Biological Resources Assessment

Knights Landing Ridge Cut Erosion Repair Project

Yolo County, California

Prepared For:

Knights Landing Ridge Drainage District

Prepared By:

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ENVIRONMENTAL CONSULTANTS

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LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
AMM	Avoidance and Minimization Measure
BA	Biological assessment
BCC	Bird of conservation concern
BO	Biological opinion
BRA	Biological resources assessment
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife

Term	Description
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
EPIC	Environmental Protection Information Center
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
GPS	Global Positioning System
HCP	Habitat Conservation Plan
KLOG	Knights Landing Outfall Gate
KLRC	Knights Landing Ridge Cut
KLRDD	Knights Landing Ridge Drainage District
MBTA	Migratory Bird Treaty Act
MLRA	Major Land Resource Area
MSL	Mean sea level
NCCP	Natural Communities Conservation Plan
NCCPA	Natural Community Conservation Planning Act
NFH	National Fish Hatchery
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmosphere Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High-Water Mark
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Application
sDPS	Southern Distinct Population Segment
SL	Standard length
SR	State Route
SRC	Salmon River Challenge
SSC	Species of Special Concern
SSURGO	Soil Survey Geographic
TRBL	Tricolored blackbird (*Agelaius tricolor*
USACE	U.S. Army Corps of Engineers

Term	Description
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle [*Desmocerus californicus dimorphus*
VFZ	Vegetation free zone
WBWG	Western Bat Working Group

1.0 INTRODUCTION

At the request of Knights Landing Ridge Drainage District (KLRDD), ECORP Consulting, Inc. has conducted a biological resources assessment (BRA) for the proposed Knights Landing Ridge Cut Erosion Repair Project (Project) located in Yolo County, California. The purpose of the BRA was to collect information on the biological resources present within the Project Study Area (Study Area) and to determine any potential biological constraints to Project activities.

1.1 Project Location

The approximately 295.6-acre Study Area includes the east and west levees of the Knights Landing Ridge Cut (KLRC), which is approximately 6.25 miles long, located in Yolo County, California (Figure 1). The Study Area corresponds to portions of the unsectioned Rancho Jimeno Land Grant lands, Rancho Rio de Jesus Maria Land Grant lands, and Yolo Bypass; and portions of Sections 14, 23-25, and 36, Township 11 North, Range 2 East (Mount Diablo Base and Meridian) within the "Knights Landing, California" and "Grays Bend, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1952, photorevised 1981 and 1953, photorevised 1973, respectively; Figure 1). The approximate center of the Study Area is located at 38.759799° North and -121.696536° West within the Sacramento-Stone Corral and Lower Sacramento watersheds (Hydrologic Unit Codes #18020104 and #18020163, respectively; Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016).

1.2 Project Description

The KLRC is a human-made leveed drainage channel constructed in 1914 by local parties to relieve flooding in the Colusa Basin. The KLRC was later incorporated during into the Sacramento River Flood Control Project (SRFCP). Repairs and improvements to the KLRC have been constructed as needed since then.

KLRC conveys flows from the Colusa Drain to the Yolo Bypass. Flows and water levels within the KLRC are dependent on operations at Knights Landing Outfall Gate (KLOG) and flows occurring within the Yolo Bypass. The KLRC is approximately 6.25 miles long and its levees are maintained by KLRDD, the local levee maintaining agency. Erosion can occur along the KLRC levees during high flows, requiring repair.Levees are typically inspected before and after the flood season and after high-water events, but no less than every 90 days, to determine areas requiring repair.

The Project is entirely within the Phase II of the USACE and Central Valley Flood Protection Board's (CVFPB) Sacramento River Bank Protection Project (SRBPP) project area, and its associated programmatic Environmental Impact Statement (EIS)/EIR (State Clearinghouse No. 2009012081, dated March 2020) prepared to cover levee erosion repairs (USACE and CVFPB 2020). Specifically, the USACE and CVFPB studied approximately six miles of the KLRC under Phase II of the SRBPP. Under the SRBPP site selection process, as described in the Post Authorization Change Report for Phase II of the SRBPP (USACE 2020), certain repairs are not economically justified to receive federal funding. Those kinds of repairs would be left within the purview of state and local levee districts.

