned pattern with darker flight feathers and lighter wing linings. This species is highly migratory, wintering in Central and South America and returning to breed throughout the western United States, including California's Central Valley.

Swainson's hawks require a combination of open foraging habitat and suitable nesting sites. They nest primarily in large trees such as cottonwoods, willows, oaks, and eucalyptus, typically located along riparian corridors, field edges, levees, and isolated groves adjacent to agricultural lands or grasslands. Their foraging habitat includes irrigated pasture, fallow fields, grasslands, and grain fields where they prey on small mammals, reptiles, amphibians, and large insects.

The species is listed as Threatened under the California Endangered Species Act (CESA) due to substantial declines from habitat loss, conversion of grasslands to intensive agriculture, and removal of nest trees. Swainson's hawks are also protected under the MBTA, which prohibits take, harassment, or destruction of individuals, nests, or eggs without authorization.

Within the project area, suitable foraging habitat is available in the form of open agricultural fields, pastures, and fallow lands. While no active nests were detected during field surveys, several mature trees in the broader landscape could provide potential nesting opportunities. CNDDB records indicate multiple nest sites occurring in the region. Given their large foraging ranges, Swainson's hawks could utilize the project area for hunting activities during the breeding season.

Recommendation:
Due to the presence of suitable foraging habitat and the potential for nesting sites within proximity to the project area, focused Swainson's hawk surveys are recommended if construction or ground-disturbing activities are scheduled during the breeding season (March 1 through September 15).

Pre-construction surveys should be conducted by a qualified biologist following the survey guidelines established by the CDFW, including systematic visual surveys of the project area and a minimum 0.5-mile radius buffer for active nests. If an active Swainson's hawk nest is located, consultation with CDFW would be required to establish appropriate avoidance measures. Typical

protective measures include the establishment of a no-disturbance buffer of at least 0.5 mile around active nests, although buffer distances may vary based on site-specific conditions and CDFW recommendations. All survey results, methodologies, and recommended avoidance or mitigation measures should be documented to ensure compliance with CEQA, CESA, and MBTA requirements.

White-tailed Kite (*Elanus leucurus*)
CDFW Fully Protected; Protected under MBTA

Discussion:
The white-tailed kite is a medium-sized raptor known for its striking appearance, with predominantly white underparts and face, gray upper wings and back, and black patches on the shoulders. Its namesake white tail is broad and rounded. White-tailed kites are often observed hovering in place over open fields, a behavior known as "kiting," as they scan for prey.

Preferred habitats for white-tailed kites include open grasslands, savannas, agricultural fields, wetlands, and areas with scattered trees or dense shrubs for nesting. They forage primarily on small mammals, especially voles and mice, but will also take insects and small birds when available. White-tailed kites typically nest in the upper canopies of dense trees or large shrubs, using twigs and grasses to construct their nests, which are well-concealed within foliage.

The species is designated as Fully Protected under the CFGC and is protected under the MBTA. This designation reflects concern over past population declines caused by habitat loss, human disturbance, and historical persecution. While populations have stabilized in many areas, they remain vulnerable to habitat conversion and fragmentation.

During field surveys for the project, a white-tailed kite was observed foraging within the project area adjacent to SAC-TW-2 and SAC-TW-3. Suitable nesting and foraging habitat is present within the project area, particularly in fallow agricultural fields, open grassland areas, and in association with scattered trees along irrigation canals and field edges. These habitats provide prey resources and potential nesting substrates.

Recommendation:
Given the observed presence of a white-tailed kite within the project area and the availability of suitable nesting and foraging habitat, protective measures are recommended if construction or ground-disturbing activities are scheduled during the breeding season (generally February 15 through August 15). Pre-construction surveys should be conducted by a qualified biologist to assess the project area and a minimum 500-foot buffer for evidence of active white-tailed kite nests. If active nests are detected, a no-disturbance buffer, typically at least 500 feet, should be established around the nest site and maintained until the young have fledged, as determined by a qualified biologist in coordination with the CDFW.

American Badger (*Taxidea taxus*)
CDFW Species of Special Concern

Discussion:
The American badger is a medium-sized, fossorial mammal distinguished by its broad, flattened body, short legs, distinctive black-and-white facial markings, and strong digging adaptations. It inhabits a variety of open landscapes including grasslands, pastures, scrublands, and lightly cultivated agricultural areas where soils are suitable for digging. Badgers primarily prey on small mammals such as ground squirrels, gophers, and rabbits, using their strong forelimbs and claws to excavate burrows and pursue prey underground. They rely heavily on open habitats with friable soils and abundant prey populations to survive. The species is listed as a California Species of Special Concern due to declines linked to habitat loss, agricultural conversion, and human-related mortality. Protection of remaining open-space habitats is critical to conserving regional badger populations. During field surveys, no American badgers or active burrows were observed. However, the project area's open fallow fields and grasslands could provide suitable foraging and denning habitat.

Recommendation:
Prior to construction, a pre-construction survey for American badgers should be conducted by a qualified biologist to detect any active dens within the project footprint. If occupied dens are found, avoidance measures should be implemented, including establishment of a no-disturbance buffer. If avoidance is not feasible, consultation with CDFW would be necessary to develop and implement an approved passive relocation plan. All survey findings, methods, and recommended protective measures should be fully documented to ensure CEQA compliance.

Hoary Bat (*Lasiurus cinereus*)
State Species of Special Concern

Discussion:
The hoary bat is one of the largest bat species in North America, easily recognized by its dense, frosted gray-brown fur and large size. The species has a distinctive appearance, with heavily furred tail membranes and white-tipped hairs that give it a "hoary" or frosted look. Hoary bats are solitary and roost individually, typically hidden in the foliage of mature trees where their camouflaged appearance offers protection during the day.

This species prefers a wide variety of habitats including open woodlands, riparian corridors, agricultural areas with scattered trees, and forest edges. Roost sites are most often located in tree foliage rather than cavities or crevices. Hoary bats are highly migratory, traveling between breeding grounds in North America and wintering sites farther south. They forage extensively at night, feeding on moths and other flying insects over open habitats such as grasslands, water bodies, and agricultural fields. The hoary bat is designated as a California Species of Special Concern largely due to population concerns related to habitat loss, tree removal, and mortality at wind energy facilities. Although highly adaptable, hoary bats are sensitive to the loss of suitable roost trees and disruptions along migration pathways. While no hoary bats were observed during field surveys, CNDDB records indicate historical records of this species in the region. CNDDB

recorded occurrence of the hoary bat were recorded in 1999 along the bank of the Sacramento River

The presence of mature trees and nearby open fields within and adjacent to the project area provides potentially suitable roosting and foraging habitat for this species.

Recommendation:
A pre-construction bat habitat evaluation should be conducted by a qualified biologist to evaluate the presence of suitable roosting habitat. If suitable roost trees are identified, and impacts cannot be avoided, work should be scheduled outside of the bat maternity season (generally April 1 through August 31) to minimize potential impacts to reproductive individuals.

If tree removal during the maternity season is unavoidable, additional surveys such as acoustic monitoring or emergence surveys may be required to determine occupancy. If active roosts are detected, consultation with the CDFW would be necessary to develop appropriate avoidance or mitigation measures, which may include phased tree removal or habitat enhancement elsewhere. All survey results, methods, and mitigation strategies should be thoroughly documented to ensure full compliance with CEQA.

Pallid Bat (*Antrozous pallidus*)
CDFW Species of Special Concern

Discussion:
The pallid bat is a large, pale-colored bat with very large ears and a distinct blunt snout. Its fur is typically light cream to yellowish-brown on the back and pale below, providing excellent camouflage in dry, open habitats. Pallid bats are unique among North American bats for their ground-foraging behavior; they capture prey directly from the ground or low vegetation rather than catching insects in flight. Their diet includes a wide variety of ground-dwelling arthropods such as beetles, crickets, scorpions, and spiders. Preferred roosting sites include rocky outcrops, cliffs, abandoned buildings, hollow trees, bridges, and even dense foliage in open areas such as deserts, grasslands, scrublands, and oak woodlands. Pallid bats are known to switch between day roosts and night roosts, often using different structures depending on temperature and protection from predators. The pallid bat is a California Species of Special Concern due to declines associated with habitat loss, roost site disturbance, and human development.

Although pallid bats were not observed during field surveys and no CNDDB records occur in the region, the presence of suitable foraging areas (e.g., fallow fields and open agricultural landscapes) and potential roosting habitat (e.g., large trees, abandoned structures) within and adjacent to the project site suggests that the species could occur in the project vicinity.

Recommendation:
Prior to any construction activities involving tree removal, demolition of structures, or disturbance of rocky features, a pre-construction bat habitat assessment should be conducted by a qualified biologist to identify potential roosting habitat for pallid bats. If suitable habitat is present, focused

bat surveys (such as roost emergence surveys or acoustic monitoring) should be completed to determine occupancy.

If active roosts are detected, work should be scheduled outside of the maternity season (April 1 through August 31) to avoid impacts to reproductive females and young. If avoidance is not possible, consultation with the CDFW would be necessary to develop appropriate mitigation strategies, which could include phased removal or habitat enhancement elsewhere. All survey results, methodologies, and mitigation measures should be thoroughly documented in a report to ensure compliance with CEQA.

Western Red Bat (*Lasiurus frantzii*)
CDFW Species of Special Concern

Discussion:
The western red bat is a medium-sized bat species recognized by its striking reddish-orange fur and relatively short, rounded ears. It is a solitary, foliage-roosting bat that typically selects roost sites in the dense outer leaves of broadleaf trees, often along riparian corridors or within shaded woodlands. Roosting individuals are highly cryptic, relying on their coloration and the density of the foliage for concealment from predators.

The species' preferred habitats include riparian forests, mature cottonwood-willow stands, orchards, and occasionally landscaped areas with suitable tree cover. Western red bats forage primarily over open areas, water bodies, and along forest edges, preying on a wide variety of nocturnal insects, especially moths. During the day, they roost in trees close to their foraging areas, often switching roosts frequently.

The western red bat is designated as a California Species of Special Concern due to ongoing threats from habitat loss, riparian vegetation degradation, pesticide exposure, and urbanization. Maintaining riparian woodlands and mature tree canopies is critical for the survival of this species. Although no western red bats were detected during field surveys CNDDB records indiciate that this species has been observed in the region. Mature riparian and ornamental trees located within or near the project area could provide suitable roosting habitat. The surrounding agricultural fields and open spaces may also offer appropriate foraging habitat.

Recommendation:
Prior to any tree removal or significant vegetation clearing, a pre-construction bat habitat evaluation should be conducted by a qualified biologist to evaluate the presence of suitable roosting habitat for western red bats. If suitable trees are identified, removal should be scheduled outside of the maternity season (typically April 1 through August 31) to avoid impacts to reproductive females and dependent young. If tree removal during the maternity season is unavoidable, additional focused bat surveys such as acoustic monitoring or emergence surveys may be required to confirm occupancy. Should an active roost be found, consultation with the CDFW would be necessary to develop and implement appropriate avoidance or mitigation measures.

American Bumblebee (*Bombus pensylvanicus*)

Discussion:
The American bumblebee is a large, robust bee recognized by its predominantly black body with distinct yellow bands across the thorax and abdomen. Historically one of the most common and widespread bumblebee species in North America, its populations have declined dramatically over recent decades due to habitat loss, pesticide exposure, competition with non-native species, and disease. The species prefers open habitats such as grasslands, prairies, agricultural fields, and disturbed areas with a high diversity of flowering plants. It requires an abundance of nectar and pollen resources throughout its active season and suitable underground or surface cavities for nesting. American bumblebees are important pollinators for both native plants and agricultural crops. Although no American bumblebees were observed during field surveys, historical CNDDB records of this species occur in the region. The project area's fallow fields, open agricultural margins, and presence of blooming vegetation suggest that suitable foraging habitat could exist within portions of the site.

Recommendation:
To minimize potential impacts to the American bumblebee, ground-disturbing activities should avoid peak blooming periods (spring and early summer) when possible to preserve floral resources. Pre-construction surveys should be conducted during peak activity to detect bumblebee colonies if extensive disturbance to flowering areas is anticipated. If colonies are located, avoidance measures such as establishment of protective buffers or seasonal work restrictions should be implemented.

Crotch's Bumblebee (*Bombus crotchii*)
CDFW Candidate

Discussion:
Crotch's bumblebee is a distinctive, medium-sized bee with a lemon-yellow thorax and an abdomen marked by a combination of black and yellow banding. Endemic to California, this species is associated with coastal scrub, chaparral, grasslands, and agricultural margins that support native wildflowers and open ground for nesting. Crotch's bumblebee populations have experienced significant declines, primarily due to habitat fragmentation, agricultural intensification, and pesticide use. It is highly sensitive to landscape changes and requires a continuous supply of floral resources throughout its active season. While no individuals were detected during field surveys, suitable foraging habitat consisting of weedy margins, native flowering plants, and open disturbed areas exists within the project area.

Recommendation:
Prior to initiating protocol surveys, a habitat assessment shall be conducted to evaluate the availability of key resources for CESA candidate bumble bee species in accordance with CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. This includes documenting foraging resources (blooming flowers), nesting substrates

(such as undisturbed soil, rodent burrows, etc.), and potential overwintering sites (loose soil, leaf litter, or undisturbed ground cover). Following the habitat assessment to determine presence of suitable resources, surveys must be performed by qualified biologists during peak bumble bee activity (April–September) under suitable weather conditions (≥60°F, low wind, no rain). Standardized methods involve timed aerial netting (minimum 30 minutes per acre) with non-lethal documentation and careful handling. Survey efforts must capture precise GPS locations, detailed habitat characteristics, and species-level identification, with multiple visits recommended across the season.

Western Bumblebee (*Bombus occidentalis*)
CDFW Candidate

Discussion:
The western bumblebee is a once-common species easily identified by its black body and a prominent white band on the abdomen. This species historically ranged widely throughout the western United States but has experienced dramatic declines attributed to disease, habitat loss, pesticide exposure, and competition with non-native bees. Western bumblebees inhabit a range of ecosystems, including grasslands, montane meadows, agricultural fields, and open woodlands, where they forage on a wide variety of flowering plants. They nest underground in abandoned rodent burrows or natural cavities. Although no western bumblebees were observed during field surveys, the project area's open fields and agricultural margins, combined with the presence of seasonal flowering plants, could provide suitable foraging and nesting opportunities.

Recommendation:
As recommended for Crotch's bumble bee, surveys in accordance with with CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species.

Yellow-banded Andrenid Bee (*Perdita hirticeps luteocincta*)

Discussion:
The yellow-banded andrenid bee is a small, solitary ground-nesting bee associated with sandy soils and open, flower-rich habitats. It is identified by its yellow-banded abdomen and slender body shape. This species is poorly understood due to its cryptic behavior and limited documentation, but it is thought to prefer undisturbed or lightly disturbed areas with abundant native or naturalized flowering plants. Habitat degradation, pesticide exposure, and competition with invasive species are contributing factors to its decline. Because it nests underground, ground disturbance during the active season can directly impact individuals and nesting success. While no individuals were detected during field surveys, portions of the project area characterized by sandy soils, open ground, and flowering vegetation could provide marginally suitable habitat for this species.

Recommendation:
Although there are no species-specific survey protocols established for this bee by the USFWS or the CDFW. General survey practices for ground-nesting bees can be applied when assessing

their presence. Protocol's for detecting presence of the Western and Crotch's bumble bee can be applied for this species.

Wetlands and Waterways

Preliminary planning for the well development project has identified the potential presence of wetlands and waterways within the proposed project area. Prior to field surveys, MESA biologists conducted a desktop review of the USFWS NWI and the USGS NHD to identify aquatic features that may require further evaluation. The results of this review are provided in **Figures 6 and 7** of this report and will serve as a reference for field verification during subsequent site surveys. While streams and wetlands have been identified within the project vicinity, jurisdictional status under federal and state regulations has not yet been determined and will require site-specific evaluations and possible agency coordination during future phases of the project.

This technical study has been prepared based on preliminary pipeline routings and does not incorporate finalized construction methodologies. As such, the analysis herein is intended to provide a baseline evaluation of potential aquatic resources and anticipated impacts, which will be further refined once final construction methods and alignments are established. Potential impacts to wetlands and waterways may include soil erosion, sedimentation, temporary alteration of hydrologic conditions, and direct or indirect disturbance to aquatic and riparian habitats. The extent of these impacts will be influenced by the final selection of construction techniques, the specific location of pipeline crossings, and the timing of construction activities relative to seasonal hydrology.

Following finalization of the construction methodologies by CRC, an updated evaluation of potential impacts to wetlands and waterways will be conducted. Construction methods that minimize or avoid surface disturbance, such as horizontal directional drilling or boring beneath sensitive resources, will be considered where feasible. Best management practices (BMPs) for erosion and sediment control, restoration of temporarily disturbed areas with native vegetation, and implementation of hydrological stabilization measures will be incorporated into the project design to minimize adverse effects. A final mitigation measure will be implemented to assess and address impacts to wetlands and waterways once construction methodologies are finalized. This mitigation will include updated field surveys to confirm the presence, extent, and jurisdictional status of aquatic resources within the project area, and the development of site-specific avoidance, minimization, and mitigation strategies consistent with applicable federal, state, and local regulatory requirements. The project will ensure full compliance with the Clean Water Act, the California Fish and Game Code, and other relevant environmental regulations to protect aquatic resources and support long-term ecosystem integrity.

Prior to construction, CRC shall finalize construction methodologies and complete updated field surveys to verify the presence and jurisdictional status of wetlands and waterways within project disturbance areas. Based on survey results, CRC shall implement avoidance and minimization measures, such as rerouting pipelines, using trenchless construction methods (e.g., horizontal directional drilling), and installing erosion and sediment control BMPs. Temporarily disturbed areas shall be restored to pre-project conditions. If permanent impacts to jurisdictional aquatic

resources occur, compensatory mitigation shall be provided as required by applicable regulatory agencies.

Nesting Birds

Detecting nesting birds in California involves rigorous and methodical surveys to comply with the protections outlined in both the CFGC and the federal MBTA. These laws safeguard most bird species, their nests, and eggs, making it vital for development and land-use activities to avoid disturbances during the nesting season. Surveys are conducted primarily during the peak nesting season, which typically spans from February 1 to August 31, although the timing can vary based on the region and specific bird species. The objective of these surveys is to identify active nests and ensure project activities do not negatively impact nesting birds.

Pre-construction surveys are performed by qualified biologists prior to any ground-disturbing activities to identify active nests within and around the project area. These surveys involve systematically walking the site and surrounding buffer areas, using visual and auditory cues to detect nesting behavior such as birds carrying nesting material, courtship displays, and movements associated with nest entry and exit. Binoculars and scopes are used for detailed visual inspections, while listening for bird calls and songs helps identify active nesting territories, as birds sing more frequently during the breeding season. In larger project areas or extended projects, sequential surveys may be conducted to ensure continuous monitoring throughout the nesting period.

If active nests are found, biologists establish appropriate buffer zones to prevent disturbance, with buffer sizes varying based on the sensitivity of the species—ranging from 50 to 500 feet or more. Work within these zones is restricted until the young have fledged and the nest is no longer active, as verified by follow-up inspections. Survey results are documented in detailed reports that include nest locations, species identification, and the status of nesting activity. For cases involving sensitive or protected species, coordination with the CDFW and potentially the USFWS ensures that mitigation measures are put in place. Ongoing monitoring during project execution may be required to maintain compliance with established protection measures, ensuring nests remain undisturbed.

Conclusion

MESA Biological LLC conducted this evaluation for the Rio Vista Well Development Project to assess potential impacts on special-status species, sensitive habitats, wetlands, and waterways within Solano, Sacramento, and Contra Costa counties. The evaluation, based on extensive database research, field reconnaissance surveys, and habitat analysis, determined that the project area is largely characterized by disturbed agricultural lands, fallow fields, and grazing pastures, with limited native vegetation or intact natural habitats. A review of biological databases identified 57 special-status plant species with potential to occur regionally; however, field surveys conducted outside the optimal blooming season did not detect any special-status plants, and habitat conditions were found to be unsuitable due to heavy agricultural disturbance. Consequently, no further botanical surveys are recommended. Regarding wildlife, 76 special-status species were initially considered, with 17 species evaluated as having a possible or confirmed presence based on habitat suitability and field observations. Four special-status species—burrowing owl, great egret, northern harrier, and white-tailed kite—were directly observed within the project footprint. Additional sensitive species such as Swainson's hawk, American badger, grasshopper sparrow, and several species of special-status bats and bumblebees were identified as having the potential to utilize the area, particularly in fallow fields, wetlands, and along irrigation canals.

The evaluation also identified the presence of wetland and waterway features associated with agricultural canals and drainage systems, but the jurisdictional status of these features under the Clean Water Act and CFGC requires further field verification and possible agency coordination once final project designs are established. Notably, the project area offers diverse nesting opportunities for birds, including ground, shrub, and raptor nesting species, necessitating pre-construction nesting bird surveys during the February 1 to August 31 breeding season to ensure compliance with the MBTA and California regulations. The report recommends a series of mitigation measures, including biological surveys for special-status wildlife, establishment of no-disturbance buffers around active nests and burrows. Overall, while the project area retains moderate habitat value for select sensitive species, it is largely constrained by its agricultural history and ongoing land uses.