Project Study Area (295.6 acres)

Yolo County, California
Rancho Jimeno Land Grant, Rancho Rio de Jesus Maria Land Grant, Yolo Bypass
§14, 23, 24, 25, 36, T.11N, R.02E, MDBM
Latitude (NAD83): 38.759799°
Longitude (NAD83): -121.696536°
Watershed: Sacramento-Stone Corral (18020104)
Lower Sacramento (18020163)

Scale in Feet
0 1,000 2,000

Knights Landing, CA (1952, P.R. 1981, NAD27)
Grays Bend, CA (1953, P.R. 1973, NAD27)
CA 7.5-minute Topographic Quadrangle
US Geological Survey

Map Date: 6/4/2021
Source: USGS Topo Maps, National Geographic Society (2013)

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Figure 1. Project Location and Vicinity

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Location: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Location_ Vicinity\KLRCER_LnV_20210603.mxd (CCH)-chinkelman 6/4/2021

Therefore, KLRDD is taking the lead for repairs of the levees along the KLRC. KLRDD proposes repairs in phases over the next 10 years as described below. Although the SRBPP EIS/EIR was intended for use by the USACE and CVFPB for USACE-funded projects, the results of the SRBPP EIS/EIR (USACE and CVFPB 2020) are discussed and incorporated herein by reference.

To protect property as well as the health and safety of residents, bank repair and levee rehabilitation are needed at erosion sites. The objective of the Project is to repair existing eroded areas along the KLRC levees on the east and west banks to arrest or avoid streambank erosion that threatens the integrity of KLRC levee system.

1.2.1 Erosion Repair Methods

Erosion repairs are expected to include two methods that the U.S. Army Corps of Engineers (USACE) has approved. They are listed in the Sacramento River Bank Protection Project Environmental Impact Statement and Environmental Impact Report (USACE and Central Valley Flood Protection Board [CVFPB] 2020) as Bank Protection Measure 2 - "Bank Fill Stone Protection with No On-Site Woody Vegetation" and Bank Protection Measure 5 - "Bank Fill Stone Protection with On-Site Vegetation" described below and depicted in Attachment A. These bank protection measures are site-specific design solutions to control an existing erosion site while minimizing and/or mitigating environmental impacts using the following criteria:

- To restore the flood damage risk-reduction capability of the originally constructed levee using structurally reliable erosion-control elements.
- To the extent practicable, to maintain fish and wildlife habitat and scenic and recreational values and replace habitat losses through the use of onsite mitigation elements overlying or integrated with erosion-control elements.
- To fully mitigate offsite significant residual fish and wildlife habitat losses to the extent justified.
- To minimize costs of construction and to maintain both erosion-control and onsite habitat mitigation elements.

These measures are conceptual and would be modified to the degree necessary to be suitable for conditions at any given erosion site. Site-specific engineering solutions would be based on the location and magnitude of the erosion at each area.

1.2.2 Bank Fill Stone Protection at Locations with No Onsite Woody Vegetation

The site-specific analysis has determined that this measure, which entails filling the eroded portion of the bank and installing quarry stone along the levee slope, is needed. The rock or soil ratio would vary by location and would be determined during site-specific design. Revegetation would occur with an KLRDD-approved seed mix and existing vegetation will only be removed to the extent necessary for the erosion repair.

1.2.3 Bank Fill Stone Protection at Locations with Onsite Woody Vegetation

This measure entails filling the eroded portion of the bank and installing revetment along the waterside levee slope and streambank from streambed to a height determined by site-specific analysis. The revetment would be placed at a slope of 3:1. Any instream woody material would be removed from the bank and would not be replaced on the bank fill stone protection.

Existing vegetation would be removed within the VFZ; however, grass would be allowed in this area. Approximately 25 percent of existing vegetation that is outside of the VFZ on the waterside slope is expected to be retained during construction. This assumption, made for purposes of analysis, is based on past construction experience. The actual amount of vegetation retained during implementation could vary substantially from site to site. New vegetation would be limited to native grasses within the VFZ, while woody vegetation could be replaced by planting outside of the VFZ, as allowed by specific site conditions. The long-term goal of vegetation planting is to provide riparian habitat. Plans would describe species to be planted within a specific elevation zone and would detail the number, area and spacing of plants, and whether the plants are from cuttings or containers. The revetment maybe covered with 6 inches of soil to support onsite vegetation.