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Attachment A

California Natural Diversity Database Query - Jersey Island and Rio Vista USGS 7.5-minute Quadrangles and Ten Surrounding Quadrangles

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Rio Vista (3812126) OR Jersey Island (3812116) OR Brentwood (3712186) OR Antioch North (3812117) OR Antioch South (3712187) OR Birds Landing (3812127) OR Dozier (3812137) OR Liberty Island (3812136) OR Courtland (3812135) OR Isleton (3812125) OR Bouldin Island (3812115) OR Woodward Island (3712185))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Alameda whipsnake *Masticophis lateralis euryxanthus*	ARADB21031	Threatened	Threatened	G4T2	S2	
Alkali Meadow *Alkali Meadow*	CTT45310CA	None	None	G3	S2.1	
alkali milk-vetch *Astragalus tener var. tener*	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Alkali Seep *Alkali Seep*	CTT45320CA	None	None	G3	S2.1	
alkali-sink goldfields *Lasthenia chrysantha*	PDAST5L030	None	None	G2	S2	1B.1
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American bumble bee *Bombus pensylvanicus*	IIHYM24260	None	None	G3G4	S2	
American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
Antioch andrenid bee *Perdita scitula antiochensis*	IIHYM01031	None	None	G1T1	S2	
Antioch cophuran robberfly *Cophura hurdi*	IIDIP06010	None	None	GX	SX	
Antioch Dunes anthicid beetle *Anthicus antiochensis*	IICOL49020	None	None	G3	S3	
Antioch Dunes buckwheat *Eriogonum nudum var. psychicola*	PDPGN0849Q	None	None	G5T1	S1	1B.1
Antioch Dunes evening-primrose *Oenothera deltoides ssp. howellii*	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
Antioch Dunes halcitid bee *Sphecodogastra antiochensis*	IIHYM78010	None	None	G1	S1	
Antioch efferian robberfly *Efferia antiochi*	IIDIP07010	None	None	G1G2	S1S2	
Antioch multilid wasp *Myrmosula pacifica*	IIHYM15010	None	None	GH	SH	
Antioch specid wasp *Philanthus nasalis*	IIHYM20010	None	None	G2	S2	
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S3	
bearded popcornflower *Plagiobothrys hystriculus*	PDBOR0V0H0	None	None	G2	S2	1B.1
big tarplant *Blepharizonia plumosa*	PDAST1C011	None	None	G1G2	S1S2	1B.1
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	IIHYM35030	None	None	G2	S1	
Boggs Lake hedge-hyssop *Gratiola heterosepala*	PDSCR0R060	None	Endangered	G2	S2	1B.2
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	PDAPI0M051	None	None	G5T4T5	S2?	2B.1
Brewer's western flax *Hesperolinon breweri*	PDLIN01030	None	None	G2	S2	1B.2
Bridges' coast range shoulderband *Helminthoglypta nickliniana bridgesi*	IMGASC2362	None	None	G3T1	S1S2	
bristly sedge *Carex comosa*	PMCYP032Y0	None	None	G5	S2	2B.1
brittlescale *Atriplex depressa*	PDCHE042L0	None	None	G2	S2	1B.2
broadleaf pondweed *Stuckenia striata*	PMPOT030K0	None	None	G3G4Q	S2S3	2B.3
burrowing owl *Athene cunicularia*	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G2	S2	1B.2
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3T1	S2	FP
California glossy snake *Arizona elegans occidentalis*	ARADB01017	None	None	G5T2	S2	SSC
California least tern *Sternula antillarum browni*	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
California tiger salamander - central California DPS *Ambystoma californiense pop. 1*	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
caper-fruited tropidocarpum *Tropidocarpum capparideum*	PDBRA2R010	None	None	G1	S1	1B.1
Carquinez goldenbush *Isocoma arguta*	PDAST57050	None	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
chaparral ragwort *Senecio aphanactis*	PDAST8H060	None	None	G3	S2	2B.2
Cismontane Alkali Marsh *Cismontane Alkali Marsh*	CTT52310CA	None	None	G1	S1.1	
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh *Coastal Brackish Marsh*	CTT52200CA	None	None	G2	S2.1	
Colusa grass *Neostapfia colusana*	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Conservancy fairy shrimp *Branchinecta conservatio*	ICBRA03010	Endangered	None	G2	S2	
Contra Costa goldfields *Lasthenia conjugens*	PDAST5L040	Endangered	None	G1	S1	1B.1
Contra Costa wallflower *Erysimum capitatum var. angustatum*	PDBRA16052	Endangered	Endangered	G5T1	S1	1B.1
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*	PDAST5L0A1	None	None	G4T2	S2	1B.1
Crampton's tuctoria or Solano grass *Tuctoria mucronata*	PMPOA6N020	Endangered	Endangered	G1	S1	1B.1
Crotch's bumble bee *Bombus crotchii*	IIHYM24480	None	Candidate Endangered	G2	S2	
curved-foot hygrotus diving beetle *Hygrotus curvipes*	IICOL38030	None	None	G2	S2	
Delta button-celery *Eryngium racemosum*	PDAPI0Z0S0	None	Endangered	G1	S1	1B.1
Delta green ground beetle *Elaphrus viridis*	IICOL36010	Threatened	None	G1	S1	
Delta mudwort *Limosella australis*	PDSCR10030	None	None	G5	S2	2B.1
Delta smelt *Hypomesus transpacificus*	AFCHB01040	Threatened	Endangered	G1	S1	
Delta tule pea *Lathyrus jepsonii var. jepsonii*	PDFAB250D2	None	None	G5T2	S2	1B.2
Diablo helianthella *Helianthella castanea*	PDAST4M020	None	None	G2	S2	1B.2
diamond-petaled California poppy *Eschscholzia rhombipetala*	PDPAP0A0D0	None	None	G1	S1	1B.1
double-crested cormorant *Nannopterum auritum*	ABNFD01020	None	None	G5	S4	WL
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
eel-grass pondweed *Potamogeton zosteriformis*	PMPOT03160	None	None	G5	S3	2B.2
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	PDFAB0F8R3	None	None	G2T1	S1	1B.1
foothill yellow-legged frog - central coast DPS *Rana boylii pop. 4*	AAABH01054	Threatened	Endangered	G3T2	S2	
fragrant fritillary *Fritillaria liliacea*	PMLIL0V0C0	None	None	G2	S2	1B.2
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
grasshopper sparrow *Ammodramus savannarum*	ABPBXA0020	None	None	G5	S3	SSC
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
green sturgeon - southern DPS *Acipenser medirostris pop. 1*	AFCAA01031	Threatened	None	G2T1	S1	SSC
Hall's bushmallow *Malacothamnus hallii*	PDMAL0Q0F0	None	None	G2	S2	1B.2
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
Heckard's pepper-grass *Lepidium latipes var. heckardii*	PDBRA1M0K1	None	None	G4T1	S1	1B.2
hoary bat *Lasiurus cinereus*	AMACC05032	None	None	G3G4	S4	
Hoover's cryptantha *Cryptantha hooveri*	PDBOR0A190	None	None	GH	SH	1A
Hurd's metapogon robberfly *Metapogon hurdi*	IIDIP08010	None	None	G1G2	S1S2	
Jepson's coyote-thistle *Eryngium jepsonii*	PDAPI0Z130	None	None	G2	S2	1B.2
Keck's checkerbloom *Sidalcea keckii*	PDMAL110D0	Endangered	None	G2	S2	1B.1
Lange's metalmark butterfly *Apodemia mormo langei*	IILEPH7012	Endangered	None	G5T1	S1	
large-flowered fiddleneck *Amsinckia grandiflora*	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
legenere *Legenere limosa*	PDCAM0C010	None	None	G2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
loggerhead shrike *Lanius ludovicianus*	ABPBR01030	None	None	G4	S4	SSC
longfin smelt - San Francisco Bay-Delta DPS *Spirinchus thaleichthys pop. 2*	AFCHB03040	Endangered	Threatened	G5TNRQ	S1	
marsh skullcap *Scutellaria galericulata*	PDLAM1U0J0	None	None	G5	S2	2B.2
Mason's lilaeopsis *Lilaeopsis masonii*	PDAPI19030	None	Rare	G2	S2	1B.1
Middlekauff's shieldback katydid *Idiostatus middlekauffi*	IIORT31010	None	None	G1G2	S1	
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	
molestan blister beetle *Lytta molesta*	IICOL4C030	None	None	G2	S2	
mountain plover *Charadrius montanus*	ABNNB03100	None	None	G3	S2	SSC
Mt. Diablo buckwheat *Eriogonum truncatum*	PDPGN085Z0	None	None	G1	S1	1B.1
Mt. Diablo fairy-lantern *Calochortus pulchellus*	PMLIL0D160	None	None	G2	S2	1B.2
Mt. Diablo manzanita *Arctostaphylos auriculata*	PDERI04040	None	None	G2	S2	1B.3
Northern California legless lizard *Anniella pulchra*	ARACC01020	None	None	G3	S2S3	SSC
Northern Claypan Vernal Pool *Northern Claypan Vernal Pool*	CTT44120CA	None	None	G1	S1.1	
northern harrier *Circus hudsonius*	ABNKC11011	None	None	G5	S3	SSC
northwestern pond turtle *Actinemys marmorata*	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
oval-leaved viburnum *Viburnum ellipticum*	PDCPR07080	None	None	G4G5	S3	2B.3
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G4	S3	SSC
pappose tarplant *Centromadia parryi ssp. parryi*	PDAST4R0P2	None	None	G3T2	S2	1B.2
redheaded sphecid wasp *Eucerceris ruficeps*	IIHYM18010	None	None	G1G3	S2	
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	IICOL5V010	None	None	G2?	S2?	
Sacramento anthicid beetle *Anthicus sacramento*	IICOL49010	None	None	G4	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sacramento perch *Archoplites interruptus*	AFCQB07010	None	None	G1	S1	SSC
Sacramento splittail *Pogonichthys macrolepidotus*	AFCJB34020	None	None	G3	S3	SSC
saline clover *Trifolium hydrophilum*	PDFAB400R5	None	None	G2	S2	1B.2
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A	None	None	G5T3	S3	SSC
salt-marsh harvest mouse *Reithrodontomys raviventris*	AMAFF02040	Endangered	Endangered	G1G2	S3	FP
San Joaquin dune beetle *Coelus gracilis*	IICOL4A020	None	None	G1	S1	
San Joaquin kit fox *Vulpes macrotis mutica*	AMAJA03041	Endangered	Threatened	G4T2	S3	
San Joaquin pocket mouse *Perognathus inornatus*	AMAFD01060	None	None	G2G3	S2S3	
San Joaquin spearscale *Extriplex joaquinana*	PDCHE041F3	None	None	G2	S2	1B.2
San Joaquin Valley giant flower-loving fly *Rhaphiomidas trochilus*	IIDIP05010	None	None	G1	S1	
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
shining navarretia *Navarretia nigelliformis ssp. radians*	PDPLM0C0J2	None	None	G4T2T3	S2S3	1B.2
showy golden madia *Madia radiata*	PDAST650E0	None	None	G3	S3	1B.1
side-flowering skullcap *Scutellaria lateriflora*	PDLAM1U0Q0	None	None	G5	S1S2	2B.2
slender silver moss *Anomobryum julaceum*	NBMUS80010	None	None	G5	S2	4.2
soft salty bird's-beak *Chloropyron molle ssp. molle*	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
song sparrow ("Modesto" population) *Melospiza melodia pop. 1*	ABPBXA3013	None	None	G5T3?Q	S3?	SSC
Stabilized Interior Dunes *Stabilized Interior Dunes*	CTT23100CA	None	None	G1	S1.1	
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	SSC
stinkbells *Fritillaria agrestis*	PMLIL0V010	None	None	G3	S3	4.2
Suisun Marsh aster *Symphyotrichum lentum*	PDASTE8470	None	None	G2	S2	1B.2

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Suisun song sparrow *Melospiza melodia maxillaris*	ABPBXA301K	None	None	G5T3	S2	SSC
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S4	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool smallscale *Atriplex persistens*	PDCHE042P0	None	None	G2	S2	1B.2
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G3	S3	
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western bumble bee *Bombus occidentalis*	IIHYM24252	None	Candidate Endangered	G3	S1	
western red bat *Lasiurus frantzii*	AMACC05080	None	None	G4	S3	SSC
western ridged mussel *Gonidea angulata*	IMBIV19010	None	None	G3	S2	
western snowy plover *Charadrius nivosus nivosus*	ABNNB03031	Threatened	None	G3T3	S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP
woolly rose-mallow *Hibiscus lasiocarpos var. occidentalis*	PDMAL0H0R3	None	None	G5T3	S3	1B.2
yellow-banded andrenid bee *Perdita hirticeps luteocincta*	IIHYM01021	None	None	GNRTX	SX	

Record Count: 139

Attachment B

California Native Plant Society's Online Inventory of Rare Plants within the Jersey Island and Rio Vista USGS 7.5-minute Quadrangles and Ten Surrounding Quadrangles

USGS25-01
California Native Plant Society's Online Rare Plant Inventory Nine Quadrangle Search
Broadview Farms, Hammonds Ranch, Dos Palos, Oxalis, Santa Rita Bridge, Delta Ranch, Los Banos, Charleston School, Laguna Seca Ranch USGS 7.5-Minute Quadragles

CommonName	ScientificName	Family	Lifeform	CRPR	CESA	FESA	BloomingPeriod
Howell's onion	Allium howellii var. howellii	Alliaceae	perennial bulbiferous herb	4.3	None	None	Mar-Apr
heartscale	Atriplex cordulata var. cordulata	Chenopodiaceae	annual herb	1B.2	None	None	Apr-Oct
crownscale	Atriplex coronata var. coronata	Chenopodiaceae	annual herb	4.2	None	None	Mar-Oct
Lost Hills crownscale	Atriplex coronata var. vallicola	Chenopodiaceae	annual herb	1B.2	None	None	Apr-Sep
lesser saltscale	Atriplex minuscula	Chenopodiaceae	annual herb	1B.1	None	None	May-Oct
subtle orache	Atriplex subtilis	Chenopodiaceae	annual herb	1B.2	None	None	(Apr)Jun-Sep(Oct)
Parry's rough tarplant	Centromadia parryi ssp. rudis	Asteraceae	annual herb	4.2	None	None	May-Oct
hispid salty bird's-beak	Chloropyron molle ssp. hispidum	Orobanchaceae	annual herb (hemiparasitic)	1B.1	None	None	Jun-Sep
recurved larkspur	Delphinium recurvatum	Ranunculaceae	perennial herb	1B.2	None	None	Mar-Jun
Hoover's eriastrum	Eriastrum hooveri	Polemoniaceae	annual herb	4.2	None	FD	Mar-Jul
protruding buckwheat	Eriogonum nudum var. indictum	Polygonaceae	perennial herb	4.2	None	None	(Apr)May-Oct(Dec)
Idria buckwheat	Eriogonum vestitum	Polygonaceae	annual herb	4.3	None	None	Apr-Aug
spiny-sepaled button-celery	Eryngium spinosepalum	Apiaceae	annual/perennial herb	1B.2	None	None	Apr-Jun
hogwallow starfish	Hesperevax caulescens	Asteraceae	annual herb	4.2	None	None	Mar-Jun
alkali-sink goldfields	Lasthenia chrysantha	Asteraceae	annual herb	1B.1	None	None	Feb-Apr
Ferris' goldfields	Lasthenia ferrisiae	Asteraceae	annual herb	4.2	None	None	Feb-May
Munz's tidy-tips	Layia munzii	Asteraceae	annual herb	1B.2	None	None	Mar-Apr
Panoche pepper-grass	Lepidium jaredii ssp. album	Brassicaceae	annual herb	1B.2	None	None	Feb-Jun
serpentine leptosiphon	Leptosiphon ambiguus	Polemoniaceae	annual herb	4.2	None	None	Mar-Jun
large-flowered leptosiphon	Leptosiphon grandiflorus	Polemoniaceae	annual herb	4.2	None	None	Apr-Aug
prostrate vernal pool navarretia	Navarretia prostrata	Polemoniaceae	annual herb	1B.2	None	None	Apr-Jul
California alkali grass	Puccinellia simplex	Poaceae	annual herb	1B.2	None	None	Mar-May
Sanford's arrowhead	Sagittaria sanfordii	Alismataceae	perennial rhizomatous herb (emergent)	1B.2	None	None	May-Oct(Nov)
chaparral ragwort	Senecio aphanactis	Asteraceae	annual herb	2B.2	None	None	Jan-Apr(May)
Wright's trichocoronis	Trichocoronis wrightii var. wrightii	Asteraceae	annual herb	2B.1	None	None	May-Sep

Attachment C

United States Fish and Wildlife Service Information for Planning and Consultation (IPaC) Database

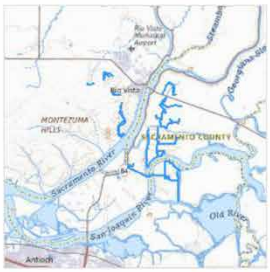
IPaC resource list

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

Contra Costa , Sacramento , and Solano counties, California



Local offices

San Francisco Bay-Delta Fish And Wildlife

(916) 930-5603
(916) 930-5654

650 Capitol Mall
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 species[1] 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 Fisheries[2]).

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.

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 Ridgway"s Rail Rallus obsoletus obsoletus 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 Thamnophis gigas Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii 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 Ambystoma californiense 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
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened
Longfin Smelt Spirinchus thaleichthys There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9011	Endangered
Longfin Smelt Spirinchus thaleichthys No critical habitat has been designated for this species.	Proposed Endangered

Insects

NAME	STATUS
Delta Green Ground Beetle *Elaphrus viridis* 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	Threatened
Monarch Butterfly *Danaus plexippus* Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Valley Elderberry Longhorn Beetle *Desmocerus 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	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* 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	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* 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	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* 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	Endangered

Flowering Plants

NAME	STATUS
Soft Bird's-beak *Cordylanthus mollis ssp. mollis* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8541	Endangered

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 *Hypomesus transpacificus* 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 Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

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 avoidance and minimization 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

Bald and Golden Eagle information is not available at this time

Bald & Golden Eagles FAQs

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 an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 line or no data line (red horizontal) 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 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 and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are 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 resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), 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.

Interpreting the Probability of Presence Graphs

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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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

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.

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.

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.

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.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (FWS). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The FWS interprets the MBTA to prohibit incidental take.

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 avoidance and minimization measures for birds
- 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

Migratory bird information is not available at this time

Migratory Bird FAQs

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

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed 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 Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

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) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection 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, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

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 resident), you may query your location using the RAIL Tool and view 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 IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), 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 Bald and Golden Eagle Protection 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 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 BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

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.

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 look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). 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 does not represent all birds present in your project area. 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 and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
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 taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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

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.

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.

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.

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.

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.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

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 tuberficid 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.