1.2.4 Construction Methods

Hydraulic excavators would be used per repair location to remove and reshape existing soil and to place rock and other materials trucked in from commercial sources. Some in-water work would occur, including installing up to 1-ton rock slope protection below the water line using land-based methods and equipment, and possible installation of silt curtains within the canal using a small boat. Excavated materials would be incorporated into the work. No excavation or cutting into the landward side of levees would occur. Rock fill materials would be brought in by trucks on existing roads. Any staging of materials would occur in the immediate vicinity of the work on the levee, on the levee toe roads, or within the designated 2.5-acre staging area at the base of the east levee. Construction details for each erosion repair location are as follows:

- Typical heavy construction equipment at each Project location would include: two tracked excavators, one bulldozer, one front-end loader, one water truck for dust control, and several dump trucks.
- Maximum excavation depth would be 5 feet in both upland and aquatic areas.
- Solid waste generated by the Project would include limited quantities of removed vegetation that would be hauled to the nearest solid waste disposal facility.
- Access routes to the Project location would be via State Route (SR) 113 to the northern end, or via County Road 16 and County Road 17 near the southern end. Vehicles would then use the existing dirt and gravel levee toe roads and the gravel road on the levee crown.

KLRDD would implement repairs in phases over the next 10 years as erosion areas are identified and funding becomes available.

1.3 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for occurrence of special-status plant and animal species or their habitat, and sensitive habitats, such as wetlands, within the Study Area. This BRA was conducted pursuant to the Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo HCP/NCCP) guidelines for preliminary land cover and covered species habitat assessments, and planning level surveys for land cover types and covered species habitat. This BRA does not include determinate field surveys conducted according to agency-promulgated protocols (with the exception of the Valley elderberry longhorn beetle [*Desmocerus californicus dimorphus*; VELB] survey). The conclusions and recommendations presented in this report are based upon a review of the Yolo HCP/NCCP Final Environmental Impact Report/Environmental Impact Statement and site reconnaissance.

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

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- are identified as a Species of Special Concern (SSC) by the California Department of Fish and Wildlife (CDFW);
- are birds identified as birds of conservation concern (BCCs) by the U.S. Fish and Wildlife Service (USFWS);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Ranks [CRPRs] 1 and 2);
- are plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- are fully protected in California in accordance with the California Fish and Game Code, Sections 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes); and/or
- are covered species under the Yolo HCP/NCCP.

Only species that fall into one of the groups listed above were considered for this assessment. The only exception is one CDFW watch list species that was included in the analysis (white-faced ibis [*Plegadis chihi*]) because of its potential to occur within the Study Area. Other species without any special status, sometimes found in database searches or within the literature, were not included within this analysis.

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

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

2.1.1.1 Section 7

Section 7 of ESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. The adverse modifications will require formal consultation with USFWS or NMFS if direct and/or indirect effects will occur to critical habitat that appreciably diminish the value of critical habitat for both the survival and recovery of a species. The applicant must conduct a biological assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat to establish and justify an "effect determination," if adverse effects are likely. The federal agency reviews the BA and prepares a BO if it concludes that the project may adversely affect a listed species or its habitat. The BO may recommend *reasonable and prudent alternatives* to the project to avoid jeopardizing or adversely modifying habitat.

2.1.1.2 Critical Habitat and Essential Habitat

Critical Habitat is defined in Section 3 of ESA as:

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

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

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

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

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities, such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

2.1.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended) provides for the protection of bald eagle and golden eagle by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit [16 USC 668(a); 50 CFR 22]. USFWS may authorize take of bald eagles and

golden eagles for activities where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided (50 CFR 22.26).

2.1.4 Federal Clean Water Act

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

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

The USEPA also has authority over wetlands and may override a USACE permit.

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

2.2 State or Local Regulations

2.2.1 Species of Special Concern

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

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered, or meets the state definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- SSC are typically associated with threatened habitats. Project-related impacts to SSC, state-threatened or endangered species are considered significant under CEQA.

2.2.2 California Rare Plant Ranks

The CNPS maintains the Inventory of Rare and Endangered Plants of California (CNPS 2014), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, or low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, nongovernmental organizations, and private sector botanists. The CDFW and the CNPS manage the system. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

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

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

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

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank and differences in Threat Ranks do not constitute additional or different protection (CNPS 2014). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2 are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

2.2.3 California Fish and Game Code

2.2.3.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of the federal ESA but, unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called *candidates* by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. *Take* is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California ESA allows for incidental take during lawful development projects. State lead agencies are required to consult with the CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat.