Attachment D

Special Status Plant Species Identified by Database Review

Table 2 – Special Status Plant Species Identified by Database Review

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Plants				
alkali milk-vetch *Astragalus tener* var. *tener*	None/None 1B.2	Occurs in playas, valley and foothill grassland (adobe clay), alkali flats, playas, vernal pools Elevation: 5 - 195 Blooms: Mar - Jun	**Not Expected**	Alkali milk vetch typically occurs in seasonally moist, alkaline habitats such as vernal pools, alkaline flats, and low-lying swales with heavy clay or saline soils. The project area, consisting of previously disturbed agricultural fields and grazed grasslands, lacks the undisturbed alkaline soils and intact hydrological conditions necessary to support this species.
alkali-sink goldfields *Lasthenia chrysantha*	None/None 1B.1	Occurs in vernal pools. Elevation: 0 - 655 feet Blooms: Feb - Apr	**Not Expected**	Alkali-sink goldfields historically occurred in alkaline wetlands, playas, and seasonally flooded flats throughout the Central Valley and parts of the Delta region. However, most populations in the region have been extirpated due to extensive agricultural development, hydrological modifications, and habitat degradation. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the intact alkaline soils and seasonal flooding conditions necessary to support this species. Given the significant habitat alteration and regional decline, the potential for alkali-sink goldfields to occur on the project area is not expected.
Antioch Dunes buckwheat *Eriogonum nudum* var. *psychicola*	None/None 1B.1	Occurs in inland dunes. Elevation: 0 - 65 feet Blooms: Jul - Oct	**None**	Antioch Dunes buckwheat is historically restricted to the unique inland dune habitats along the San Joaquin River near Antioch. Extensive habitat loss, invasive species encroachment, and industrial development have led to the near elimination of natural populations, with remaining individuals largely confined to protected areas within the Antioch Dunes National Wildlife Refuge. The project area, consisting of previously disturbed agricultural fields and grazed grasslands, does not contain the specialized sandy soils or dune structures required to support this species. Given the specific habitat requirements and the species' limited distribution, this species does not occur in the project area.
Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii*	FE/SE 1B.1	Occurs in inland dunes. Elevation: 0 - 100 feet Blooms: Mar - Sep	**None**	Antioch Dunes evening-primrose has historically restricted to the unique sandy dune habitats along the San Joaquin River near Antioch. CNDDB record indicate a population this species within the project region. This population was found to be transplanted as part of a conservation effort. Previously disturbed agricultural lands and grazed grasslands generally lack the deep, well-drained sandy soils and dune structures required to support this species.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	None/None 1B.1	Occurs in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Elevation: 15 - 5710 feet Blooms: Apr - Jul	**None**	Baker's navarretia is an annual herb typically found in vernal pools, seasonal wetlands, and moist, alkaline or clay-heavy soils, often within grassland and woodland habitats. Although historically more widespread in lowland regions of California, habitat loss and disturbance have significantly reduced its distribution. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks intact vernal pools, undisturbed seasonal wetlands, and the hydrological conditions necessary to support this species.
bearded popcornflower *Plagiobothrys hystriculus*	None/None 1B.1	Occurs in valley and foothill grassland (mesic), vernal pools (margins). Elevation: 0 - 900 feet Blooms: Apr - May	**None**	Bearded popcornflower is an annual herb associated with seasonally moist habitats, including vernal pools, alkaline flats, and other low-lying areas with poorly drained clay soils. The previously disturbed agricultural fields and grazed grasslands of the project area have been extensively modified by cultivation, grazing, and soil disturbance. These areas generally lack the intact hydrological conditions, soil structure, and habitat characteristics required to support bearded popcornflower.
big tarplant *Blepharizonia plumosa*	None/None 1B.1	Occurs in valley and foothill grassland. Elevation: 100 - 1655 feet Blooms: Jul - Oct	**Not Expected**	Big tarplant is an annual herb typically found in open grasslands and valley foothill habitats with well-drained clay or loamy soils. Historically, it occurred across lowland areas of California, including parts of the Delta and Central Valley. However, agricultural development, grazing, and urbanization have significantly reduced its range. The project area, consisting of previously disturbed agricultural fields and grazed grasslands, has been heavily altered, degrading the native grassland conditions necessary to support this species. Although some less-disturbed grassland areas exist, they lack the soil integrity and habitat structure required. Therefore, the potential for big tarplant is not expected to occur.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Boggs Lake hedge-hyssop *Gratiola heterosepala*	None/SE 1B.2	Occurs in marshes and swamps (lake margins), vernal pools. Elevation: 35 - 7790 feet Blooms: Apr - Aug	**None**	Boggs Lake hedge-hyssop is a rare annual herb typically found along the margins of vernal pools, seasonal wetlands, and other intermittently flooded depressions with clay or silty soils. Historically, it occurred throughout parts of California's Central Valley and surrounding regions where intact vernal pool complexes were present. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, has experienced significant soil disturbance and hydrological alteration, eliminating suitable wetland habitat. Although minor low-lying areas exist, they lack the necessary seasonal hydrology and soil characteristics.
Bolander's water-hemlock *Cicuta maculata var. bolanderi*	None/None 2B.1	Occurs in marshes and swamps (brackish, coastal, freshwater). Elevation: 0 - 655 feet Blooms: Jul - Sep	**None**	Bolander's water hemlock is a perennial herb typically found in freshwater wetlands, marshes, riparian corridors, and along the edges of slow-moving streams and ponds. The previously disturbed agricultural fields and grazed grasslands within the project area generally lack the persistent hydrological conditions and intact wetland habitats necessary to support this species. Although isolated areas with surface water or drainage features may occur, and CNDDB observations have been recorded in the vicinity, the potential for Bolander's water hemlock to occur on these disturbed landscapes is considered absent due to the extensive modification of natural wetland systems.
Brewer's western flax *Hesperolinon breweri*	None/None 1B.2	Occurs in chaparral, cismontane woodland, valley and foothill grassland. Elevation: 100 - 3100 feet Blooms: May - Jul	**Not Expected**	Brewer's western flax is a California endemic annual herb typically found in dry, open grasslands and chaparral communities, particularly on serpentine or rocky soils. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, does not contain the serpentine or rocky substrates necessary to support this species. Due to the absence of suitable soil conditions, Brewer's western flax is not expected to occur on the project area.
bristly sedge *Carex comosa*	None/None 2B.1	Occurs in coastal prairie, marshes and swamps (lake margins), valley and foothill grassland. Elevation: 0 - 2050 feet Blooms: May - Sep	**None**	Bristly sedge is a perennial herb typically found in freshwater wetlands, marshes, and along the margins of ponds, lakes, and slow-moving streams. Although CNDDB records occur in the region, the project area, characterized largely by previously disturbed agricultural fields and grazed grasslands, lacks the persistent wetland hydrology and saturated soil conditions required to support this species.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
brittlescale *Atriplex depressa*	None/None 1B.2	Occurs in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Elevation: 5 - 1050 feet Blooms: Apr - Oct	**None**	Brittlescale is an annual herb typically found in alkaline soils within playas, valley grasslands, and seasonally dry basins. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, does not support the undisturbed alkaline soil conditions necessary for this species.
broadleaf pondweed *Stuckenia striata*	None/None 2B.3	Occurs in marshes and swamps. Elevation: -230 - 7005 feet Blooms: (Jun)Jul - Aug	**None**	Broadleaf pondweed is a perennial aquatic plant typically found in slow-moving streams, irrigation ditches, ponds, and other freshwater habitats with persistent water flow. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the stable aquatic environments necessary to support this species.
California alkali grass *Puccinellia simplex*	None/None 1B.2	Occurs in chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools. Elevation: 5 - 3050 feet Blooms: Mar - May	**None**	California alkali grass is an annual grass species typically found in alkaline wetlands, playas, and other seasonally moist areas with saline or alkaline soils. The project area, consisting largely of previously disturbed agricultural fields and grazed grasslands, does not support the intact alkaline soil conditions or hydrology required for this species.
caper-fruited tropidocarpum *Tropidocarpum capparideum*	None/None 1B.1	Occurs in valley and foothill grassland (alkaline hills). Elevation: 5 - 1495 feet Blooms: Mar - Apr	**Not Expected**	Caper-fruited tropidocarpum is an annual herb historically found in open grasslands and alkaline or clay-rich soils, often in low-elevation valleys and foothills. This species is presumed extirpated. The project area, composed primarily of previously disturbed agricultural fields and grazed grasslands, has been heavily modified by cultivation, grazing, and soil disturbance. These alterations have degraded the natural soil and habitat conditions necessary to support this species. This species is not expected to occur.
Carquinez goldenbush *Isocoma arguta*	None/None 1B.1	Occurs in valley and foothill grassland (alkaline). Elevation: 5 - 65 feet Blooms: Aug - Dec	**Not Expected**	Carquinez goldenbush is a perennial shrub typically found in alkaline grasslands, margins of tidal marshes, and on clay or saline soils in lowland regions of California. Historically, it occurred along the margins of the Carquinez Strait and adjacent Delta areas. However, agricultural development, grazing, and urban expansion have led to substantial habitat loss throughout its range. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, has experienced significant soil disturbance and lacks the alkaline or saline conditions necessary to support this species. Although minor areas of less disturbance exist, they do not provide suitable habitat characteristics.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
chaparral ragwort *Senecio aphanactis*	None/None 2B.2	Occurs in chaparral, cismontane woodland, and coastal scrub. Elevation: 50 - 2625 feet Blooms: Jan – Apr (May)	**None**	Chaparral ragwort is a perennial herb typically found in chaparral, cismontane woodland, and coastal scrub habitats, often on rocky or well-drained soils. Historically, it was distributed across portions of California's coastal ranges and foothills, where intact chaparral and scrub communities were present. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the rocky substrates, dense shrub cover, and undisturbed soil conditions required to support this species. Although minor grassland areas are present, they do not provide the soil conditions associated with chaparral ragwort habitat.
Colusa grass *Neostapfia colusana*	FT/SE 1B.1	Occurs in vernal pools (adobe clay). Elevation: 15 - 655 feet Blooms: May - Aug	**None**	Colusa grass is an annual herb typically found in the drying margins of large, deep vernal pools with heavy clay soils, primarily in the Central Valley of California. Historically, it was more widespread within intact vernal pool complexes, but agricultural conversion, hydrological alterations, and habitat fragmentation have caused significant declines in its distribution. The project area, consisting mainly of previously disturbed agricultural fields and grazed grasslands, lacks the intact vernal pools, hydrology, and soil conditions required to support this species. Although minor low-lying areas are present, they do not provide the seasonal inundation or undisturbed claypan features necessary for Colusa grass.
Contra Costa goldfields *Lasthenia conjugens*	FE/None 1B.1	Occurs in cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools. Elevation: 0 - 1540 feet Blooms: Mar - Jun	**None**	Contra Costa goldfields is an annual herb typically found in vernal pools, seasonal wetlands, and moist, alkaline grasslands, primarily within the northern and central portions of California's Central Valley and surrounding foothills. Historically, it occurred across a broader range, but extensive agricultural development, urbanization, and hydrological modifications have led to significant habitat loss and population declines. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the intact vernal pools, seasonal wetlands, and alkaline soil conditions required to support this species. Although minor depressional areas exist, they do not retain the necessary hydrology or soil structure.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Contra Costa wallflower *Erysimum capitatum* var. *angustatum*	FE/SE 1B.1	Occurs in inland dunes. Elevation: 10 - 65 feet Blooms: Mar - Jul	**None**	Contra Costa wallflower is a short-lived perennial or biennial herb typically found in inland dune habitats and sandy soils along the edges of the San Francisco Bay and Delta regions. Historically, it was more widespread in natural dune systems, but habitat loss from urban development, agricultural conversion, and invasive species has severely reduced its range. The project area, composed primarily of previously disturbed agricultural fields and grazed grasslands, lacks the sandy substrates, dune structure, and associated native plant communities required to support this species. Although some open grassland areas are present, they do not provide the specific soil or habitat conditions needed.
Coulter's goldfields *Lasthenia galbrata* ssp. *coulteri*	None/None 1B.1	Occurs in marshes and swamps (coastal salt), playas, vernal pools. Elevation: 5 - 4005 feet Blooms: Mar - Jul	**None**	Coulter's goldfields is an annual herb typically found in vernal pools, alkaline flats, playas, and other seasonally wet habitats with clay or saline soils, primarily in the Central Valley and surrounding regions of California. Historically, it occupied a broader range within intact seasonal wetland complexes, but widespread agricultural development, grazing, and hydrological modifications have led to significant habitat loss. The project area, consisting mainly of previously disturbed agricultural fields and grazed grasslands, lacks the intact vernal pools, alkaline soils, and seasonal hydrology necessary to support this species. Although some low-lying areas are present, they do not retain the appropriate hydrological conditions or soil chemistry.
Crampton's tuctoria/Solano grass *Tuctoria mucronata*	FE/SE 1B.1	Occurs in valley and foothill grassland (mesic), vernal pools. Elevation: 15 - 35 feet Blooms: Apr - Aug	**None**	Crampton's tuctoria, also known as Solano grass, is a rare annual grass typically found along the drying margins of large, deep vernal pools with heavy clay or claypan soils in California's Central Valley, particularly in Solano County. Historically, it occupied intact vernal pool complexes, but agricultural conversion, hydrological disruption, and habitat fragmentation have caused severe declines in its distribution. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the undisturbed vernal pools, specific soil types, and seasonal hydrological patterns necessary to support this species. Although some depressional features are present, they do not provide the proper inundation or soil conditions required.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Delta button-celery *Eryngium racemosum*	None/SE 1B.1	Occurs in riparian scrub (vernally mesic clay depressions) Elevation: 10 - 100 feet Blooms: (May)Jun - Oct	**None**	Delta button-celery is a perennial herb typically associated with vernal pools, seasonal wetlands, and swales underlain by alkaline or clay-rich soils, primarily within the Delta and Central Valley regions of California. Although historically more widespread, the species has experienced significant declines due to agricultural conversion, grazing, and hydrological modification. The project area is predominantly composed of previously disturbed agricultural fields and grazed grasslands, which lack the intact vernal pool systems, alkaline soils, and seasonal inundation patterns necessary to support this species. While minor low-lying features are present on-site, they do not exhibit the appropriate hydrological regime or soil conditions to provide suitable habitat.
Delta mudwort *Limosella australis*	None/None 2B.1	Occurs in marshes and swamps (brackish, freshwater), riparian scrub. Elevation: 0 - 10 feet Blooms: May - Aug	**None**	Delta mugwort is a perennial herb typically found in freshwater marshes, along riverbanks, and in other seasonally or perennially saturated habitats within the Delta and surrounding lowland regions of California. Although historically more widespread along natural riparian corridors and wetlands, habitat loss due to agricultural development, flood control modifications, and urbanization has significantly reduced available habitat. The project area is primarily composed of previously disturbed agricultural fields and grazed grasslands and lacks the stable freshwater wetlands, riparian features, and saturated soils necessary to support this species. While drainage features may be present, they do not exhibit the consistent hydrology or ecological characteristics required to provide suitable habitat.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	None/None 1B.2	Occurs in marshes and swamps (brackish, freshwater). Elevation: 0 - 15 feet Blooms: May – Jul(Aug – Sep)	**None**	Delta tule pea is a perennial climbing vine typically found in freshwater and brackish marshes, along riverbanks, sloughs, and tidal channels throughout the Delta and adjacent low-lying regions of California. Historically, it was widespread along the natural waterways and wetland margins of the region, but extensive habitat loss due to agricultural conversion, levee construction, and hydrological alterations has significantly reduced its available habitat. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, does not support the freshwater marshes, riparian zones, or hydrologically stable environments required by this species. Although minor drainage features may exist, they do not provide the wetland conditions or vegetative structure necessary for Delta tule pea.
Diablo helianthella *Helianthella castanea*	None/None 1B.2	Occurs in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elevation: 195 - 4265 feet Blooms: Mar - Jun	**Not Expected**	Diablo helianthella is a perennial herb typically found in chaparral, cismontane woodland, and valley and foothill grasslands, often on rocky, well-drained soils in the foothills of the Coast Ranges, particularly around Mount Diablo. Historically, it occupied undisturbed, upland habitats with shallow soils and open shrub or grassland cover. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the rocky substrates, intact native vegetation communities, and soil structure required to support this species. Although some open grassland areas exist, they have been heavily altered by cultivation and grazing, eliminating the necessary habitat conditions. Therefore, the potential for Diablo helianthella to occur on the project area is not expected.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
diamond-petaled California poppy *Eschscholzia rhombipetala*	None/None 1B.1	Occurs in valley and foothill grassland (alkaline, clay). Elevation: 0 - 3200 feet Blooms: Mar - Apr	**Not Expected**	Diamond-petaled California poppy is an annual herb typically found in alkaline grasslands, playas, and seasonally dry basins with clay or saline soils, primarily within the Central Valley of California. Historically, it occurred across alkali-affected landscapes where intact seasonal hydrology and undisturbed soil conditions were present. The project area, consisting largely of previously disturbed agricultural fields and grazed grasslands, has undergone significant soil modification, agricultural development, and hydrological alteration, resulting in the loss of suitable alkaline habitat. Although minor low-lying areas are present, they do not retain the appropriate soil salinity, structure, or seasonal inundation patterns required to support this species. Therefore, the potential for diamond-petaled California poppy to occur on the project area is not expected.
dwarf downingia *Downingia pusilla*	None/None 2B.2	Occurs in valley and foothill grassland (mesic), vernal pools. Elevation: 5 - 1460 feet Blooms: Mar - May	**None**	Dwarf downingia is a small annual herb typically found in vernal pools, ephemeral wetlands, and other seasonally inundated depressions with clay or loamy soils, primarily in the Central Valley and surrounding lowlands of California. Historically, it was widespread across intact vernal pool complexes, but extensive agricultural development, land grading, and hydrological alterations have resulted in significant habitat loss and fragmentation. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the intact vernal pools, seasonal wetland hydrology, and undisturbed soil profiles required to support this species. Although some minor depressional features may be present in the vicinity, they do not exhibit the necessary hydrological regime or ecological conditions.
eel-grass pondweed *Potamogeton zosteriformis*	None/None 2B.2	Occurs in marshes and swamps (freshwater). Elevation: 0 - 6105 feet Blooms: Jun - Jul	**None**	Eel-grass pondweed is a perennial aquatic plant typically found in slow-moving freshwater habitats such as ponds, lakes, sloughs, and calm stretches of rivers and streams throughout California's lowland regions. It requires stable aquatic environments with permanent or seasonally persistent water to complete its life cycle. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the open, slow-moving freshwater bodies necessary to support this species. Although minor drainage features may occur on-site, they do not provide the hydrological permanence or habitat quality required for eel-grass pondweed.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Ferris' milk-vetch *Astragalus tener* var. *ferrisiae*	None/None 1B.1	Occurs in meadows and seeps (vernally mesic), valley and foothill grassland (subalkaline flats)). Elevation: 5 - 245 feet Blooms: Apr - May	**None**	Ferris' milk-vetch is a perennial herb typically found in sandy or gravelly soils within chaparral, coastal scrub, and alluvial fan habitats, primarily in parts of California's Central Valley and foothill regions. Historically, it was associated with undisturbed, open habitats where natural soil conditions supported a diverse native plant community. The project area, composed mainly of previously disturbed agricultural fields and grazed grasslands, lacks the sandy or gravelly substrates, intact native vegetation, and undisturbed soil structure necessary to support this species. Although open grassland areas are present, they have been heavily modified by cultivation, grazing, and soil alteration.
fragrant fritillary *Fritillaria lilacea*	None/None 1B.2	Occurs in cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation: 10 - 1345 feet Blooms: Feb - Apr	**Not Expected**	Fragrant fritillary is a perennial bulbiferous herb typically found in moist grasslands, coastal prairie, and the margins of seasonal wetlands, often on heavy clay soils in lowland areas of California. Historically, it was distributed across coastal and interior valleys where seasonal moisture and undisturbed soils supported its growth. The project area, composed primarily of previously disturbed agricultural fields and grazed grasslands, has experienced significant soil disturbance, loss of seasonal wetland features, and habitat conversion. Although minor grassland areas and low-lying features are present, they do not retain the intact hydrology, soil conditions, or native plant communities necessary to support this species. Therefore, the potential for fragrant fritillary to occur on the project area is not expected.
Hall's bushmallow *Malacothamnus hallii*	None/None 1B.2	Occurs in chaparral, coastal scrub. Elevation: 35 - 2495 feet Blooms: (Apr)May – Sep(Oct)	**None**	Hall's bush mallow is a perennial shrub typically found in chaparral and coastal scrub habitats, often on rocky or well-drained soils in foothill and low-elevation mountainous regions of California. Historically, it occurred in undisturbed shrub-dominated communities where rocky or sandy substrates provided suitable growing conditions. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the rocky soils, intact chaparral vegetation, and ecological structure necessary to support this species. Although some open grassland areas exist, they have been heavily altered by agricultural activities and grazing, eliminating suitable habitat characteristics.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
heartscale *Atriplex cordulata* var. *cardulata*	None/None 1B.2	Occurs in chenopod scrub, meadows and seeps, valley and foothill grassland (sandy). Elevation: 0 - 1835 feet Blooms: Apr - Oct	**Not Expected**	Heartscale is an annual herb typically found in alkaline or saline soils within chenopod scrub, valley grassland, and the margins of seasonal wetlands, primarily in the Central Valley and Delta regions of California. Historically, it was more widespread across alkaline flats and salt-affected basins, but extensive agricultural development, soil modification, and hydrological changes have resulted in significant habitat loss. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the undisturbed alkaline soils and intact hydrological conditions required to support this species. Although minor low-lying areas are present, they do not retain the necessary soil chemistry or habitat integrity. Therefore, the potential for heartscale to occur on the project area is not expected.
Heckard's pepper-grass *Lepidium latipes* var. *heckardii*	None/None 1B.2	Occurs in valley and foothill grassland (alkaline). Elevation: 5 - 655 feet Blooms: Mar - May	**Not Expected**	Heckard's peppergrass is an annual herb typically found in alkaline vernal pools, playas, and seasonally moist grasslands with clay or alkaline soils, primarily within the Central Valley of California. Historically, it was associated with intact vernal pool complexes and alkali sinks, but widespread agricultural conversion, grazing, and hydrological alterations have significantly reduced its available habitat. The project area, composed largely of previously disturbed agricultural fields and grazed grasslands, lacks the undisturbed alkaline soils, vernal pools, and seasonal wetland hydrology necessary to support this species. Although minor depressional features are present, they do not retain the appropriate soil chemistry, seasonal inundation, or habitat structure. Therefore, the potential for Heckard's peppergrass to occur on the project area is not expected.
Hoover's cryptantha *Cryptantha hooveri*	None/None 1A	Occurs in inland dunes, valley and foothill grassland (sandy). Elevation: 30 - 490 feet Blooms: Apr - May	**Not Expected**	Hoover's cryptantha is an annual herb typically found in dry, open grasslands, chenopod scrub, and sandy or gravelly soils within the Central Valley and adjacent foothill regions of California. Historically, it occupied undisturbed grassland habitats with well-drained soils and sparse vegetation cover. The project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks the sandy or gravelly substrates, native vegetation communities, and soil conditions necessary to support this species. Although open areas are present, they have been significantly altered by soil disturbance, cultivation, and grazing, reducing habitat suitability. Therefore, the potential for Hoover's cryptantha to occur on the project area is not expected.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Jepson's coyote-thistle *Eryngium jepsonii*	None/None 1B.2	Occurs in valley and foothill grassland, vernal pools. Elevation: 10 - 985 feet Blooms: Apr - Aug	**None**	Jepson's coyote-thistle is a perennial herb typically found in valley and foothill grasslands and vernal pools, often on clay or loamy soils with seasonal inundation. Although there are no recorded CNDDB occurrences within five miles of the project area, the species can occur within the project area's elevation range. However, the project area, consisting primarily of previously disturbed agricultural fields and grazed grasslands, lacks intact vernal pools, appropriate seasonal hydrology, and undisturbed soil conditions necessary to support this species.
Keck's checkerbloom *Sidalcae keckii*	FE/None 1B.1	Occurs in cismontane woodland, valley and foothill grassland. Elevation: 245 - 2135 feet Blooms: Apr - May(Jun)	**Not Expected**	Keck's checkerbloom is an annual herb historically associated with open grasslands, foothill woodlands, and sparsely vegetated areas with well-drained, often clay-rich or rocky soils in the southern Sierra Nevada foothills and adjacent Central Valley regions of California. It typically occurs in undisturbed native habitats characterized by minimal competition from invasive species and specific soil conditions. The project area, which is primarily composed of previously cultivated agricultural fields and heavily grazed non-native grasslands, lacks the intact native plant communities, soil texture, and habitat structure required to support this species. Although some open areas persist, they have been extensively modified through historical agricultural practices, grazing, and invasive plant colonization, substantially reducing habitat quality. Therefore, the potential for Keck's checkerbloom to occur on the project area is not expected.
large-flowered fiddleneck *Amsinkia grandiflora*	FE/SE 1B.1	Occurs in cismontane woodland, valley and foothill grassland. Elevation: 885 - 1805 feet Blooms: (Mar)Apr - May	**Not Expected**	Large-flowered fiddleneck is an annual herb native to California, typically found in open grasslands, foothill woodlands, and areas with clay to loamy soils within the eastern San Francisco Bay Area and nearby regions. This species generally occupies undisturbed native habitats with well-drained soils and minimal vegetative competition. The project area, characterized predominantly by previously disturbed agricultural lands and heavily grazed non-native grasslands, lacks native plant assemblages, and habitat features necessary to support large-flowered fiddleneck. While open areas are present, they have been substantially altered by cultivation, grazing, and the spread of invasive plant species, resulting in degraded habitat conditions. Therefore, the potential for large-flowered fiddleneck to occur on the project area is not expected.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
legenere *Legenere limosa*	None/None 1B.1	Occurs in vernal pools. Elevation: 5 - 2885 feet Blooms: Apr - Jun	**None**	Legenere historically occurred in vernal pools, seasonally inundated depressions, and clay-bottomed wetlands primarily within the interior valleys of Northern California. However, much of its limited range has been affected by agricultural development, hydrological alterations, and the widespread destruction of vernal pool habitats. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the intact vernal pool topography, claypan soils, and seasonal inundation necessary to support this species. Given the significant difference in habitat type and the species' narrow ecological requirements, this species does not occur in the project area.
marsh skullcap *Scutellaria galericulata*	None/None 2B.2	Occurs in lower montane coniferous forest, marshes and swamps, meadows and seeps (mesic). Elevation: 0 - 6890 feet Blooms: Jun - Sep	**None**	Marsh skullcap historically occurred in wet meadows, marshes, and along the margins of slow-moving streams and ponds, primarily in lowland and montane regions with consistently saturated soils. However, many populations have declined due to wetland drainage, water diversions, and habitat conversion for agriculture and development. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the perennial wetland features, saturated soils, and hydrophytic vegetation necessary to support this species. Given the significant difference in habitat conditions and the species' reliance on intact wetland systems, this species does not occur.
Mason's lilaeopsis *Lilaeopsis masonii*	None/SR 1B.1	Occurs in marshes and swamps (brackish, freshwater), riparian scrub. Elevation: 0 - 35 feet Blooms: Apr - Nov	**None**	Mason's lilaeopsis historically occurred along the edges of tidal sloughs, riverbanks, and brackish marshes within the Sacramento-San Joaquin Delta and adjacent estuarine regions, typically in silty or clay soils subject to periodic tidal inundation. However, much of its habitat has been degraded or eliminated due to levee construction, dredging, and wetland reclamation for agriculture and urban development. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the tidal influence, saturated soils, and brackish water conditions necessary to support this species. Given the significant difference in habitat type and the species' specialized ecological requirements, Mason's lilaeopsis does not occur.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Mt. Diablo buckwheat *Eriogonum truncactum*	None/None 1B.1	Occurs in chaparral, coastal scrub, valley and foothill grassland. Elevation: 10 - 1150 feet Blooms: Apr - Sep(Nov - Dec)	**Not Expected**	Mt. Diablo buckwheat historically occurred on rocky outcrops, open slopes, and grasslands within the foothills of Contra Costa County, primarily on sandy or gravelly soils derived from sandstone. However, due to its extremely limited distribution and extensive habitat loss from urban development, grazing, and land disturbance, the species has become one of the rarest plants in the region. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the well-drained, rocky substrates and undisturbed grassland conditions necessary to support this species. Given the substantial differences in habitat type and the species' highly restricted range, the potential for Mt. Diablo buckwheat to occur on the project area is not expected.
Mt. Diablo fairy-lantern *Calcochortus pulchellus*	None/None 1B.2	Occurs in chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation: 100 - 2755 feet Blooms: Apr - Jun	**Not Expected**	Mt. Diablo fairy lantern historically occurred on grassy slopes, open woodlands, and rocky outcrops in the foothills of Contra Costa County, primarily on clay-rich or serpentine soils within oak woodland and chaparral habitats. However, much of its habitat has been lost or fragmented due to urban expansion, road development, and land conversion. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the undisturbed upland soils, native woodland vegetation, and specific geologic substrates required to support this species. Given the significant differences in habitat and the species' restricted range, the potential for Mt. Diablo fairy lantern to occur on the project area is not expected.
Mt. Diablo manzanita *Arctostaphylos auriculata*	None/None 1B.3	Occurs in chaparral (sandstone), cismontane woodland. Elevation: 445 - 2135 feet Blooms: Jan - Mar	**None**	Mt. Diablo manzanita historically occurred on rocky slopes, chaparral, and woodland margins within the foothills and uplands of Contra Costa County, particularly on sandstone and shale-derived soils. However, much of its limited range has been affected by urban development, road construction, and habitat fragmentation. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the rocky substrates, well-drained upland soils, and chaparral vegetation necessary to support this species. Given the significant difference in habitat type and the species' narrow geographic range, the potential for Mt. Diablo manzanita does not occur.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
oval-leaved viburnum *Viburnum ellipticum*	None/None 2B.3	Occurs in chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 705 - 4595 feet Blooms: May - Jun	**None**	Oval-leaved viburnum historically occurred in moist woodlands, forest margins, and riparian areas within foothill and montane regions of California. However, many populations have been reduced or eliminated due to habitat loss from logging, land conversion, and fire suppression. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the shaded understory, woodland canopy, and mesic soil conditions necessary to support this species. Given the significant habitat alteration and absence of suitable environmental features, the oval-leaved viburnum does not occur.
pappose tarplant *Centromadia parryi* ssp. *parryi*	None/None 1B.2	Occurs in chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 0 - 1380 feet Blooms: May - Nov	**None**	Pappose tarplant historically occurred in moist grasslands, vernal pool margins, and alkaline flats throughout the Central Valley and surrounding regions. However, most populations in the region have been extirpated due to widespread agricultural development, grazing impacts, and the alteration of seasonal wetland hydrology. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the moist, alkaline soils and seasonal inundation conditions necessary to support this species.
saline clover *Trifolium hydrophilum*	None/None 1B.2	Occurs in marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation: 0 - 985 feet Blooms: Apr - Jun	**None**	Saline clover historically occurred in alkaline wetlands, moist grasslands, and seasonally flooded flats throughout the Central Valley and Delta regions. However, most populations in the region have been extirpated due to extensive agricultural development, hydrological modifications, and the loss of alkaline and seasonally inundated habitats. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the saturated soils, alkaline conditions, and seasonal hydrology necessary to support this species.
San Joaquin spearscale *Extriplex joaquinana*	None/None 1B.2	Occurs in chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elevation: 5 - 2740 feet Blooms: Apr - Oct	**None**	San Joaquin spearscale historically occurred in alkali sinks, chenopod scrub, and seasonally flooded saline-alkaline grasslands throughout the Central Valley. However, most populations in the region have been extirpated due to extensive agricultural development, groundwater pumping, and the loss of alkaline wetland habitats through hydrological alterations and land conversion. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the intact saline-alkaline soils and seasonal inundation required to support this species.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
Sanford's arrowhead *Sagittaria sanfordii*	None/None 1B.2	Occurs in marshes and swamps (shallow freshwater). Elevation: 0 - 2135 feet Blooms: May - Oct(Nov)	**None**	Sanford's arrowhead historically occurred in slow-moving streams, sloughs, ditches, and shallow freshwater marshes throughout the Central Valley and Delta regions. However, most populations in the region have been extirpated due to widespread wetland drainage, channelization, and conversion of aquatic habitats to agriculture. The project area, characterized by previously disturbed agricultural fields and grazed grasslands, lacks the perennial or seasonal aquatic features and hydrologic conditions necessary to support this species.
shining navarretia *Navarretia nigelliformis ssp. radians*	None/None 1B.2	Occurs in cismontane woodland, valley and foothill grassland, vernal pools. Elevation: 215 - 3280 feet Blooms: (Mar)Apr - Jul	**None**	Shining navarretia historically occurred in vernal pools, swales, and seasonally wet grasslands within the Central Valley and surrounding foothill regions. Although many populations have been impacted by agricultural expansion, grading, and alteration of natural hydrology, the species has been documented persisting in some grazed grasslands where vernal pool topography and seasonal inundation patterns remain intact. The project area, consisting of previously cultivated lands and currently grazed grasslands, may offer limited suitability if remnant vernal pool features or shallow depressions with appropriate hydrology are present.
showy golden madia *Madia radiata*	None/None 1B.1	Occurs in cismontane woodland, valley and foothill grassland. Elevation: 80 - 3985 feet Blooms: Mar - May	**Not Expected**	Showy golden madia historically occurred in open grasslands, foothill woodlands, and along the margins of vernal pools throughout the Central Valley and adjacent foothill regions. While many populations have been lost due to agricultural conversion and habitat fragmentation, the species is known to persist in some grazed grasslands where native vegetation and appropriate soil conditions remain intact. The project area, composed of previously disturbed agricultural lands and currently grazed grasslands, may provide marginally suitable habitat if grazing intensity is low and native herbaceous cover is present. Given the species' ability to persist under certain grazing regimes and the partial suitability of the habitat, the potential for showy golden madia to occur on the project area is considered low but not precluded.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
side-flowering skullcap *Scutellaria laterflora*	None/None 2B.2	Occurs in marshes and swamp, meadows and deeps (mesic). Elevation: 0 - 1640 feet Blooms: Jul - Sep	**None**	Side-flowering skullcap historically occurred in moist meadows, streambanks, and the margins of freshwater wetlands throughout lowland areas of California, including portions of the Central Valley. However, many populations have been extirpated due to widespread wetland drainage, agricultural development, and the alteration of natural hydrology. The project area, characterized by disturbed agricultural fields and upland grasslands, lacks the consistently moist soils and shaded, hydric habitat conditions necessary to support this species.
soft salty bird's-beak *Chloropyron molle* ssp. *m*	FE/SE 1B.2	Occurs in marshes and swamp (coastal salt). Elevation: 0 - 10 feet Blooms: Jun - Nov	**None**	Soft salty bird's-beak (*Chloropyron molle ssp. molle*) historically occurred in alkaline wetlands, saline flats, and seasonally inundated grasslands throughout the Central Valley and portions of the Delta region. However, most populations in the region have been extirpated due to agricultural expansion, groundwater pumping, and the loss of native alkali habitats through hydrological alterations and land degradation. The project area, consisting of previously cultivated agricultural fields and heavily grazed grasslands, lacks the saline-alkaline soils and seasonal hydrological conditions necessary to support this species.
Suisun Marsh aster *Symphytrichum lentum*	None/None 1B.2	Occurs in marshes and swamp (brackish, freshwater). Elevation: 0 - 10 feet Blooms: (Apr)May - Nov	**None**	Suisun Marsh aster historically occurred in tidal brackish and freshwater marshes, slough margins, and riparian corridors throughout the Delta and Suisun Marsh regions. However, many populations have been extirpated due to levee construction, conversion of wetlands to agriculture, and altered hydrology resulting from water management infrastructure. CNDDB records occur in close proximity; however, the project area, composed of disturbed upland agricultural fields and managed grasslands, lacks the brackish wetland habitat, tidal influence, and persistent soil moisture conditions required to support this species.
vernal pool smallscale *Atriplex persistens*	None/None 1B.2	Occurs in vernal pools (alkaline). Elevation: 35 - 375 feet Blooms: Jun - Oct	**None**	Vernal pool small scale historically occurred in alkaline vernal pools and seasonally inundated flats within the Central Valley, particularly in areas with clay-rich or saline-alkaline soils. However, numerous populations have been lost due to widespread agricultural development, soil modification, and disruption of natural flooding regimes. The project area, characterized by upland agricultural fields and managed grasslands, lacks the alkaline soil conditions and seasonal hydrology needed to support this species.

Scientific Name Common Name	Status (Fed/State) (CRPR)	Habitat Requirements	Potential to Occur	Discussion
watershield *Brasenia schreberi*	None/None 2B.3	Occurs in marshes and swamps (freshwater). Elevation: 0 - 7220 feet Blooms: Jun - Sep	**None**	Watershield historically occurred in shallow, still or slow-moving freshwater habitats such as ponds, oxbows, sloughs, and marshes throughout the Central Valley and adjacent lowland regions. However, many populations have been eliminated due to wetland drainage, conversion to agriculture, and the loss of permanent aquatic habitats through water diversions and hydrological alterations. The project area, consisting of upland agricultural fields and managed grasslands, lacks the standing freshwater bodies and stable hydrological conditions necessary to support this species.
woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	None/None 1B.2	Occurs in marshes and swamps (freshwater). Requires constantly moist to saturated soils. Elevation: 0 - 395 feet Blooms: Jun - Sep	**None**	Woolly rose-mallow historically occurred along the margins of rivers, sloughs, and freshwater marshes throughout the Central Valley and Delta regions. However, many populations in these areas have been lost due to levee construction, channelization, wetland drainage, and conversion to agriculture. The project area, consisting of disturbed grasslands and modified agricultural lands, lacks the saturated soils and persistent hydrological conditions required to support this species.

Community Name	Discussion
Sensitive Vegetation Communities	
Alkali Meadow	Alkali meadows occur in low-lying areas with alkaline soils and seasonal flooding. The project area lacks these conditions, and this vegetation community was not observed during the field survey.
Alkali Seep	Alkali seeps form in areas with saline groundwater discharge and support specialized salt-tolerant vegetation. The project area lacks these hydrological and soil conditions, and this vegetation community was not observed during the field survey.
Cismontane Alkali Marsh	Cismontane alkali marshes occur in lowland areas with alkaline soils and saturated conditions. The project area lacks these features, and this vegetation community was not observed during the field survey.

Coastal and Valley Freshwater Marsh	Coastal and valley freshwater marshes occur in low-lying areas with standing or slow-moving freshwater and support a dense cover of emergent wetland vegetation. The project area lacks persistent surface water and saturated soil conditions, and this vegetation community was not observed during the field survey.
Coastal Brackish Marsh	Coastal brackish marshes occur in tidal or semi-tidal zones where freshwater mixes with saline water, supporting salt-tolerant emergent vegetation. The project area lacks tidal influence and brackish water conditions, and this vegetation community was not observed during the field survey.
Northern Claypan Vernal Pool	Northern claypan vernal pools occur in seasonally inundated depressions underlain by claypan soils that restrict drainage, supporting specialized vernal pool plant communities. The project area lacks these soil characteristics and seasonal hydrologic conditions, and this vegetation community was not observed during the field survey.
Stabilized Interior Dunes	Stabilized interior dunes occur in inland areas with sandy soils shaped by historic aeolian processes and support specialized, drought-tolerant plant communities. The project area lacks sandy substrates and dune topography, and this vegetation community was not observed during the field survey.
Valley Needlegrass Grassland	Valley needlegrass grasslands occur in well-drained soils of valley and foothill regions and are dominated by native perennial bunchgrasses such as *Stipa pulchra*. The project area lacks intact native grassland structure and species composition, and this vegetation community was not observed during the field survey.

California Endangered Species Act (CESA) and California Department of Fish and Wildlife (CDFW)

SE: State Endangered SE: State Threatened

Federal Endangered Species Act (FESA) and United States Fish and Wildlife Service (USFWS)

FE: Federal Endangered FE: Federal Threatened

CNPR (CNPS California Rare Plant Rank):

1A = Plants presumed extirpated in California
1B = Plants rare, threatened, or endangered in California and elsewhere

CRPR Threat Code Extension

.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Fairly endangered in California (20%-80% occurrences threatened)
.3 = Not very endangered in California (<20% of occurrences threatened)

Potential to Occur Classifications

None classification indicates that the species is determined to be completely absent from the site. This determination is based on the absence of suitable habitat features required by the species, a lack of documented occurrences in the local area or surrounding quadrangles, and environmental conditions incompatible with the species' known habitat requirements.

Not Expected classification is used for species that are unlikely to occur at the site but cannot be entirely ruled out. This classification applies when the site contains minimal or limited habitat features that are suboptimal for the species. Few or no documented occurrences exist in the surrounding area, and the site may experience environmental factors such as disturbance or habitat fragmentation that make it unlikely for the species to inhabit or use the area.

Possible classification is assigned to species that have a reasonable likelihood of occurring on the site. This classification applies when the site contains suitable habitat that meets the species' known requirements, and there are documented occurrences within a reasonable distance, such as nearby quadrangles or within the species' typical range. Species in this category may use the site seasonally, sporadically, or for specific life history activities like foraging, breeding, or migration.

Occurs classification is used for species that are known to inhabit or regularly use the site. This determination is based on the presence of optimal or high-quality habitat that fully meets the species' requirements, along with confirmed records of the species' presence in close proximity, such as direct observations or documented data. Environmental conditions and habitat features at the site are well-suited for the species' long-term or consistent presence.