2.2.3.2 Fully Protected Species

The state of California first began to designate species as *fully protected* prior to the passage of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the state and federal ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

2.2.3.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 was enacted with the intent to "preserve, protect and enhance rare and endangered plants in this state." The CDFW administers the NPPA. The Fish and Wildlife Commission has the authority to designate native plants as *endangered* or *rare* and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code §§ 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.3.4 Birds of Prey

Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds of prey. Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a CDFW -approved mitigation plan for mining

operations. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, Subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the federal MBTA, serve to protect nesting raptors.

2.2.3.5 California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires the submission of a Streambed Alteration Application (SAA) to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions and, if necessary, submits measures to protect affected fish and wildlife resources to the applicant. The SAA is the final proposal mutually agreed upon by CDFW and the applicant. Projects that require an SAA often also require a permit from the USACE under Section 404 of the CWA. The conditions of the Section 404 permit and the SAA overlap in these instances.

2.2.4 Porter-Cologne Water Quality Act

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

2.2.5 California Environmental Quality Act

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

2.2.5.1 CEQA Significance Criteria

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

Specifically, Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

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

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

2.2.6 Yolo County 2030 Countywide General Plan – Conservation and Open Space Element

The Yolo County General Plan (General Plan) is a statement of the community's land use values that guides land use decisions in the county: zoning, specific plans, area plans, subdivisions, capital improvements, development agreements and many other land use actions must be consistent with the adopted General Plan. The General Plan Conservation and Open Space Element provides direction regarding the preservation of open space and the conservation, continued enjoyment, and enhancement of natural resources in Yolo County. This element anticipates full integration of the Yolo HCP/NCCP as a tool for multispecies protection.

2.2.6.1 Yolo County Oak Woodland Conservation and Enhancement Plan

The Parks and Natural Resources Management Division published the Yolo County Oak Woodland Conservation and Enhancement Plan in January 2007. Since 87 percent of the county's oak woodlands are privately owned, the purpose of this plan is to help coordinate voluntary oak woodland conservation and enhancement efforts and guide oak woodland mitigation. This plan establishes a program to identify areas in Yolo County with the highest value habitat. Conservation and enhancement of these high value areas is addressed by encouraging landowners to preserve these areas from urban and rural development. With this plan, the county is able to apply for state money and other funding sources.

2.2.7 Yolo County Habitat Conservation Plan/Natural Communities Conservation Plan

The Yolo HCP/NCCP is a comprehensive, countywide plan for the conservation of 12 sensitive species and the natural communities and agricultural land on which they depend, as well as a streamlined permitting process to address the effects of a range of future anticipated activities on these 12 species. The Yolo Habitat Conservancy (Conservancy), which consists of Yolo County and the incorporated cities of Davis, West Sacramento, Winters, and Woodland, developed the Yolo HCP/NCCP. The Yolo HCP/NCCP provide the basis for issuance of long-term permits under the federal ESA and California Natural Community Conservation Planning Act (NCCPA) that cover an array of public and private activities. Specifically, the Yolo HCP/NCCP will provide the Permittees (i.e., Yolo County, the four incorporated cities, and the Conservancy) with incidental take permits from both the USFWS and the CDFW for the 12 covered species. This action is pursuant to Section 10(a)(1)(B) of the federal ESA and Section 2835 of the NCCPA chapter of the California Fish and Game Code. Permittees must comply with the Avoidance and Minimization Measures (AMMs) set forth in the Yolo HCP/NCCP, and Yolo HCP/NCCP fees must be paid to the Conservancy or in-lieu mitigation provided, subject to Conservancy approval. The Conservancy will consider requests for an HCP/NCCP fee reduction or waiver in exchange for land dedication (title transfer or conservation easement) on a case-by-case basis. The Yolo HCP/NCCP ensures compliance with the federal ESA, NCCPA, and the California ESA for covered activities that may affect the covered species.

3.0 METHODS

3.1 Literature Review

The following resources were reviewed to determine the special-status species that had been documented within or in the vicinity of the Study Area or that otherwise had the potential to occur onsite:

- CDFW CNDDB data for the "Knights landing" and "Grays Bend, California," 7.5-minute quadrangles, as well as the 10 surrounding USGS quadrangles (CDFW 2021a);
- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2021a);
- CNPS' electronic Inventory of Rare and Endangered Plants of California was queried for the "Knights landing, California," and "Grays Bend, California," 7.5-minute quadrangles and the 10 surrounding quadrangles (CNPS 2021); and
- Yolo HCP/NCCP Appendix A: Covered Species Accounts modeled habitat maps for all covered species within the Yolo HCP/NCCP Plan Area (Conservancy 2018).

3.2 Site Reconnaissance

The site reconnaissance survey was conducted pursuant to the Yolo HCP/NCCP guidelines planning level surveys for land cover types and covered species habitat. Valid Yolo HCP/NCCP Qualified Biologist Certifications have been issued for the following:

- Planning-level habitat surveys (includes land cover mapping and identification of species habitat): Eric Stitt and Angela Haas
- Valley elderberry longhorn beetle planning-level species surveys: Emily Mecke

ECORP biologists Eric Stitt, Angela Haas, Emily Mecke, and Daniel Wong conducted the site reconnaissance survey from March 23 through 25 and May 20, 2021. The Study Area was systematically surveyed on foot using a Global Positioning System (GPS) unit with submeter accuracy and aerial imagery to ensure total site coverage. Special attention was given to identifying those portions of the Study Area with the potential to support special-status species and sensitive habitats. During the field survey, biological communities onsite were characterized and the following biological resource information was collected:

- Animal species directly observed;
- Animal evidence (e.g., scat, tracks);
- Burrows and any other special habitat features;
- Elderberry (*Sambucus nigra* ssp. *caerulea*) shrub locations and characteristics, as described in Section 3.4;
- Land cover and sensitive natural communities, as defined by the Yolo HCP/NCCP;

- Representative Study Area photographs (Attachment B); and
- Aquatic resources.

3.3 Special-Status Species Considered for the Project

Based on species occurrence information from the literature review and observations in the field, a list of special-status plant and animal species that have the potential to occur within the Study Area was generated. Only special-status species as defined in Section 1.2 were included in this analysis. Each of these species' potential to occur onsite was assessed based on the following criteria:

- **Present** - Species was observed during the site reconnaissance or is known to occur within the Study Area based on documented occurrences within the CNDDB or other literature
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area
- **Low Potential to Occur** - Marginal or limited amounts of habitat occurs or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other available documentation
- **Absent** - No suitable habitat (including soils and elevation requirements) or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other documentation

3.4 Valley Elderberry Longhorn Beetle Survey

Concurrent with the BRA site visit, a determinate-level survey for VELB was conducted for the entire Study Area and all accessible areas within 165 feet of the Study Area. The survey was conducted in accordance with the *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017). All elderberry shrubs observed onsite were mapped with a GPS unit capable of submeter accuracy (EOS Arrow 100 GPS). The biologists searched each shrub for VELB exit holes (as access allowed), estimated height, and documented the general health of the shrub.

4.0 RESULTS

4.1 Site Characteristics and Land Use

The Study Area includes the east and west banks of the KLRC, the waterside levee slope, levee crown, landside levee slope, and landside levee toe roads, where applicable. Surrounding land uses primarily include agricultural fields (i.e., alfalfa and row crops). The town of Knights Landing and wastewater detention ponds occur adjacent to the east levee at the northern end of the Study Area, where Highway 113 crosses the KLRC. County Road 16 also crosses the KLRC slightly south of the center of the Study Area.

4.2 Regional Conditions

The Study Area is situated in the Sacramento Valley Subregion of the Great Central Valley floristic region of California (Baldwin et. al. 2012). The average minimum low temperature in the vicinity of the Study Area is 38.2˚F and the average maximum high temperature is 91.1˚F. Average annual precipitation is approximately 21.17 inches of rain (National Oceanic and Atmosphere Administration [NOAA] 2021).

4.3 Vegetation Communities and Land Cover Types

There are three vegetation communities or land cover types within the proposed Study Area. Vegetation communities and land cover types found within the Study Area included riparian, ruderal grassland, and developed. The riparian community is found along the banks of the KLRC, the ruderal grassland is found on the levee slopes, and the developed is the gravel road on the levee crown and levee toe roads.