Attachment E

Special Status Wildlife Species Identified by Database Query

Special Status Wildlife Species Identified by Database Review

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Crustaceans				
California linderiella *Linderiella occidentalis*	None/None	The California linderiella (*Linderiella occidentalis*) is a small, freshwater fairy shrimp species endemic to California's seasonal vernal pools and temporary wetlands. It requires shallow, clear, and cool rain-fed pools that fill during winter and dry out in the summer, preventing the establishment of predatory fish. These pools are typically located in grasslands with clay or hardpan soils that retain water long enough for the shrimp to complete its lifecycle. The species relies on undisturbed habitats with consistent hydrological cycles.	None	The potential for California linderiella to occur on the west side of the Montezuma Hills near Rio Vista, CA, and on Brannan, Twitchell, Bradford, and Sherman Islands is best classified as none. This species is typically found in seasonal vernal pools and other ephemeral freshwater habitats with specific hydrological regimes and soil types, such as hardpan or claypan soils. The surveyed areas are dominated by agricultural fields and disturbed grasslands, lacking the natural conditions required to support vernal pool ecosystems. No occurrences have been documented in the surrounding quadrangles, and no suitable vernal pool habitat was identified during the field survey. Given the lack of suitable habitat and incompatible environmental conditions, California linderiella is considered absent from these locations.
Conservancy fairy shrimp *Branchinecta conservation*	FE/None	The conservancy fairy shrimp (*Branchinecta conservatio*), a federally endangered species, inhabits seasonal vernal pools and other temporary freshwater wetlands in California's Central Valley, foothills, and coastal plains. It requires shallow, rain-fed pools that fill during winter and dry out in the summer, preventing the establishment of predatory fish. These pools must have clear, cool water with low salinity and specific soil types, such as hardpan or clay, that help retain water. The species relies on undisturbed vernal pool ecosystems for its entire lifecycle, as its eggs, or cysts, remain dormant in the dry soil until the next rainy season.	None	The potential for conservancy fairy shrimp to occur in the same areas is also best classified as none. This species requires large, intact vernal pools with specific seasonal hydrology and soil composition, none of which were found during the field survey. The areas are heavily modified for agriculture, lack suitable habitat features, and there are no known occurrences nearby. Due to incompatible environmental conditions and the absence of vernal pool habitat, conservancy fairy shrimp are considered absent from these sites.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Midvalley fairy shrimp *Branchinecta mesovallensis*	None/None	The Midvalley fairy shrimp (*Branchinecta mesovallensis*) is a small, freshwater crustacean endemic to California's Central Valley. It inhabits seasonal vernal pools and ephemeral freshwater wetlands that fill with rainwater during the winter and dry out in the summer, preventing the establishment of predatory fish. These pools are typically located in grasslands with clay or hardpan soils that retain water long enough for the shrimp to complete its life cycle. The species feeds on algae, bacteria, and small organic particles.	None	The potential for Midvalley fairy shrimp to occur on the west side of the Montezuma Hills near Rio Vista, CA, and on Brannan, Twitchell, Bradford, and Sherman Islands is best classified as none. This species is associated with seasonal vernal pools typically found in grassland habitats with clay or hardpan soils, which are not present in the surveyed areas. The sites are dominated by agricultural use and lack the necessary hydrology and soil conditions, with no recorded occurrences in the surrounding quadrangles. No vernal pool habitat was identified during the field survey, and the environmental setting is unsuitable for this species. As such, Midvalley fairy shrimp are considered absent from these locations.
vernal pool fairy shrimp *Branchinecta lynchi*	FT/None	The vernal pool fairy shrimp (*Branchinecta lynchi*), a federally threatened species, inhabits seasonal vernal pools and other ephemeral wetlands in California and southern Oregon. It requires shallow, temporary pools that form during the rainy season and dry up in summer, which prevents predatory fish from establishing. These pools typically have clear to slightly turbid water with low salinity and neutral to slightly basic pH. Vernal pool fairy shrimp rely on undisturbed habitats with intact hydrology and native vegetation.	None	The potential for vernal pool fairy shrimp to occur on the west side of the Montezuma Hills near Rio Vista, CA, and on Brannan, Twitchell, Bradford, and Sherman Islands is best classified as none. This species depends on seasonal vernal pools with specific soil and hydrological conditions, which are not present in the surveyed areas dominated by agriculture and disturbed landscapes. The sites lack suitable habitat, are fragmented by infrastructure, and have no documented occurrences in nearby quadrangles. No vernal pool habitat was identified during the field survey, and the environmental conditions are incompatible with the species' known requirements. Therefore, vernal pool fairy shrimp are considered absent from these locations.
vernal pool tadpole shrimp *Lepidurus packardi*	FE/None	The vernal pool tadpole shrimp (*Lepidurus packardi*) is a federally endangered crustacean that inhabits seasonal freshwater vernal pools in California's Central Valley and surrounding foothills. These pools must fill with rainwater during the winter and spring, providing temporary aquatic habitats that dry out in the summer, which helps prevent the establishment of predatory fish. The species relies on pools with clay or hardpan substrates that retain water for sufficient time to complete its lifecycle. It feeds on detritus, algae, and small aquatic organisms.	None	The potential for vernal pool tadpole shrimp to occur on the project area is best classified as none. This federally endangered species is restricted to seasonal vernal pools and similar ephemeral wetland habitats with clay or hardpan soils that allow for temporary ponding. The project area is composed primarily of agricultural fields and disturbed grasslands, which lack the necessary hydrological and soil conditions to support vernal pool ecosystems. No documented occurrences exist in the surrounding quadrangles, and no vernal pool habitat was identified during the field survey. Due to the absence of suitable habitat and incompatible environmental conditions, vernal pool tadpole shrimp are considered to be completely absent from the project area.
Amphibians				

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
California red-legged frog *Rana draytonii*	FT/None SSC	The California red-legged frog (*Rana draytonii*) is a federally threatened amphibian found in aquatic and riparian habitats throughout California's coastal and inland regions. It requires still or slow-moving freshwater habitats such as ponds, marshes, streams, or lagoons with dense emergent or surrounding vegetation, which provide cover and foraging opportunities. Breeding occurs in deep pools or ponds with minimal disturbance and sufficient aquatic vegetation for egg-laying. During the non-breeding season, red-legged frogs may use upland habitats, seeking shelter in rodent burrows, under logs, or within moist leaf litter.	None	The potential for California red-legged frog to occur on the project area is best classified as none. This federally threatened species typically requires deep, still or slow-moving freshwater with dense emergent vegetation for breeding, and adjacent upland habitat for dispersal and estivation. The project area is dominated by agricultural fields and disturbed grasslands, which lack the aquatic features and suitable riparian or emergent vegetation necessary to support breeding or foraging habitat. Additionally, the site is highly fragmented and influenced by agricultural operations, limiting its suitability for dispersal. A review of the CNDDB indicates no documented occurrences of the species within or near the project area. Based on the absence of suitable aquatic and upland habitat, the lack of supporting vegetation, and no known CNDDB records in the vicinity, California red-legged frog is considered absent from the project area.
California tiger salamander – central California DPS *Anbystoma californiense pop. 1*	FT/ST WL	The California tiger salamander (*Ambystoma californiense*) requires a combination of seasonal aquatic and upland terrestrial habitats to complete its lifecycle. It breeds in temporary vernal pools, seasonal ponds, or other fishless wetlands, which provide the still, shallow water necessary for egg-laying and larval development. During the rest of the year, it inhabits grasslands and open oak woodlands, relying on underground burrows created by small mammals for shelter and moisture retention.	None	The potential for California tiger salamander to occur on the project area is best classified as none. This federally and state threatened species requires seasonal vernal pools or temporary ponds for breeding and adjacent upland grasslands with underground refugia, such as ground squirrel burrows, for the majority of its life cycle. The project area is primarily composed of agricultural fields and disturbed grasslands, lacking the natural vernal pools or seasonal wetlands necessary for successful breeding. Furthermore, while the site is surrounded by irrigation canals, water reservoirs, and rivers, these features do not provide suitable breeding habitat due to their permanent water regimes, steep banks, and active management, which are incompatible with the species' ecological requirements. The presence of these artificial water bodies, along with intensive land use and the absence of documented occurrences in the CNDDB, further limits the site's suitability for dispersal or colonization. Therefore, California tiger salamander is considered absent from the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
foothill yellow-legged frog – central coast DPS *Rana boylii pop. 4*	FT/SE	The foothill yellow-legged frog (*Rana boylii*) is a stream-dwelling amphibian found in low- to mid-elevation rivers and streams across California and Oregon. It requires clear, cool, and well-oxygenated waters with rocky substrates for breeding and development. This species prefers areas with moderate to swift-flowing water, gravel or cobble beds for egg-laying, and nearby riparian vegetation for cover and foraging.	None	The potential for foothill yellow-legged frog (Rana boylii) to occur on the project area is best classified as none. This species is typically associated with perennial streams and rivers that have rocky substrates, clear, flowing water, and adjacent riparian vegetation, which are essential for breeding, foraging, and shelter. The project area is composed primarily of agricultural fields and disturbed grasslands and lacks the natural stream channels and riparian structure required to support suitable habitat. Although the site is bordered by irrigation canals, water reservoirs, and rivers, these artificial or modified water features generally lack the hydrological conditions, substrate, and ecological stability necessary to support foothill yellow-legged frog populations. Additionally, no occurrences of the species are documented within or near the project area in the CNDDB. Given the absence of natural aquatic habitat, lack of supporting vegetation, and no known nearby occurrences, foothill yellow-legged frog is considered absent from the project area.
western spadefoot *Spea hammondii*	FPT/None	The western spadefoot (*Spea hammondii*) is an amphibian adapted to arid and semi-arid habitats, including grasslands, oak woodlands, coastal scrub, and desert regions of the western United States. It requires temporary, seasonal pools for breeding, such as vernal pools, flooded fields, or ephemeral ponds, which must remain wet long enough for larvae to develop but are free of fish predators. For its terrestrial phase, the spadefoot relies on loose, sandy, or well-drained soils where it can burrow to avoid desiccation during dry periods.	None	The potential for western spadefoot to occur on the project area is best classified as none. This species relies on seasonal pools, vernal pools, or ephemeral wetlands for breeding, and occupies adjacent grasslands or open habitats with friable soils suitable for burrowing during the dry season. The project area consists primarily of agricultural fields and disturbed grasslands, which lack the necessary seasonal wetland features and have likely compacted or altered soils that are unsuitable for burrowing. Although the site is surrounded by irrigation canals, reservoirs, and rivers, these features are typically permanent or heavily managed and do not provide appropriate breeding conditions. Additionally, no occurrences of western spadefoot are reported in the CNDDB for the project area or surrounding area. Due to the lack of suitable aquatic and upland habitat, the presence of incompatible water features, and no known CNDDB records nearby, western spadefoot is considered absent from the project area.
Reptiles				