4.3.1 Riparian

Riparian vegetation is present along the east and west banks of the KLRC. Density and successional stage of the vegetation varies throughout the Study Area. Emergent and herbaceous vegetation dominates patches of early successional vegetation, shrubs dominate the mid-successional vegetation, and mature tress dominate the late successional vegetation.

Species present within the early successional vegetation of the riparian areas include tule (*Schoenoplectus* sp.), Queen Anne's lace (*Daucus carota*), poison oak (*Toxicodendron diversilobum*), California rose (*Rosa californica*), mugwort (*Artemisia douglasiana*), and perennial pepperweed (*Lepidium latifolium*). Species present within the mid-successional vegetation include box elder (*Acer negundo*), common button bush (*Cephalanthus occidentalis*), sandbar willow (*Salix exigua*), blue elderberry, California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus armeniacus*), poison oak, and California rose. Species present within the late successional vegetation include Valley oak (*Quercus lobata*), box elder, fig (*Ficus carica*), Goodding's black willow (*Salix gooddingii*) and other willow species (*Salix* sp.), with the understory dominated by poison oak.

4.3.2 Ruderal Grassland

Ruderal grassland occurs on the levee slopes that is regulatory maintained. Species present include foxtail barely (*Hordeum murinum*), wild oat (*Avena* sp.), salt grass (*Distichlis spicata*), Italian ryegrass (*Festuca perennis*), red-stemmed filaree (*Erodium cicutarium*), vetch (*Vicia* sp.) and shortpod mustard (*Hirschfeldia incana*).

4.3.3 Developed

Developed portions of the Study Area include the levee crown gravel road, other dirt levee roads, Highway 113, and County Road 16.

4.4 Soils

According to the Web Soil Survey (NRCS 2021a), 10 soil units, or types, have been mapped within the Study Area (Figure 2):

- Ca – Capay silty clay, 0 percent slopes, Major Land Resource Area (MLRA) 17
- Ck – Clear Lake clay, 0 percent to 1 percent slopes, MLRA 17
- Lg – Laugenour very fine sandy loam
- Lm – Loamy alluvial land
- Sd – Sacramento clay, drained
- Sn – Soboba gravelly sandy loam
- Sp – Sycamore silt loam, drained 0 percent slopes MLRA 17
- St – Sycamore silty clay loam, drained 0 percent slopes, MLRA 17
- Sv – Sycamore complex, drained
- Sw – Sycamore complex, flooded

All of these soil units contain hydric components and are considered hydric, except for (St) Sycamore silty clay loam, drained, 0 percent slopes, MLRA 17 (NRCS 2021b).

4.5 Aquatic Resources

An aquatic resources delineation in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement) (USACE 2008a) was conducted during the March and May 2021 site visits. A total of 55.520 acres of aquatic resources have been mapped within the Study Area (ECORP 2021; Figure 3). These features are further described below. The USACE has not verified the delineation of the aquatic resources.

4.5.1 Other Waters

4.5.1.1 Knights Landing Ridge Cut

A total of 54.897 acres of the KLRC was mapped within the Study Area. The KLRC is perennial and exhibits bed and bank. It is a human-made leveed drainage channel constructed in 1914 to relieve flooding in the Colusa Basin. It conveys flow from the Colusa Drain to the Yolo Bypass. Flows and water levels within the KLRC are regulated through the KLOG.

Figure 2. Natural Resources Conservation Service Soil Types

Map Features

- Project Study Area - 295.6 acres

Series Code - Series Name

- Ca - Capy silty clay, 0 percent slopes, MLRA 17
- Ck - Clear Lake clay, 0 to 1 percent slopes, MLRA 17
- Lg - Laugenour very fine sandy loam
- Lm - Loamy alluvial land
- Sd -Sacramento clay, drained
- Sn - Soboba gravelly sandy loam
- Sp - Sycamore silt loam, drained, 0 percent slopes, MLRA 17
- St - Sycamore silty clay loam, drained, 0 percent slopes, MLRA 17
- Sv - Sycamore complex, drained
- Sw - Sycamore complex, flooded
- W - Water

Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) Database for Yolo County, CA