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/ST	The Alameda whipsnake (*Masticophis lateralis euryxanthus*), a federally threatened subspecies, inhabits chaparral, coastal scrub, and adjacent grasslands in the San Francisco Bay Area, particularly in Alameda and Contra Costa counties. It requires dense shrub cover for shelter and open areas for basking and hunting, preying primarily on lizards, small mammals, and insects. Rock outcrops and burrows provide essential refuge from predators and temperature extremes.	None	The potential for Alameda whipsnake to occur on the project area is best classified as none. This federally threatened and state threatened subspecies is typically found in chaparral and adjacent grassland or woodland habitats on rocky hillsides with an abundance of cover and basking sites. The project area is composed of flat agricultural fields and disturbed grasslands, lacking the rugged topography, dense shrub cover, and structural habitat diversity required by the species. Additionally, the surrounding environment is fragmented by irrigation canals, reservoirs, and rivers, which serve as barriers to dispersal and further isolate the site from suitable habitat. No occurrences are documented within or near the project area according to the CNDDB. Given the absence of required habitat features, lack of topographic and vegetative complexity, and no nearby CNDDB records, Alameda whipsnake is considered absent from the project area.
California glossy snake *Arizona elegans occidentalis*	None/None SSC	The California glossy snake (*Arizona elegans occidentalis*) is a nocturnal, burrowing species that inhabits arid and semi-arid regions, including grasslands, deserts, chaparral, and coastal scrub across California. It prefers loose, sandy, or loamy soils that facilitate burrowing, where it seeks shelter from extreme temperatures and predators. This snake is often found in open areas with sparse vegetation and relies on underground retreats, rock crevices, or abandoned rodent burrows for cover. It primarily preys on small vertebrates, including lizards and rodents.	None	The potential for California glossy snake (Arizona elegans occidentalis) to occur on the project area is best classified as none. This species is typically associated with arid and semi-arid habitats such as grasslands, scrublands, and sandy or loamy soils that allow for burrowing and nocturnal activity. The project area consists primarily of agricultural fields and disturbed grasslands, which are heavily managed and lack the loose, well-drained soils and native vegetation communities preferred by the species. Additionally, the presence of surrounding irrigation canals, water reservoirs, and rivers creates habitat fragmentation and barriers to movement, further reducing the site's suitability. No occurrences of California glossy snake are reported in the CNDDB within or near the project area. Based on the absence of suitable soil and vegetation conditions, habitat fragmentation, and lack of documented occurrences, California glossy snake is considered absent from the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
giant gartersnake *Thamnophis gigas*	FT/ST	The giant gartersnake (*Thamnophis gigas*) is an aquatic species endemic to the wetlands and waterways of California's Central Valley. It thrives in freshwater marshes, ponds, sloughs, and irrigation canals with dense emergent vegetation such as cattails and bulrushes, which provide cover and foraging habitat. This snake relies on slow-moving or stagnant water bodies with adjacent upland areas for basking and refuge during the dry season. Its diet primarily consists of small fish and amphibians.	Not Expected	The potential for giant garter snake to occur on the project area is best classified as not expected. This federally and state threatened species is typically found in freshwater marshes, wetlands, sloughs, and slow-moving waterways with dense emergent vegetation, and relies on adjacent upland areas for basking and refuge. While the project area itself is composed primarily of agricultural fields and disturbed grasslands that lack suitable wetland features and vegetative cover, the surrounding landscape includes portions of the Sacramento and San Joaquin rivers and associated waterways. A review of the CNDDB indicates documented occurrences of giant garter snake along the banks of these rivers near the project area. However, the habitat within the site is highly modified, fragmented, and bordered by steep-sided irrigation canals and managed waterways, which are generally unsuitable for breeding or long-term occupation. Given the proximity of known occurrences but the lack of suitable on-site habitat and potential barriers to movement, giant garter snake is unlikely to occur within the project area but cannot be entirely ruled out. Therefore, the potential to occur is classified as not expected.
northern California legless lizard *Anniella pulchra*	None/None SSC	The Northern California legless lizard (*Anniella pulchra*) is a fossorial species that inhabits loose, sandy, or loamy soils in coastal dunes, chaparral, oak woodlands, and grasslands across Northern California. It requires areas with abundant leaf litter, decomposing vegetation, or other surface debris that provide cover and moisture retention, which are essential for thermoregulation and protection from predators. This species spends most of its life burrowing underground, emerging to hunt for small invertebrates such as insects and larvae.	None	The potential for northern legless lizard to occur on the project area is best classified as none. This species is typically associated with loose, sandy or loamy soils in coastal scrub, chaparral, dunes, and grasslands, often beneath leaf litter, logs, or other surface cover that provides a cool, moist microhabitat. The project area consists primarily of agricultural fields and disturbed grasslands that have compacted or cultivated soils lacking the friability and cover necessary to support this species. Additionally, the site is surrounded by irrigation canals, reservoirs, and rivers that contribute to habitat fragmentation and further reduce suitability for occupancy. A review of the CNDDB reveals no documented occurrences of northern legless lizard within or near the project area. Given the absence of appropriate soil conditions, microhabitat features, and supporting occurrence records, northern legless lizard is considered absent from the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
northwestern pond turtle *Actinemys marmorata*	FPT/None SSC	The northwestern pond turtle (*Actinemys marmorata*), also known as the western pond turtle, inhabits a variety of aquatic habitats, including rivers, streams, ponds, lakes, and marshes, primarily in the Pacific Northwest and California. It prefers areas with slow-moving or still waters and abundant aquatic vegetation for foraging, as well as basking sites such as logs, rocks, or floating vegetation. Upland areas with loose, well-drained soils are essential for nesting and overwintering.	Not Expected	The potential for northwestern pond turtle to occur on the project area is best classified as not expected. This species typically inhabits ponds, marshes, streams, and slow-moving rivers with basking sites such as logs or rocks, and nearby upland areas for nesting. While the project area itself consists primarily of agricultural fields and disturbed grasslands that lack suitable aquatic features and basking or nesting habitat, it is located near segments of the Sacramento and San Joaquin rivers, as well as irrigation canals and water conveyance structures. These water bodies, however, are often steep-sided, concrete-lined, or actively managed, limiting their suitability for long-term occupancy. A review of the CNDDB indicates occurrences of northwestern pond turtle in the broader region, including areas along the Sacramento and San Joaquin rivers, but not within the project area itself. Given the proximity of known occurrences and potential for limited dispersal through nearby waterways, but the lack of suitable habitat within the project area, the species is unlikely to occur but cannot be entirely ruled out. Therefore, the potential to occur is classified as not expected.
Birds				
American peregrine falcon *Falco peregrinus anatum*	None/None	The American peregrine falcon (*Falco peregrinus anatum*) inhabits a wide range of environments, including coastal areas, mountains, river valleys, and open landscapes across North America. It requires tall cliffs, ledges, or urban structures such as skyscrapers and bridges for nesting, where it lays eggs in shallow scrapes without building traditional nests. These elevated sites provide clear vantage points for hunting and protection from predators. Peregrine falcons primarily prey on medium-sized birds, which they catch in mid-air. Proximity to open areas and abundant prey is essential for their survival.	Possible	The peregrine falcon is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent segments of the Sacramento and San Joaquin Rivers. This classification is supported by the presence of suitable foraging habitat such as open agricultural fields, grazed grasslands, irrigation canals, sloughs, and river corridors, which attract a variety of avian prey. Although the immediate project area lacks nesting substrates, nearby elevated structures like transmission towers and bridges may provide potential nesting or roosting sites. Documented occurrences in the surrounding Delta region, as reported in the CNDDB, further support this classification. While the project area does not offer direct nesting habitat, peregrine falcons may use the site for seasonal foraging or during migration. Potential impacts from gas well drilling activities are expected to be minimal and temporary, primarily limited to short-term disturbance of foraging individuals.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
bank swallow *Riparia riparia*	None/ST	The bank swallow (*Riparia riparia*), a colonial nesting bird, inhabits riparian areas, coastal bluffs, and riverbanks across North America. It requires vertical, sandy or erodible soil banks along rivers, lakes, and coastal cliffs for nesting, where it excavates burrows to lay eggs and raise young. This species forages over open water, wetlands, and grasslands, feeding primarily on flying insects.	Not Expected	The bank swallow is classified as not expected to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and surrounding portions of the Sacramento and San Joaquin Rivers. This classification is based on the lack of suitable nesting habitat, as bank swallows require vertical, eroding banks of friable soil—features generally absent from the project area. The local landscape is dominated by leveed channels, managed irrigation canals, agricultural fields, and grazed grasslands, which do not support the steep, natural banks necessary for colony formation. While the species historically bred along parts of the Sacramento River, current CNDDB data indicate few or no recent records in the immediate vicinity of the project area. Although individual swallows may pass through during migration, the site is unlikely to support nesting or regular use by the species.
burrowing owl *Athene cunicilaria*	None/SP	The burrowing owl (*Athene cunicularia*) inhabits open landscapes such as grasslands, prairies, deserts, and agricultural areas, where it relies on flat terrain with sparse vegetation for visibility and hunting. This species depends on burrows, often created by mammals like prairie dogs or ground squirrels, for nesting and shelter. Suitable habitat includes areas with well-drained soils that facilitate burrow construction, an abundant supply of insects and small mammals for food, and minimal tree cover to reduce predation risk.	Occurs	The burrowing owl is classified as occurs within the project area based on a confirmed observation of an individual along the access road to well pad SOL-6. This direct observation indicates that the species is currently using the site. The project area contains suitable habitat in the form of open agricultural fields, grazed grasslands, and disturbed areas, which provide the low vegetative cover and open ground preferred by the species for foraging and roosting. Additionally, CNDDB records document burrowing owl occurrences in the surrounding region, further supporting the species' presence within the local landscape. Although nesting activity has not been confirmed at the site, the availability of ground burrows or similar refuges suggests the potential for seasonal or sporadic use for breeding or roosting. Given these factors, focused pre-construction surveys and appropriate avoidance measures are recommended to prevent disturbance or harm to individuals or active burrows.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
California black rail *Laterallus jamaicensis coturniculus*	None/ST FP	The California black rail (*Laterallus jamaicensis coturniculus*), a secretive marsh bird, inhabits tidal salt marshes, freshwater wetlands, and brackish marshes along the Pacific Coast and inland regions of California. It requires dense, low-growing wetland vegetation, such as pickleweed (*Salicornia* spp.), cattails (*Typha* spp.), and bulrushes (*Schoenoplectus* spp.), for nesting, cover, and foraging. This species relies on stable water levels and high marsh areas to avoid flooding, as well as mudflats for feeding on small invertebrates and seeds.	Not Expected	The California black rail is classified as not expected to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This determination is based on the lack of suitable habitat, as the species relies on dense, low-lying wetland vegetation with shallow, stable water—conditions are not present in the primarily agricultural and grazed grassland landscape of the site. Although some canals and sloughs exist nearby, they are typically managed or disturbed and do not provide the consistent hydrology or vegetation structure needed by the species. No individuals were observed during surveys, and CNDDB records show few or no nearby occurrences. Given these factors, the species is unlikely to use the site, even sporadically.
California least tern *Sternula antillarum browni*	FE/SE FP	The California least tern (*Sternula antillarum browni*), a federally endangered seabird, inhabits coastal beaches, estuaries, and salt flats along the Pacific Coast of California. It requires open, sandy or gravelly habitats near shallow waters for nesting and foraging. Nesting occurs in small scrapes on the ground in sparsely vegetated areas, where the birds rely on camouflage for protection. This species feeds primarily on small fish, which it catches by diving into nearshore waters.	Not Expected	The California least tern is classified as not expected to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species typically nests on sandy or gravelly beaches, alkali flats, and other open substrates near marine or estuarine environments, particularly along the coast. The project area consists primarily of agricultural fields, grazed grasslands, leveed waterways, and irrigation canals, which do not provide the bare, open substrates or proximity to marine-influenced foraging areas required by the species. No California least terns were observed during field visits, and CNDDB records indicate few or no occurrences in the immediate vicinity. Due to the lack of suitable nesting habitat and the inland, managed nature of the site, the California least tern is unlikely to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
California Ridgway's rail *Rallus obsoletus obsoletus*	FE/None	The California Ridgway's rail (*Rallus obsoletus obsoletus*), an endangered bird endemic to California's coastal wetlands, primarily inhabits tidal salt marshes with dense vegetation, such as cordgrass (*Spartina* spp.) and pickleweed (*Salicornia* spp.). It requires well-vegetated, undisturbed marshlands with high-tide refuges, mudflats for foraging, and channels for movement. This species primarily feeds on small fish, invertebrates, and plant material.	Not Expected	The California Ridgway's rail is classified as not expected to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This subspecies is typically restricted to tidal salt marshes with dense stands of cordgrass and pickleweed, primarily around San Francisco Bay and portions of the Suisun Marsh. The project area, dominated by agricultural fields, grazed grasslands, and managed irrigation canals, lacks the tidal marsh vegetation and hydrologic conditions required by the species. Although nearby sloughs and leveed waterways may contain some emergent vegetation, they are generally too disturbed, fragmented, or managed to provide suitable habitat. No individuals were observed during surveys, and CNDDB records indicate no recent occurrences in the immediate vicinity. As such, the species is unlikely to use the site, even occasionally, and is classified as not expected to occur.
double-crested cormorant *Nannopterum auritum*	None/None WL	The double-crested cormorant (*Phalacrocorax auritus*) is a waterbird that inhabits a variety of aquatic environments, including freshwater lakes, rivers, coastal estuaries, and marine shorelines across North America. It requires open water bodies with abundant fish populations for foraging, as well as secluded areas with tall trees, rocky cliffs, or islands for nesting. This species nests in colonies, often building stick nests in trees or on the ground in isolated locations to avoid human disturbance.	Possible	The double-crested cormorant is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. While the project area itself—consisting of agricultural fields and grazed grasslands—does not provide suitable habitat for nesting or roosting, the surrounding region supports appropriate aquatic features, including sloughs, rivers, and large canals that are commonly used by this species for foraging. Additionally, nearby structures such as transmission towers and riparian trees may offer suitable roosting or nesting opportunities. The CNDDB includes records of double-crested cormorant occurrences in the surrounding Delta region, supporting the likelihood of the species using nearby habitats. Although use of the project area itself is unlikely, the species may occur in the immediate vicinity for foraging or roosting.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
golden eagle *Aquila chrysaetos*	None/None FP	The golden eagle (*Aquila chrysaetos*) is a large raptor that inhabits a wide range of open and semi-open habitats, including grasslands, deserts, shrublands, tundra, and mountainous regions, across the Northern Hemisphere. It requires expansive territories with minimal human disturbance for hunting and nesting. Golden eagles often nest on cliffs, rocky outcrops, or in large trees, typically in remote areas with a clear view of their surroundings. They prey on a variety of animals, including mammals, birds, and reptiles, and prefer areas with abundant prey populations.	Possible	The golden eagle is categorized as possible to occur within the project area. This classification is supported by the presence of open terrain, including agricultural fields and grazed grasslands, which may provide suitable foraging habitat. While the project area lacks rugged cliffs or large trees typically used for nesting, golden eagles are known to range widely in search of prey and may use the area for foraging. Importantly, CNDDB records document golden eagle occurrences in the Montezuma Hills directly adjacent to the project area, indicating that the species is present in the immediate region. Although nesting within the site is unlikely, the potential for eagles to forage within or traverse the site exists, particularly given the open landscape and proximity to known occurrences.
grasshopper sparrow *Ammodramus savannarum*	None/None SSC	The grasshopper sparrow (*Ammodramus savannarum*) is a grassland-dependent bird that inhabits open prairies, savannas, pastures, and agricultural fields with tall grasses and minimal shrub cover. It requires dense, native grasslands for nesting and foraging, building well-concealed ground nests in thick vegetation. This species primarily feeds on insects, including grasshoppers, and seeds.	Possible	The grasshopper sparrow is classified as possible to occur within the project area. This species typically nests in open grasslands with moderate to dense herbaceous cover, preferring areas with minimal shrub or tree encroachment and well-developed ground vegetation that conceals their ground nests. Portions of the project area, including grazed annual grasslands and fallow agricultural fields, may provide these nesting conditions, particularly in less disturbed areas. Although no individuals were observed during field surveys and CNDDB do not occur in vicinity, the site lies within the species' known breeding range and contains habitat features consistent with its nesting requirements. As such, there is a reasonable likelihood that grasshopper sparrows may occur on-site seasonally for breeding.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
great blue heron *Ardea herodias*	None/None	The great blue heron (*Ardea herodias*) is a large wading bird that inhabits a variety of wetland habitats, including freshwater and saltwater marshes, rivers, lakes, estuaries, and coastal shorelines across North America. It requires shallow waters for foraging, where it hunts fish, amphibians, crustaceans, and small mammals. Nesting typically occurs in tall trees, often in colonies known as rookeries, near water sources that provide abundant food. The species also utilizes shrubs, cliffs, or even artificial structures for nesting if trees are unavailable.	Possible	The great blue heron is classified as Possible to occur within the project area. This species commonly forages in shallow aquatic habitats such as sloughs, irrigation canals, flooded fields, and along the margins of rivers—all of which are present in the surrounding landscape. While the project area itself is primarily composed of agricultural fields and grazed grasslands, these adjacent water features provide suitable foraging opportunities. Great blue herons typically nest in tall trees, often in colonies known as rookeries, which are not present within the project area but may occur nearby. Additionally, CNDDB records document occurrences of great blue heron nesting colonies in the region surrounding the project area, further supporting the potential for the species to use nearby habitat. Although no individuals were observed during field surveys, the availability of suitable foraging habitat and regional occurrence records support a Possible classification, suggesting that great blue herons may forage or pass through the area periodically.
great egret *Ardea alba*	None/None	The great egret (*Ardea alba*) is a large wading bird that inhabits a variety of wetland habitats, including freshwater and saltwater marshes, swamps, rivers, lakes, estuaries, and coastal shorelines. It requires shallow, calm waters with abundant aquatic vegetation for foraging, where it hunts fish, amphibians, crustaceans, and insects. Nesting typically occurs in tall trees, shrubs, or reed beds near water, often in colonies with other wading birds.	Occurs	The great egret is classified as occurs within the project area based on direct observations made during field surveys. This large, wading bird is commonly associated with wetlands, sloughs, irrigation canals, and flooded agricultural fields, where it forages for fish, amphibians, and invertebrates. The project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers, provides suitable foraging habitat along the margins of waterways and irrigated fields. Although no nesting colonies were identified during surveys, the presence of individuals actively foraging within the project area confirms that the great egret utilizes the site. Given the availability of aquatic foraging habitat and the species' observed presence, the great egret is considered to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
loggerhead shrike *Lanius ludovicianus*	None/None SSC	The loggerhead shrike (*Lanius ludovicianus*) is a predatory songbird that inhabits open habitats such as grasslands, savannas, shrublands, agricultural fields, and desert scrub across North America. It requires areas with scattered trees, shrubs, or fence lines for perching and nesting, as well as open ground for hunting. This species is known for impaling its prey—small mammals, birds, insects, and reptiles—on thorns or barbed wire for storage.	Possible	The loggerhead shrike is classified as possible to occur within the project area. This species prefers open habitats such as grasslands, agricultural fields, and scrublands with scattered shrubs, trees, or artificial structures like fences that provide suitable perching and nesting opportunities. The project area includes grazed grasslands and agricultural fields, which offer appropriate foraging habitat, as well as occasional perches that could support nesting activity. Loggerhead shrikes are known to occupy and breed in disturbed or modified environments, particularly in low-elevation areas like those found in the region. Although no individuals were observed during field surveys and no CNDDB records exist for the immediate vicinity, the presence of suitable habitat and the site's location within the species' known range support a possible classification, suggesting the species may occur on-site for foraging or nesting.
mountain plover *Charadrius montanus*	None/None SSC	The mountain plover (*Charadrius montanus*) is a ground-nesting bird that inhabits open, flat landscapes with sparse vegetation across its range in western North America. It prefers shortgrass prairies, arid plains, and agricultural fields, often associated with areas grazed by livestock or disturbed by prairie dogs, which maintain the low vegetation height required for visibility and nesting. This species feeds on insects and other invertebrates found in these open habitats.	Not Expected	The mountain plover is classified as not expected to occur within the project area. This species primarily winters in California's Central and Imperial Valleys, favoring large expanses of flat, open ground such as heavily grazed grasslands, dry fallow agricultural fields, and alkali flats with minimal vegetative cover. While the project area does contain some grazed grasslands and agricultural lands, these are relatively limited in extent and interspersed with canals, levees, and other landscape features that reduce the large, uninterrupted open space preferred by mountain plovers. Additionally, the project area lies outside the species' primary wintering concentration zones, and no individuals were observed during surveys. There are no known CNDDB records of mountain plover in the immediate vicinity. Due to the fragmented and suboptimal nature of available habitat and lack of regional occurrence data, the species is unlikely to occur on-site and is therefore classified as not expected.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
northern harrier *Circus hudsonius*	None/None SSC	The northern harrier (*Circus hudsonius*) is a ground-nesting raptor that inhabits open landscapes such as grasslands, marshes, prairies, agricultural fields, and wetlands across North America. It requires extensive, undisturbed areas with low vegetation for hunting and nesting. Preferred nesting sites are typically in dense vegetation like tall grasses, sedges, or reeds, often near wetlands. Northern harriers rely on these open habitats to hunt small mammals, birds, and insects, using their low, gliding flight to locate prey.	Occurs	The northern harrier is classified as occurs within the project area based on direct observations made during field surveys. This species occupies open habitats such as grasslands, marshes, and agricultural fields, where it forages by flying low over vegetation in search of small mammals and birds. The project area, which includes grazed grasslands and cultivated fields, provides suitable foraging habitat, particularly during the winter and migration periods. Northern harriers typically nest on the ground in areas with dense, tall herbaceous vegetation—such as undisturbed grasslands, wetland margins, or fallow fields—where cover provides concealment and protection for eggs and chicks. While the project area itself may offer limited nesting habitat due to disturbance and vegetation management, adjacent less-disturbed areas could support nesting. Additionally, CNDDB records document occurrences of northern harriers in the surrounding region, further supporting the species' use of the area. Based on field observations and the availability of suitable habitat, the northern harrier is considered to occur within the project area.
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	None/None SSC	The saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), a subspecies of the common yellowthroat, is endemic to the tidal marshes of the San Francisco Bay Area. It requires dense wetland vegetation, such as pickleweed, cattails, and tules, for nesting, cover, and foraging. This species primarily feeds on insects and other small invertebrates found within the marsh ecosystem. It relies on undisturbed, well-structured marsh habitats to avoid predation and tidal flooding.	Not Expected	The salt marsh common yellowthroat classified as not expected to occur within the project area. This subspecies is typically associated with tidal salt and brackish marshes dominated by dense, emergent vegetation such as cattails, bulrush, and pickleweed, where it nests and forages close to the ground. The project area is primarily composed of agricultural fields, grazed grasslands, and irrigation canals, and lacks the dense, perennial wetland vegetation and stable hydrology characteristic of suitable habitat for this species. While limited emergent vegetation may occur along some canal edges, these features are generally narrow, managed, and do not provide the extensive, undisturbed wetland habitat required for breeding. No individuals were observed during field surveys, and although the project area lies within the species' general range, there are no CNDDB records in the immediate vicinity. Given the absence of appropriate nesting habitat and lack of nearby documented occurrences, the salt marsh common yellowthroat is considered not expected to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
song sparrow ("Modesto" population) *Melospiza melodia*	None/None SSC	The song sparrow (*Melospiza melodia*) is a highly adaptable songbird found in a variety of habitats across western North America, including riparian woodlands, coastal marshes, grasslands, shrublands, and urban areas. It requires dense vegetation, such as thickets, shrubs, or wetland plants, for nesting, cover, and foraging. This species primarily feeds on insects, seeds, and berries, thriving in areas with abundant food sources year-round.	Possible	The song sparrow ("Modesto" population) is classified as possible occur within the project area. This subspecies is typically associated with riparian corridors, freshwater marshes, and densely vegetated edges of wetlands and waterways, where it nests in low shrubs or emergent vegetation. Portions of the project area, particularly along irrigation canals, sloughs, and riparian zones, may contain patches of suitable habitat with dense vegetation that could support nesting and foraging. Although much of the site is dominated by agricultural fields and grazed grasslands, which offer limited habitat value, the presence of vegetated water margins increases the likelihood of occurrence. While no individuals were observed during field surveys, the project area is within the known range of the Modesto population, and CNDDB records document occurrences in the surrounding region. Based on the availability of marginally suitable habitat and nearby records, the song sparrow ("Modesto" population) is classified as possible occur within the project area, particularly in areas with sufficient riparian or emergent vegetation.
Suisun song sparrow *Melospiza melodia maxillaris*	None/None SSC	The Suisun song sparrow (*Melospiza melodia maxillaris*), a subspecies of the song sparrow, is endemic to the Suisun Marsh in California. It requires tidal brackish marsh habitats dominated by pickleweed, tule, and other wetland vegetation, which provide nesting sites, cover, and foraging opportunities. This species feeds on insects, seeds, and small invertebrates found in the marsh environment. Suisun song sparrows rely on dense vegetation for protection from predators and tidal flooding.	Not expected	The Suisun song sparrow is classified as not expected occur within the project area. This subspecies is restricted to tidal brackish and salt marshes within and around Suisun Bay and the western Delta, where it requires dense, emergent vegetation such as tules, bulrush, and pickleweed for nesting and foraging. The project area, consisting largely of agricultural fields, grazed grasslands, and managed irrigation canals, lacks the tidal influence and extensive marsh vegetation characteristic of the Suisun song sparrow's preferred habitat. While some canal edges may support narrow strips of emergent vegetation, these features are fragmented and heavily managed, reducing their suitability for the species. No individuals were detected during field surveys, and although the project area lies east of the known core habitat, CNDDB records do not indicate occurrences in the immediate vicinity. Given the lack of appropriate habitat and absence of nearby records, the Suisun song sparrow is classified as not expected to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Swainson's hawk *Buteo swainsoni*	None/ST	The Swainson's hawk (*Buteo swainsoni*) inhabits open grasslands, prairies, agricultural fields, and desert edges across North and South America. It requires expansive, open areas for foraging, where it primarily hunts small mammals, insects, and reptiles. For nesting, it relies on scattered trees or shrubs, often near water sources or in riparian zones, where it builds large nests.	Possible	The Swainson's hawk is classified as possible to occur within the project area. This species breeds in California's Central Valley and is commonly associated with open agricultural lands and grasslands used for foraging, in proximity to large trees or riparian corridors that provide suitable nesting sites. The project area includes extensive grazed grasslands and cultivated fields that offer high-quality foraging habitat for this species, particularly during the breeding season. While large, mature trees suitable for nesting may be limited within the immediate project footprint, such features may occur along nearby field edges, irrigation canals, or riparian zones. Additionally, CNDDB records confirm occurrences of Swainson's hawks in the surrounding region, supporting the likelihood of seasonal use. Although no individuals were observed during field surveys, the combination of suitable foraging conditions, regional nesting habitat, and nearby records supports a possible classification, indicating that Swainson's hawks may forage within the site and potentially nest in adjacent areas.
tricolored blackbird *Agelaius tricolor*	None/ST SSC	The tricolored blackbird (*Agelaius tricolor*) is a colonial songbird that inhabits freshwater marshes, wetlands, and agricultural areas in California and parts of the western United States. It relies on dense vegetation, such as cattails, bulrushes, or nettles, for nesting, typically near standing water. This species also forages in nearby open grasslands, pastures, and fields, feeding primarily on insects, seeds, and grains. The tricolored blackbird is highly dependent on large, undisturbed wetlands and surrounding foraging areas.	Not Expected	The tricolored blackbird is classified as not expected to occur within the project area. This colonial-nesting species typically breeds in dense stands of cattails, bulrushes, or blackberry thickets located near open foraging areas such as grasslands and agricultural fields. Although the project area includes grazed grasslands and cultivated fields that provide some foraging habitat, it lacks substantial patches of dense emergent vegetation needed to support nesting colonies. No individuals or nesting colonies were observed during field surveys, and CNDDB records do not document occurrences of tricolored blackbirds in the immediate region. While the project area lies within the broader known range of the species, the absence of essential nesting habitat and lack of documented occurrences indicate that tricolored blackbirds are not expected to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
western snowy plover *Charadrius nivosus nivosus*	FT/None SSC	The western snowy plover (*Charadrius nivosus nivosus*) is a small shorebird that inhabits sandy coastal beaches, salt flats, estuaries, and inland alkaline lakes across the western United States. It requires open, sparsely vegetated areas with fine sand or gravel substrates for nesting and foraging. Nesting typically occurs in shallow depressions on the ground, where the birds rely on camouflage for protection. This species primarily feeds on small invertebrates found along the shoreline.	Not Expected	The western snowy plover is classified as not expected to occur within the project area. This species typically nests and forages on coastal beaches, salt flats, and dry lakebeds with open, sandy or alkaline substrates, generally in proximity to marine or estuarine environments. The project area consists of agricultural fields, grazed grasslands, and managed irrigation canals, and lacks the open, sparsely vegetated, sandy or saline habitats required for breeding or roosting. While the species may occur along inland salt flats in parts of California, such habitat is not present within or near the site. Additionally, no individuals were observed during surveys, and there are no CNDDB records of the species occurring in the region surrounding the project area. Due to the absence of suitable habitat and lack of local occurrence records, the western snowy plover is considered not expected to occur within the project area.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/SE	The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a riparian-dependent bird that inhabits dense, mature riparian woodlands in the western United States. It requires large tracts of multi-layered vegetation, primarily composed of willows, cottonwoods, and other deciduous trees and shrubs, typically near slow-moving rivers, streams, or wetlands. These habitats provide essential nesting sites, cover, and an abundant supply of insects, particularly caterpillars, which make up a significant part of their diet.	Not Expected	The western yellow-billed cuckoo (Coccyzus americanus occidentalis) is classified as not expected to occur within the project area. This species is closely associated with large tracts of dense riparian woodland, particularly mature stands of cottonwood and willow along low-gradient rivers and streams, which it uses for breeding and foraging. The project area is composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, and does not contain the extensive, structurally diverse riparian forest habitat required by this species. While the broader region includes portions of the Sacramento and San Joaquin Rivers, riparian habitat in the immediate vicinity of the project area is limited and fragmented. No individuals were observed during field surveys, and there are no CNDDB records for this species in the project area or its immediate surroundings. Given the lack of suitable nesting and foraging habitat and absence of nearby documented occurrences, the western yellow-billed cuckoo is considered not expected to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
white-tailed kite *Elanus laucurus*	None/None FP	The white-tailed kite (*Elanus leucurus*) is a raptor that inhabits open grasslands, savannas, marshes, agricultural fields, and riparian areas across western North and South America. It requires expansive, open habitats with scattered trees or shrubs for nesting and perching, typically near productive hunting grounds where it preys on small mammals, birds, and insects. Nesting sites are usually in the upper branches of tall trees, often near water sources.	Occurs	The white-tailed kite is classified as occurs within the project area. This species favors open habitats such as grasslands, agricultural fields, and marsh edges for foraging, often hunting small mammals by hovering low over the ground. The project area includes extensive grazed grasslands and cultivated fields that provide suitable foraging conditions, along with nearby trees and riparian edges that may support nesting. An individual white-tailed kite was observed near the Bradford Island well pad (CC-1), confirming the species' presence within the site. Additionally, CNDDB records document occurrences of white-tailed kite in the vicinity of the project area, further supporting its use of the region. Although nesting activity was not confirmed during surveys, the presence of appropriate habitat, a direct observation, and nearby records warrant a classification of occurs for this species within the project area.
Fish				
Delta smelt *Hypomesus transpacificus*	FT/SE	The delta smelt (*Hypomesus transpacificus*) is a small, pelagic fish endemic to the San Francisco Bay-Delta estuary in California. It requires cool, turbid, and well-oxygenated waters with low to moderate salinity, typically found in the mixing zones of freshwater and estuarine habitats. Spawning occurs in late winter and spring in freshwater areas with sandy or gravelly substrates, where eggs adhere to submerged surfaces. Larvae and juveniles develop in brackish waters before moving into the estuary. The species is highly sensitive to changes in water flow, temperature, and habitat quality.	None	The delta smelt is classified as none for potential to occur within the project area. Although CNDDB records document occurrences of this species in the broader Delta region, the project area itself does not contain aquatic habitat capable of supporting delta smelt. This species is typically found in open, turbid, low-salinity waters of tidal sloughs, estuarine channels, and river confluences, which are absent from the project area. The area is composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, none of which exhibit the flow dynamics, salinity gradients, or tidal connectivity necessary to support delta smelt populations. Furthermore, no work associated with the project will impact any waterways that could potentially support this species. Given the absence of suitable habitat within the project footprint and the lack of direct impacts to appropriate aquatic environments, the delta smelt is determined to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
green sturgeon – southern DPS *Acipenser medirostris pop. 1*	FT/None SSC	The green sturgeon (*Acipenser medirostris*), an ancient anadromous fish, requires a range of freshwater, estuarine, and marine habitats throughout its lifecycle. It spawns in deep, fast-flowing freshwater rivers with gravel and cobble substrates, typically in the spring and summer. Juveniles rear in these freshwater habitats before migrating downstream to estuaries and coastal waters, where they mature over many years. Adults inhabit nearshore marine environments, estuaries, and bays, foraging on benthic invertebrates.	None	The green sturgeon – southern distinct population segment is classified as none for potential to occur within the project area. This anadromous species primarily inhabits deep, slow-moving sections of large rivers, estuaries, and nearshore marine environments, typically requiring unimpeded migratory routes and specific spawning substrates such as coarse gravel beds. While CNDDB records confirm occurrences of green sturgeon in the broader Sacramento-San Joaquin Delta region, the project area does not contain suitable aquatic habitat to support the species. The site consists of agricultural fields, grazed grasslands, and managed irrigation canals that lack the depth, hydrologic conditions, and connectivity to tidal or mainstem riverine systems necessary for green sturgeon occupancy. Additionally, no project activities will affect any waterways capable of supporting this species. Therefore, despite its regional presence, the green sturgeon – southern DPS is determined to have no potential to occur within the project area.
longfin smelt – San Francisco Bay-Delta DPS *Spirinchus thaleichthys pop. 2*	FE/ST	The longfin smelt (*Spirinchus thaleichthys*) is an anadromous fish native to estuarine and freshwater habitats along the Pacific Coast of North America, including the San Francisco Bay-Delta. It requires cool, well-oxygenated waters and migrates between coastal marine environments and low-salinity estuaries for spawning. Spawning occurs in freshwater rivers and sloughs during winter and early spring, where eggs adhere to sandy or gravelly substrates. Larvae and juveniles develop in brackish estuarine waters before moving to the ocean.	None	The longfin smelt – San Francisco Bay-Delta distinct population segment is classified as none for potential to occur within the project area. This anadromous species is typically found in brackish to low-salinity waters of estuaries, bays, and tidal river channels, particularly in the upper San Francisco Estuary and the Sacramento-San Joaquin Delta. It relies on large, open-water habitats with specific salinity gradients and temperature ranges for spawning and rearing, often near the confluence of major river systems. Although CNDDB records document occurrences of longfin smelt in the broader Delta region, the project area itself lacks suitable aquatic habitat. The area is composed of agricultural fields, grazed grasslands, and managed irrigation canals that do not exhibit the tidal influence, hydrologic connectivity, or water quality conditions required by this species. Additionally, no project activities will impact any waterways capable of supporting longfin smelt. Given these factors, the species is determined to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Sacramento perch *Archoplites interruptus*	None/None SSC	The Sacramento perch (*Archoplites interruptus*), California's only native sunfish, historically inhabited slow-moving rivers, sloughs, floodplains, and freshwater lakes throughout the Central Valley. It requires warm, well-oxygenated waters with abundant submerged vegetation and woody debris for cover and spawning. This species thrives in areas with minimal competition and predation from non-native fish.	None	The Sacramento perch is classified as none for potential to occur within the project area. This native, warm-water fish historically inhabited slow-moving rivers, sloughs, and oxbow lakes throughout the Central Valley, including parts of the Sacramento–San Joaquin Delta. However, due to habitat loss, altered hydrology, and competition from non-native species, the Sacramento perch has been largely extirpated from its native range and now persists primarily in isolated reservoirs and managed ponds. Although the species is known historically from the broader Delta region, there are no recent CNDDB records of Sacramento perch in or near the project area. The site itself consists of agricultural fields, grazed grasslands, and managed irrigation canals, which lack the stable, vegetated, warm-water environments that support the species' spawning and rearing needs. Furthermore, project activities will not affect any perennial or natural water bodies capable of supporting this species. Based on the absence of suitable aquatic habitat and lack of nearby documented occurrences, the Sacramento perch is considered to have no potential to occur within the project area.
Sacramento splittail *Pogonichthys macrolepidotus*	None/None SSC	The Sacramento splittail (*Pogonichthys macrolepidotus*) is a native fish of California's Central Valley, primarily found in the Sacramento-San Joaquin Delta, Suisun Marsh, and associated floodplains. It requires slow-moving, low-salinity waters with abundant submerged vegetation for spawning and juvenile rearing. Spawning occurs during winter and spring in temporarily flooded areas with submerged vegetation, where eggs adhere to plant material. Juveniles depend on floodplain habitats, which provide abundant food and shelter.	None	The Sacramento splittail is classified as none for potential to occur within the project area. This native fish species is typically found in the San Francisco Bay–Delta estuary and the lower Sacramento and San Joaquin rivers, where it inhabits shallow, slow-moving waters such as seasonally inundated floodplains, sloughs, and tidal marshes with emergent vegetation. These habitats are essential for spawning and rearing, particularly during high-flow periods in winter and spring. The project area, consisting of agricultural fields, grazed grasslands, and managed irrigation canals, does not contain the hydrologic connectivity, floodplain conditions, or water quality required to support this species. Furthermore, there are no CNDDB records of Sacramento splittail occurrences in the project area or its immediate surroundings. As no natural waterways will be affected by project activities and the site lacks suitable aquatic habitat, Sacramento splittail is determined to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
steelhead – Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	FT/None SSC	Steelhead (*Oncorhynchus mykiss irideus*), the anadromous form of rainbow trout, requires diverse freshwater and marine habitats throughout its lifecycle. For spawning, they rely on cool, well-oxygenated rivers and streams with gravelly substrates to lay their eggs, typically during winter or spring. Juveniles spend 1–4 years rearing in these freshwater environments, utilizing riffles, pools, and cover such as woody debris and overhanging vegetation for protection and feeding. After migrating to the ocean, steelhead spend 1–3 years foraging in coastal marine waters before returning to freshwater to spawn.	None	The steelhead – Central Valley distinct population segment is classified as none for potential to occur within the project area. This anadromous fish requires cool, well-oxygenated, free-flowing streams and rivers with suitable gravel substrates for spawning and rearing. While CNDDB records confirm occurrences of steelhead in the broader region, particularly within the Sacramento and San Joaquin River systems, the project area itself does not contain the necessary habitat features to support the species. The site consists of agricultural fields, grazed grasslands, and managed irrigation canals that lack the hydrologic connectivity, flow conditions, and substrate quality required for any steelhead life stages. Furthermore, no natural waterways within or adjacent to the project area will be impacted by project activities. Despite regional records, the absence of suitable in-stream habitat within the project footprint supports a determination of none for the potential occurrence of steelhead – Central Valley DPS.
Mammals				
American badger *Taxidea taxus*	None/None SSC	The American badger (*Taxidea taxus*) is a burrowing mammal found in open habitats such as grasslands, prairies, deserts, and shrublands across North America. It prefers areas with loose, well-drained soils for digging extensive burrow systems, which it uses for shelter, hunting, and raising young. This species primarily preys on small mammals like ground squirrels, pocket gophers, and rabbits, often digging them out of their burrows. American badgers thrive in habitats with minimal human disturbance and abundant prey populations.	Possible	The American badger is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species prefers open habitats such as grasslands, pastures, and sparsely vegetated areas with friable soils suitable for digging burrows. The project area includes extensive grazed grasslands and agricultural fields that provide potential foraging and denning habitat. Although American badgers are sensitive to habitat fragmentation and human disturbance, they are known to persist in rural and agricultural landscapes where open terrain is available. No individuals or sign were observed during field surveys, and CNDDB records do not document occurrences within the immediate vicinity; however, the project area lies within the species' known range and includes suitable habitat features. Based on the availability of open terrain and soil conditions conducive to burrowing, the American badger is considered possible to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
hoary bat *Lasiurus cinereus*	None/None	The hoary bat (*Lasiurus cinereus*) is a solitary, migratory bat species found across North and Central America. It inhabits a variety of forested habitats, including deciduous, coniferous, and mixed woodlands, as well as open areas near water. It prefers roosting in dense foliage of tall trees, often choosing sites that provide camouflage and protection from predators. Hoary bats forage over open areas, wetlands, and along forest edges, feeding primarily on moths and other nocturnal insects. During migration, they may use a range of habitats, including urban parks and agricultural fields.	Possible	The hoary bat is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is a solitary, migratory bat that roosts in the foliage of mature trees and forages over open areas such as grasslands, agricultural fields, and along riparian corridors. The project area provides suitable foraging habitat and scattered trees that may serve as temporary roost sites during migration or seasonal activity. While no individuals were observed during field surveys, CNDDB records confirm occurrences of hoary bats in the surrounding region, supporting the potential for the species to utilize the project area. Given the presence of suitable habitat and confirmed regional occurrences, the hoary bat is considered possible to occur within the project area.
pallid bat *Antrozous pallidus*	None/None SSC	The pallid bat (*Antrozous pallidus*) is a nocturnal species found in arid and semi-arid habitats across western North America, including deserts, grasslands, shrublands, and woodlands. It roosts in rock crevices, caves, mines, hollow trees, and human-made structures such as bridges and buildings, often selecting warm sites near open foraging areas.	Possible	The pallid bat is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species typically forages in open, arid habitats such as grasslands, agricultural fields, and deserts, and roosts in a variety of structures including rock crevices, hollow trees, bridges, and buildings. The project area provides suitable foraging habitat and may contain potential day or night roosting sites in scattered trees, agricultural infrastructure, or other structures. Although no individuals were observed during field surveys, based on the availability of suitable foraging areas, potential roosting features, the pallid bat is considered possible to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
salt-marsh harvest mouse *Reithrodontomys raventris*	FE/SE FP	The salt-marsh harvest mouse (*Reithrodontomys raviventris*), an endangered species endemic to the tidal marshes of the San Francisco Bay Area, requires dense, undisturbed wetland habitats dominated by pickleweed (*Salicornia* spp.). It thrives in areas with a mix of high and low marsh zones, which provide cover from predators and nesting sites. This species is highly adapted to saline environments and can tolerate saltwater better than most rodents.	None	The salt-marsh harvest mouse is classified as none for potential to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is highly specialized and restricted to dense, mature tidal salt and brackish marshes dominated by pickleweed and other halophytic vegetation, primarily around the San Francisco Bay and Suisun Marsh. The project area is composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, and does not contain the specific marsh habitat characteristics required to support the species. Additionally, while salt-marsh harvest mice are known from the broader Suisun region, no CNDDB records exist in the immediate vicinity of the project area. As the project area lacks suitable habitat and will not impact tidal marsh systems, the salt-marsh harvest mouse is considered to have no potential to occur within the project area.
San Joaquin kit fox *Vulpes macrotis mutica*	FE/ST	The San Joaquin kit fox (*Vulpes macrotis mutica*) is an endangered subspecies native to California's San Joaquin Valley and surrounding areas. It inhabits arid grasslands, shrublands, and desert-like environments with loose, well-drained soils suitable for digging dens. These dens provide shelter, protection from predators, and a place to raise young. Kit foxes rely on a diverse diet of small mammals, birds, insects, and plant material, thriving in areas with low vegetation cover that supports foraging and denning.	Not expected	The potential for the San Joaquin kit fox to occur on the west side of the Montezuma Hills near Rio Vista, CA, and on Brannan, Twitchell, Bradford, and Sherman Islands is best classified as Not expected. These areas are characterized by highly modified landscapes dominated by agriculture, levees, and waterways, which offer limited and fragmented habitat unsuitable for the kit fox's known preferences, such as open grasslands and sparse scrubland. Additionally, there are few to no documented occurrences of the species in the immediate vicinity or surrounding quadrangles. While presence cannot be entirely ruled out due to the species' ability to disperse and use marginal habitat sporadically, the combination of altered land use and habitat fragmentation makes regular use of these areas unlikely.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
San Joaquin pocket mouse *Perognathus inornatus*	None/None	The San Joaquin pocket mouse (*Perognathus inornatus*) is a small, nocturnal rodent endemic to California's San Joaquin Valley and surrounding foothills. It inhabits arid and semi-arid grasslands, shrublands, and open woodlands with loose, sandy, or loamy soils that are suitable for burrowing. The species relies on underground burrows for shelter, food storage, and protection from predators and extreme temperatures. It primarily feeds on seeds, grasses, and small insects.	None	The San Joaquin pocket mouse is classified as none for potential to occur within the project area. This species typically inhabits dry, open habitats such as arid grasslands, scrublands, and sandy or friable soils in the southern portion of California's Central Valley, primarily south of the project area. The project area, consisting of agricultural fields, grazed grasslands, and managed irrigation canals, lacks the sandy, arid conditions and natural scrub vegetation preferred by the San Joaquin pocket mouse. No individuals were observed during field surveys, and there are no CNDDB records of the species occurring within or near the project area. Given the absence of suitable habitat, the site's location outside the species' core range, and the lack of regional occurrence data, the San Joaquin pocket mouse is considered to have no potential to occur within the project area.
western red bat *Lasiurus frantzii*	None/None SSC	The western red bat (*Lasiurus blossevillii*) is a solitary, foliage-roosting bat that inhabits riparian woodlands, forests, and shrublands across western North America. It prefers roosting in the dense foliage of deciduous trees, such as cottonwoods, willows, and sycamores, often near water sources. This species requires a diverse habitat with abundant insect populations for foraging, typically over open areas, forest edges, and wetlands.	Possible	The western red bat is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species typically roosts in the foliage of broad-leaved trees, often in riparian woodlands, and forages over open areas such as grasslands, agricultural fields, and near water sources. The project area offers suitable foraging habitat and scattered riparian vegetation along canals and levees that could provide roosting opportunities. Although no individuals were observed during field surveys, CNDDB records document occurrences of the western red bat in the region. Based on the availability of foraging habitat, potential roosting sites, and regional occurrence data, the western red bat is considered possible to occur within the project area.
Insects				