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2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Scale in Feet
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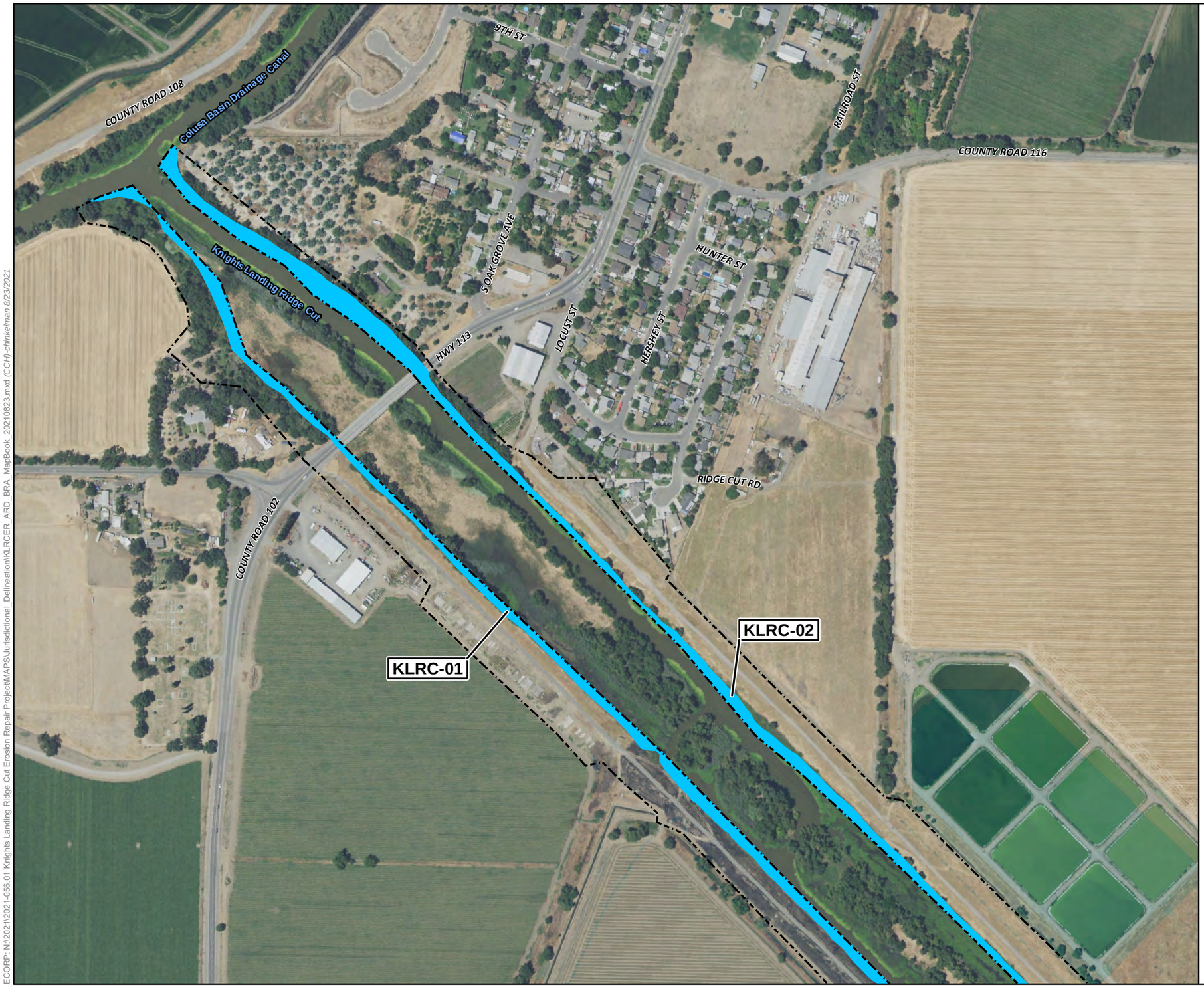
Photo Source: NAIP 2018

Map Date: 6/7/2021



Map Features

Project Study Area (295.6 acres)

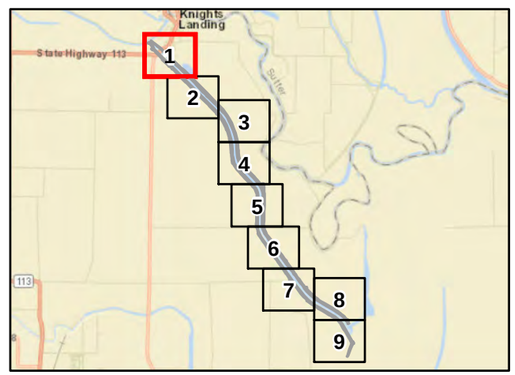
Aquatic Resources Delineation[1*]