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
American bumble bee *Bombus pensylvanicus*	None/None	The American bumble bee (*Bombus pensylvanicus*) is a generalist pollinator that inhabits open grasslands, prairies, meadows, agricultural fields, and urban gardens across North America. It requires diverse flowering plants that bloom throughout the growing season to provide continuous nectar and pollen sources. The species nests underground, often in abandoned rodent burrows, or in cavities within grassy or brushy areas. Overwintering queens require undisturbed soil or leaf litter for shelter.	Possible	The American bumblebee is classified as possible to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species prefers open habitats such as grasslands, meadows, and agricultural areas that support a diversity of flowering plants needed for foraging. The project area includes large expanses of grazed grasslands and agricultural fields, which may provide seasonal foraging resources, especially along field edges and in less intensively managed areas. Although no individuals were observed during field surveys, the project area falls within the known historical range of the American bumblebee. CNDDB records of this species occur within the project vicinity. Given the availability of foraging habitat and the species' potential to use disturbed and agricultural landscapes, the American bumblebee is considered possible to occur within the project area.
Antioch andrenid bee *Andrena candida*	None/None	The Antioch andrenid bee (*Andrena candida*) is a rare, solitary bee species endemic to the Antioch Dunes in California. It requires open, sandy soils for nesting, where females excavate underground burrows to lay their eggs. The species is closely associated with native flowering plants, particularly those adapted to the dune ecosystem, which provide essential nectar and pollen resources.	None	The Antioch andrenid bee is classified as none for potential to occur within the project area. This species is highly specialized and historically known from limited areas with sandy soils and intact, native coastal scrub or grassland habitats, primarily near Antioch and the surrounding sand dune systems. The project area is dominated by agricultural fields, grazed grasslands, and managed irrigation canals, and lacks the loose, sandy soils and native vegetation communities required by the Antioch andrenid bee for nesting and foraging. No individuals were observed during field surveys, and there are no CNDDB records of the species in or near the project area. Due to the absence of suitable habitat and lack of nearby documented occurrences, the Antioch andrenid bee is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Antioch cophuran robberfly *Cophura hurdi*	None/None	The Antioch cophuran robberfly (*Cophura hurdi*) is a rare predatory insect endemic to the Antioch Dunes in California. It inhabits open, sandy dune ecosystems with sparse vegetation, which provide the necessary conditions for hunting and reproduction. This species relies on loose, well-drained soils for laying eggs and on native dune plants that support populations of prey insects.	None	The Antioch cophuran robberfly is classified as none for potential to occur within the project area. This species is highly specialized and historically associated with undisturbed sandy soils and native dune or scrub habitats, particularly in the Antioch Dunes area. The project area, characterized by agricultural fields, grazed grasslands, and managed irrigation canals, lacks the loose, sandy soils and native vegetation communities necessary to support the species' life cycle. No individuals were observed during field surveys, and there are no CNDDB records documenting occurrences of the Antioch cophuran robberfly within or near the project area. Given the absence of suitable habitat and lack of nearby occurrence records, the Antioch cophuran robberfly is considered to have no potential to occur within the project area.
Antioch Dunes anthicid blister beetle *Anthicus sacramento*	None/None	The Antioch Dunes anthicid blister beetle (*Anthicus sacramento*) is a rare and specialized insect endemic to the unique sand dune habitats of the Antioch Dunes in California. It requires open, sandy soils with sparse vegetation, which provide suitable conditions for burrowing, foraging, and breeding. The beetle is closely associated with native dune plants, relying on them for shelter and feeding on plant matter and small invertebrates.	None	The Antioch Dunes anthicid blister beetle is classified as having no potential to occur within the project area. This species is highly specialized, relying on the unique sandy dune habitats of the historic Antioch Dunes region, where it depends on loose, well-drained sandy soils and specific native plant communities. The project area, consisting primarily of agricultural fields, grazed grasslands, and managed irrigation canals, lacks the specialized dune habitat and soil conditions necessary to support this species. Although CNDDB records document occurrences in the vicinity, the absence of suitable habitat within the project area leads to the conclusion that the Antioch Dunes anthicid blister beetle has no potential to occur there.
Antioch Dunes halictid bee *Sphecodogastra antiochensis*	None/None	The Antioch Dunes halictid bee (*Halictus harmonius*) is a rare, solitary bee species endemic to the Antioch Dunes in California. It requires open, sandy soils for nesting, where females excavate underground burrows to lay their eggs. This bee is closely associated with native flowering plants in the dune ecosystem, relying on them for nectar and pollen essential for foraging and larval development.	None	The Antioch Dunes halictid bee is classified as none for potential to occur within the project area. This species is narrowly endemic to the historic Antioch Dunes area and is associated with sandy soils and native dune vegetation, where it nests in open, loose, sandy substrates. The project area consists of agricultural fields, grazed grasslands, and managed irrigation canals, and does not contain the undisturbed sandy soils or native dune plant communities required by the species. No individuals were observed during field surveys, and there are no CNDDB records documenting this species within or near the project area. Given the absence of suitable habitat and lack of nearby occurrence records, the Antioch Dunes halictid bee is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Antioch efferian robberfly *Efferia antiochi*	None/None	The Antioch Efferian robberfly (*Efferia antiochi*) is a rare, predatory insect endemic to the Antioch Dunes in California. It inhabits open, sandy dune ecosystems with sparse vegetation, which provide the necessary conditions for hunting and reproduction. This species requires loose, well-drained sandy soils for laying eggs and relies on native dune plant communities to support populations of prey insects.	None	The Antioch efferian robberfly is classified as none for potential to occur within the project area. This species is historically restricted to the Antioch Dunes area, where it is associated with loose, sandy soils and native dune vegetation. The project area is dominated by agricultural fields, grazed grasslands, and managed irrigation canals, and does not provide the specialized sandy habitat required for the species' life cycle. No individuals were observed during field surveys, and there are no CNDDB records for the Antioch efferian robberfly in the vicinity of the project area. Given the lack of suitable habitat and absence of regional occurrence records, the Antioch efferian robberfly is considered to have no potential to occur within the project area.
Antioch multilid wasp *Myrmosula pacifica*	None/None	The Antioch mutillid wasp (*Myrmosula pacifica*) is a rare, solitary wasp species endemic to the Antioch Dunes in California. It inhabits open, sandy dune ecosystems with sparse vegetation, which provide suitable conditions for nesting and foraging. Females are ground-dwelling and require loose, well-drained sandy soils for laying eggs, often within the nests of other ground-nesting insects, as their larvae are parasitic. Adult wasps depend on native flowering plants for nectar.	None	The Antioch mutilid wasp is classified as none for potential to occur within the project area. This species is historically associated with the unique sandy dune ecosystems of the Antioch Dunes area, where it relies on loose, well-drained sandy soils and native plant communities for nesting and foraging. The project area, consisting of agricultural fields, grazed grasslands, and managed irrigation canals, lacks the undisturbed sandy soils and native dune vegetation necessary to support this species. No individuals were observed during field surveys, and there are no CNDDB records of the Antioch mutilid wasp in or near the project area. Due to the absence of suitable habitat and lack of regional occurrence records, the Antioch mutilid wasp is considered to have no potential to occur within the project area.
Antioch specid wasp *Philanthus nasalis*	None/None	The Antioch sphecid wasp (*Philanthus nasalis*) is a rare, solitary wasp species endemic to the Antioch Dunes in California. It inhabits open, sandy dune ecosystems with sparse, native vegetation, which provide suitable conditions for nesting and foraging. This species requires loose, well-drained sandy soils for excavating underground burrows where females lay their eggs. It primarily preys on bees, which it paralyzes and places in the burrows as food for its developing larvae. Adult wasps also rely on native flowering plants for nectar.	None	The Antioch specid wasp (Tachysphex antiochensis) is classified as none for potential to occur within the project area. This species is historically restricted to the Antioch Dunes area, where it depends on loose, sandy soils and native dune vegetation for nesting and foraging. The project area consists primarily of agricultural fields, grazed grasslands, and managed irrigation canals, and does not contain the sandy soil conditions or intact native dune habitat required by the Antioch specid wasp. No individuals were observed during field surveys, and there are no CNDDB records for this species in or near the project area. Given the lack of suitable habitat and absence of regional occurrence records, the Antioch specid wasp is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	None/None	The Blennosperma vernal pool andrenid bee (*Andrena blennospermatis*) is a rare, solitary bee species closely associated with vernal pool ecosystems in California. It primarily inhabits open grasslands with seasonal vernal pools, relying on these temporary wetlands for foraging. This species is a specialist pollinator, depending on the native flowering plant *Blennosperma* (yellow carpet) for nectar and pollen. It requires nearby undisturbed, sandy or loose soils for nesting, where females excavate underground burrows to lay their eggs.	None	The Blennosperma vernal pool andrenid bee is classified as none for potential to occur within the project area. This species is closely associated with seasonal vernal pool habitats where its primary floral host, Blennosperma species occurs. The project area is characterized by agricultural fields, grazed grasslands, and managed irrigation canals, and does not contain vernal pools or the specific native plant communities required by the Blennosperma vernal pool andrenid bee. No individuals were observed during field surveys, and there are no CNDDB records of this species within or near the project area. Due to the absence of suitable vernal pool habitat and lack of regional occurrence data, the Blennosperma vernal pool andrenid bee is considered to have no potential to occur within the project area.
Crotch’s bumble bee *Bombus crotchii*	None/SCE	Crotch’s bumble bee (*Bombus crotchii*), a declining species native to California, primarily inhabits open grasslands, coastal scrub, deserts, and agricultural landscapes. It requires diverse flowering plants for nectar and pollen, preferring native wildflowers such as milkweeds, lupines, and sages throughout the foraging season. This species nests underground, often in abandoned rodent burrows, and needs undisturbed soil for nesting and overwintering.	Possible	Crotch's bumblebee is classified as possible to occur within the project area. This species favors open grasslands, shrublands, and agricultural areas with abundant flowering plants for foraging and well-drained soils for nesting. The project area provides suitable foraging habitat in the form of grazed grasslands and field edges, where flowering plants may be seasonally available. Although no individuals were observed during field surveys and CNDDB records are limited in the immediate vicinity, the project area lies within the historical range of Crotch's bumblebee. Given the availability of foraging habitat and the species' ability to use disturbed landscapes, Crotch's bumblebee is considered possible to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
curved-foot hygrotus diving beetle *Hygrotus curvipes*	None/None	The curved-foot hygrotus diving beetle (*Hygrotus curvipes*) is an aquatic beetle species that inhabits shallow, freshwater wetlands, ponds, and slow-moving streams with clean, well-oxygenated water. It requires habitats with abundant aquatic vegetation, which provides shelter, breeding sites, and hunting grounds for prey such as small aquatic invertebrates. This species is highly sensitive to water pollution, habitat degradation, and alterations in hydrology. Stable water levels and the presence of undisturbed wetland ecosystems are critical for its survival.	None	The curved-foot hygrotus diving beetle is classified as none for potential to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is associated with permanent or semi-permanent ponds, marshes, and slow-moving aquatic habitats that support submerged vegetation and consistent water quality. The project area is primarily composed of agricultural fields, grazed grasslands, and managed irrigation canals, which lack the stable, natural aquatic environments necessary to support the beetle's life cycle. CNDDB records for this species do occur in the vicinity of the project area; however, due to the absence of suitable aquatic habitat, the curved-foot hygrotus diving beetle is considered to have no potential to occur within the project area.
Delta green ground beetle *Elaphrus viridis*	FT/None	The Delta green ground beetle (*Elaphrus viridis*), a federally threatened species, is endemic to vernal pool habitats in Solano County, California. It requires seasonally inundated grasslands with shallow, temporary wetlands that provide moisture and support a rich invertebrate prey base. This beetle is typically found along the muddy edges of vernal pools, where it actively hunts small insects and other invertebrates.	None	The Delta green ground beetle is classified as none for potential to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is restricted to vernal pool habitats in the Sacramento Valley, particularly in areas with intact, seasonally inundated wetlands and associated native grassland communities. The project area, consisting of agricultural fields, grazed grasslands, and managed irrigation canals, does not contain vernal pools or the native vegetation communities required to support the Delta green ground beetle. No individuals were observed during field surveys, and there are no CNDDB records of this species in or near the project area. Given the absence of suitable habitat and lack of regional occurrence records, the Delta green ground beetle is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Hurd's metapogon robberfly *Metapogon hurdi*	None/None	Hurd's metapogon robberfly (*Metapogon hurdi*) is a rare, predatory insect species endemic to specific arid and semi-arid regions, including sandy and scrubland habitats. It requires open, well-drained sandy or loose soils with sparse vegetation, which provide suitable conditions for hunting and laying eggs. As an aerial predator, it relies on abundant populations of smaller insects for food. The species also needs undisturbed ground for its larvae, which develop in soil or decaying plant matter.	None	Hurd's metapogon robberfly is classified as none for potential to occur within the project area. This species is historically associated with sandy dune habitats, particularly in the Antioch Dunes region, where it relies on loose, well-drained sandy soils and native vegetation for breeding and foraging. The project area is primarily composed of agricultural fields, grazed grasslands, and managed irrigation canals and lacks the undisturbed sandy soils and native plant communities required to support this species. No individuals were observed during field surveys, and there are no CNDDB records documenting Hurd's metapogon robberfly in or near the project area. Given the absence of suitable habitat and the lack of nearby occurrence records, Hurd's metapogon robberfly is considered to have no potential to occur within the project area.
Lange's metalmark butterfly *Apodemia mormo langei*	FE/None	The Lange's metalmark butterfly (*Apodemia mormo langei*), a federally endangered species, is endemic to the Antioch Dunes in California. It relies on sandy dune habitats with an abundance of its host plant, naked-stem buckwheat (*Eriogonum nudum auriculatum*), which serves as a larval food source and an essential nectar source for adults. The butterfly also depends on warm, open areas for basking and mating.	None	Lange's metalmark butterfly is classified as none for potential to occur within the project area. This federally endangered species is highly specialized and restricted to the Antioch Dunes area, where it relies on sandy soils and the presence of its host plant, naked-stem buckwheat (Eriogonum nudum var. auriculatum), for its entire life cycle. The project area, which is composed of agricultural fields, grazed grasslands, and managed irrigation canals, lacks the sandy dune habitat and specific host plant necessary to support the species. Although CNDDB records document occurrences in the broader region, suitable habitat is absent from the project area. Therefore, Lange's metalmark butterfly is considered to have no potential to occur within the project area.
Middlekauff's shieldback katydid *Idiostatus middlekauffi*	None/None	Middlekauff's shieldback katydid (*Idiostatus middlekauffi*) is a rare insect species endemic to specific regions of California. It inhabits arid and semi-arid environments, including shrublands, grasslands, and open woodlands with abundant native vegetation. This species requires areas with dense, low-lying shrubs and grasses for cover, feeding, and mating. It depends on a diverse plant community for food, consuming leaves, flowers, and small invertebrates. Shelter is often sought under leaf litter, rocks, or in soil crevices.	None	Middlekauff's shieldback katydid (Idiostatus middlekauffi) is classified as none for potential to occur within the project area. This species is known from limited locations in California and is typically associated with native scrub habitats, rocky outcrops, and areas with undisturbed vegetation. The project area, composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, does not provide the native, undisturbed scrub or rocky habitat required for the species' survival. No individuals were observed during field surveys, and there are no CNDDB records of Middlekauff's shieldback katydid in or near the project area. Given the absence of suitable habitat and the lack of nearby occurrence records, Middlekauff's shieldback katydid is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
molestan blister beetle *Lytta molesta*	None/None	The Molestan blister beetle (*Epicauta molestan*) is a rare beetle species typically found in arid and semi-arid habitats, such as grasslands, shrublands, and open woodlands. It requires areas with loose, sandy, or well-drained soils where females can lay their eggs. The larvae are parasitic, often developing within the nests of ground-nesting bees, while adults feed on the flowers and foliage of native plants. This species is dependent on healthy, diverse plant communities and undisturbed soil conditions.	None	The molestan blister beetle is classified as none for potential to occur within the project area. This species is typically associated with undisturbed grasslands, scrublands, and areas supporting a diverse range of native flowering plants, which are needed for adult foraging and larval development. The project area is primarily composed of agricultural fields, grazed grasslands, and managed irrigation canals, and lacks the native, undisturbed habitat features required to support this species. No individuals were observed during field surveys, and there are no CNDDB records documenting the molestan blister beetle within or near the project area. Based on the absence of suitable habitat and lack of nearby occurrence records, the molestan blister beetle is considered to have no potential to occur within the project area.
monarch butterfly Danaus plexippus	FPT/None	The monarch butterfly (*Danaus plexippus*) requires diverse habitats to support its lifecycle, including breeding, migrating, and overwintering stages. During the breeding season, monarchs rely on milkweed (*Asclepias* spp.) as the sole host plant for laying eggs and for larval development. Nectar-rich flowering plants are essential for adult monarchs as energy sources, especially during migration. Overwintering populations, such as those along the California coast and in central Mexico, require sheltered sites with specific microclimates—cool temperatures, high humidity, and low wind—often provided by clusters of trees like eucalyptus, pines, or firs.	Not expected	The monarch butterfly is classified as not expected to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. Monarchs utilize open and disturbed habitats for foraging during migration and require the presence of milkweed (Asclepias spp.) for breeding, as it serves as the sole host plant for egg-laying and larval development. While the project area includes open grasslands, agricultural margins, and disturbed areas that could provide nectar sources for adults, field surveys did not identify the presence of milkweed, indicating that essential breeding habitat is absent. Although CNDDB records show monarch occurrences within the broader region, the lack of necessary host plants and breeding conditions within the project area itself leads to the conclusion that monarch butterflies are not expected to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
redheaded sphecid wasp *Sphex habenus*	None/None	The redheaded sphecid wasp (*Sphex habenus*) is a solitary, ground-nesting wasp species found in open, sandy, or well-drained soils across grasslands, deserts, and scrublands of North America. It requires loose, bare or sparsely vegetated soil for excavating underground burrows, where it lays its eggs. The wasp hunts insects, particularly grasshoppers and crickets, which it paralyzes and stores in the burrow as food for its developing larvae. Adult wasps rely on nectar from flowering plants for sustenance, making the presence of native flowering species essential.	None	The redheaded sphecid wasp (Eucerceris ruficeps) is classified as none for potential to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is typically associated with sandy soils and undisturbed open habitats, where it nests in the ground and preys on other insects. While CNDDB records document occurrences of the redheaded sphecid wasp within the broader region, the project area itself is composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, and lacks the loose, well-drained sandy soils and undisturbed native vegetation necessary for the species. No individuals were observed during field surveys, and suitable habitat is absent from the project area. Therefore, despite regional records, the redheaded sphecid wasp is considered to have no potential to occur within the project area.
Ricksecker's water scavenger beetle *Hydrochara ricksecker*i	None/None	Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i) is an aquatic beetle species that inhabits freshwater wetlands, ponds, marshes, and slow-moving streams in California. It requires clean, shallow, and well-vegetated water bodies that provide abundant aquatic plants for shelter, feeding, and breeding. The species feeds on decaying organic matter, algae, and small aquatic invertebrates. For breeding, it relies on calm waters where eggs can be laid on submerged vegetation. Major threats include habitat loss due to wetland drainage, water pollution, and alterations to natural hydrology.	None	Ricksecker's water scavenger beetle is classified as none for potential to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is typically associated with shallow, slow-moving, or still freshwater habitats such as ponds, marshes, and wetlands that support aquatic vegetation and stable water conditions. The project area is primarily composed of agricultural fields, grazed grasslands, and managed irrigation canals, and lacks the natural, undisturbed aquatic habitats necessary to support this species. No individuals were observed during field surveys, and there are no CNDDB records documenting the presence of Ricksecker's water scavenger beetle within or near the project area. Due to the absence of suitable habitat and lack of nearby occurrence records, Ricksecker's water scavenger beetle is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
Sacramento anthicid beetle *Anthicus sacramento*	None/None	The Sacramento anthicid beetle (*Anthicus sacramento*) is a rare beetle species endemic to the sandy habitats of California's Central Valley, particularly along the Sacramento River. It requires open, well-drained sandy or loose soils with sparse vegetation, where it can burrow and forage. This beetle is closely associated with native plant communities, feeding on organic debris, pollen, and small invertebrates.	None	The Sacramento anthicid beetle is classified as none for potential to occur within the project area, which includes Brannan Island, Twitchell Island, Bradford Island, Sherman Island, the east side of the Montezuma Hills near Rio Vista, and adjacent portions of the Sacramento and San Joaquin Rivers. This species is historically associated with sandy, alluvial soils and riparian or dune habitats along large river margins where native vegetation is present. Although CNDDB records document occurrences of the Sacramento anthicid beetle within the broader region, the project area itself is composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, and lacks the undisturbed sandy soils and native riparian habitat necessary to support the species. No individuals were observed during field surveys, and suitable habitat is absent from the project footprint. Therefore, despite regional records, the Sacramento anthicid beetle is considered to have no potential to occur within the project area.
San Joaquin dune beetle *Coelus gracilis*	None/None	The San Joaquin dune beetle (*Coelus gracilis*) is a rare, ground-dwelling beetle species endemic to the sandy dune ecosystems of California's San Joaquin Valley. It requires loose, well-drained sandy soils with sparse native vegetation for burrowing, foraging, and breeding. This beetle feeds on organic debris and plant matter, relying on undisturbed dune habitats that provide cover and moisture.	None	The San Joaquin dune beetle is classified as none for potential to occur within the project area. This species is typically associated with undisturbed inland dune systems and sandy soils that support native vegetation, primarily in localized areas of the San Joaquin Valley. The project area, characterized by agricultural fields, grazed grasslands, and managed irrigation canals, does not contain the loose, sandy soils or native dune habitat required by the San Joaquin dune beetle. No individuals were observed during field surveys, and there are no CNDDB records documenting the species in or near the project area. Given the absence of suitable habitat and lack of nearby occurrence records, the San Joaquin dune beetle is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
San Joaquin Valley giant flower-loving fly *Rhaphiomidas trochilus*	None/None	The San Joaquin giant flower-loving fly (*Rhaphiomidas trochilus*) is a rare insect species endemic to California's San Joaquin Valley. It inhabits open, sandy, and well-drained soils in arid and semi-arid grasslands and desert scrub habitats. The species is closely associated with native flowering plants, relying on them for nectar as an essential food source. It requires undisturbed sandy soils for breeding and larval development, as larvae are thought to develop underground.	None	The San Joaquin Valley giant flower-loving fly is classified as none for potential to occur within the project area. This species is typically associated with arid, sandy habitats and sparsely vegetated areas of the San Joaquin Valley, where it relies on native flowering plants and loose, well-drained soils for reproduction. The project area, dominated by agricultural fields, grazed grasslands, and managed irrigation canals, lacks the natural sandy soil conditions and native vegetation communities necessary to support the species. No individuals were observed during field surveys, and there are no CNDDB records of the San Joaquin Valley giant flower-loving fly within or near the project area. Due to the absence of suitable habitat and the lack of nearby occurrence records, this species is considered to have no potential to occur within the project area.
valley elderberry longhorn beetle *Desmocerus californicus dimporphus*	FT/None	The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is a federally threatened species endemic to California's Central Valley. It is closely associated with elderberry shrubs (*Sambucus spp.*), which are essential for its lifecycle. The beetle requires riparian and upland habitats with dense elderberry populations, as its larvae develop inside the stems of living elderberry shrubs. These habitats are typically found near rivers, streams, and wetlands, providing the moisture and shelter necessary for the shrubs and beetles.	None	The valley elderberry longhorn beetle is classified as none for potential to occur within the project area. This federally threatened species is completely dependent on elderberry shrubs (*Sambucus* spp.) for all stages of its life cycle, requiring mature elderberry plants for larval development. The project area is primarily composed of agricultural fields, grazed grasslands, and managed irrigation canals, and field surveys did not identify any elderberry shrubs within or immediately adjacent to the project area. Additionally, there are no CNDDB records documenting occurrences of the valley elderberry longhorn beetle in the region. Due to the absence of required host plants and lack of nearby occurrence records, the valley elderberry longhorn beetle is considered to have no potential to occur within the project area.
western bumble bee *Bombus occidentalis*	None/SCE	The western bumble bee (*Bombus occidentalis*) is a generalist pollinator that inhabits diverse habitats across western North America, including grasslands, forests, shrublands, and agricultural areas. It requires areas with abundant, diverse flowering plants throughout the growing season for nectar and pollen, as well as suitable nesting sites, such as abandoned rodent burrows, and overwintering sites in undisturbed soil or leaf litter for queens.	Possible	The western bumble bee is classified as possible to occur within the project area. This species historically occupied a wide range of open habitats, including grasslands, agricultural areas, and edges of riparian woodlands, where it forages on a variety of flowering plants and nests in underground cavities. The project area, with its grazed grasslands, agricultural margins, and scattered patches of flowering vegetation, provides potentially suitable foraging habitat. While no individuals were observed during field surveys, CNDDB records confirm occurrences of the western bumble bee in the surrounding region, indicating that the species could opportunistically use the area. Given the presence of suitable foraging habitat and nearby occurrence records, the western bumble bee is considered possible to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
yellow-banded andrenid bee *Perdita hirticeps luteocincta*	None/None	The yellow-banded andrenid bee (*Andrena flavofasciata*) is a solitary, ground-nesting bee species found in open, sandy, or well-drained soils across grasslands, meadows, and woodland edges in North America. It requires loose, undisturbed soils for excavating underground burrows where females lay their eggs. The species depends on diverse native flowering plants for nectar and pollen, with a preference for early-blooming wildflowers that provide essential resources during its active period.	Possible	The yellow-banded andrenid bee is classified as possible to occur within the project area. This solitary, ground-nesting bee is typically found in open, well-drained grasslands and scrub habitats with an abundance of spring-blooming native plants, rather than being strictly tied to seasonal vernal pools. The project area, which includes agricultural fields, grazed grasslands, and managed irrigation canals, offers some open ground and foraging opportunities that could support the species, particularly in less disturbed areas with native or naturalized flowering plants. Although no individuals were observed during field surveys and there are no CNDDB records for this species in the immediate vicinity, the project area lies within the broader range where the species could occur. Given the presence of open habitats and potential floral resources, the yellow-banded andrenid bee is considered possible to occur within the project area.
Mollusks				
Bridges' coast range shoulderband *Helminthoglypta nickliniana bridgesi*	None/None	The Bridges' Coast Range shoulderband (*Helminthoglypta nickliniana bridgesi*) is a terrestrial snail endemic to the Coast Range of California. It inhabits moist, shaded environments within oak woodlands, chaparral, and coastal scrub habitats. The species relies on microhabitats that retain moisture, such as under leaf litter, decomposing logs, rocks, and within crevices, which provide protection from desiccation and predators.	None	The Bridges' coast range shoulderband is classified as none for potential to occur within the project area. This terrestrial snail is typically found in undisturbed coastal scrub, chaparral, and oak woodland habitats with rocky soils and leaf litter that provide the necessary moisture and shelter. The project area, consisting primarily of agricultural fields, grazed grasslands, and managed irrigation canals, lacks the native vegetation structure, rocky substrate, and microhabitats required by the species. No individuals were observed during field surveys, and there are no CNDDB records of the Bridges' coast range shoulderband in or near the project area. Given the absence of suitable habitat and the lack of nearby occurrence records, this species is considered to have no potential to occur within the project area.

Scientific Name Common Name	Listing and Special-Status	Habitat Requirements	Potential to Occur	Discussion
western ridged mussel *Gonidea angulata*	None/None	The western ridged mussel (*Gonidea angulata*) is a freshwater mussel species native to rivers and streams in the western United States and Canada. It inhabits clean, slow to moderately flowing waters with stable substrates composed of sand, gravel, or cobble, which provide anchorage and protection from strong currents. The mussel requires high water quality with low sedimentation and adequate oxygen levels for survival. It relies on specific host fish species for the development of its larvae (glochidia), which attach to the fish's gills during their early life stage.	None	The western ridged mussel is classified as none for potential to occur within the project area. This freshwater mussel species typically inhabits stable, slow-moving rivers, streams, and lakes with clean, well-oxygenated water and substrates of sand, gravel, or cobble. The project area is composed primarily of agricultural fields, grazed grasslands, and managed irrigation canals, which lack the natural, undisturbed aquatic environments required to support this species. No individuals were observed during field surveys, and there are no CNDDB records documenting the presence of the western ridged mussel within or near the project area. Due to the absence of suitable aquatic habitat and lack of nearby occurrence records, the western ridged mussel is considered to have no potential to occur within the project area.

California Endangered Species Act (CESA) and California Department of Fish and Wildlife (CDFW)

SE: State Endangered
ST: State Threatened
SC: State Candidate
FP: Fully Protected
SSC: Species of Special Concern
CFGC: California Fish and Game Code

Federal Endangered Species Act (FESA) and United States Fish and Wildlife Service (USFWS)

FE: Federal Endangered
FT: Federal Threatened
FPE: Federal Proposed Endangered
FPT: Federal Proposed Threatened
FC: Federal Candidate
MBTA: Migratory Bird Treaty Act

Potential to Occur Classifications

None classification indicates that the species is determined to be completely absent from the site. This determination is based on the absence of suitable habitat features required by the species, a lack of documented occurrences in the local area or surrounding quadrangles, and environmental conditions incompatible with the species' known habitat requirements.

Not Expected classification is used for species that are unlikely to occur at the site but cannot be entirely ruled out. This classification applies when the site contains minimal or limited habitat features that are suboptimal for the species. Few or no documented occurrences exist in the surrounding area, and the site may experience environmental factors such as disturbance or habitat fragmentation that make it unlikely for the species to inhabit or use the area.

Possible classification is assigned to species that have a reasonable likelihood of occurring on the site. This classification applies when the site contains suitable habitat that meets the species' known requirements, and there are documented occurrences within a reasonable distance, such as nearby quadrangles or within the species' typical range. Species in this category may use the site seasonally, sporadically, or for specific life history activities like foraging, breeding, or migration.

Occurs classification indicates that the species or its direct sign was observed during the survey.