Other Waters

Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Delineator(s): E. Mecke, D. Wong
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

[1] Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
** The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*



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Map Date: 8/23/2021

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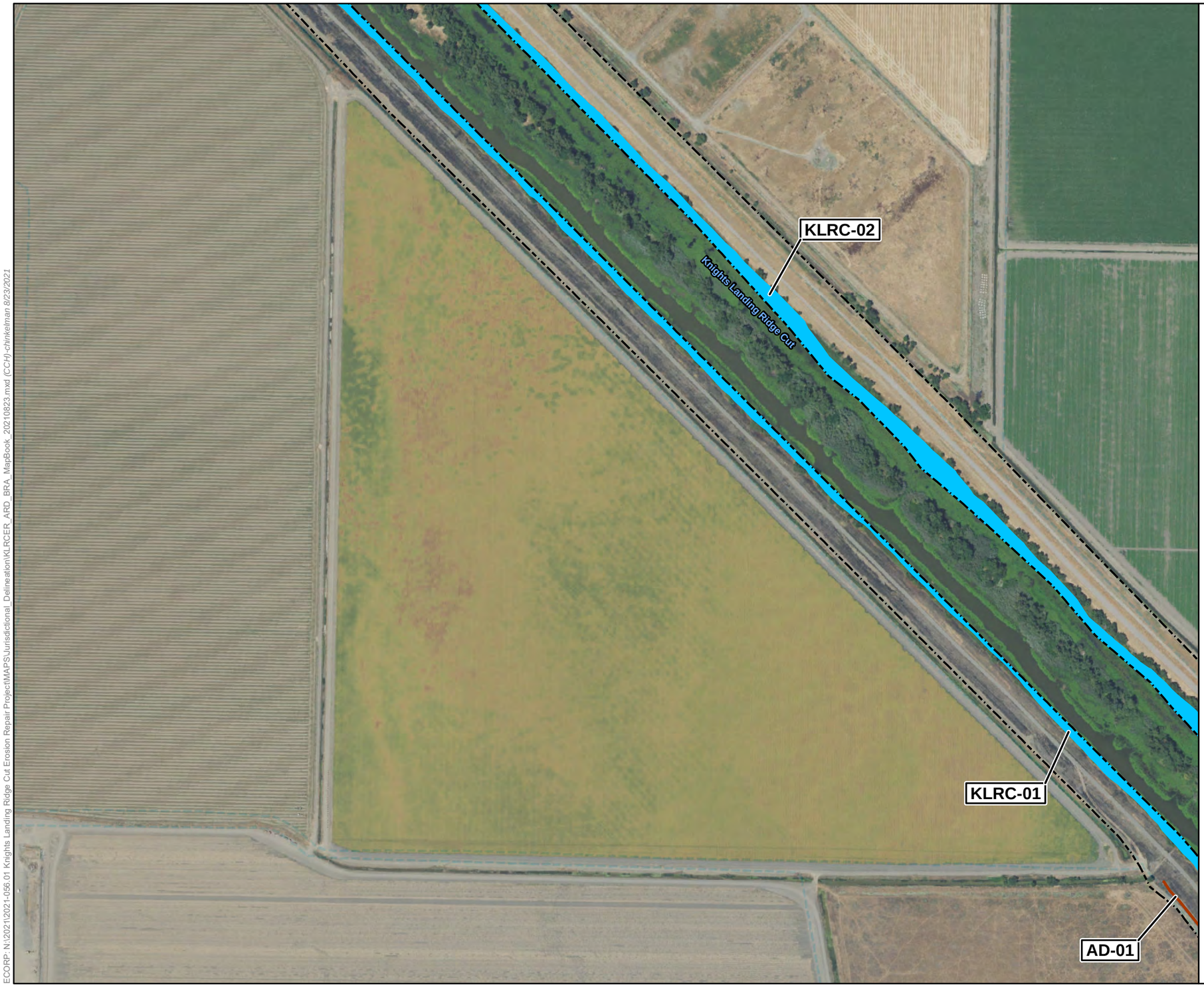
Scale in Feet
0 400

Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair



Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

Agricultural Ditch

Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Delineator(s): E. Mecke, D. Wong
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

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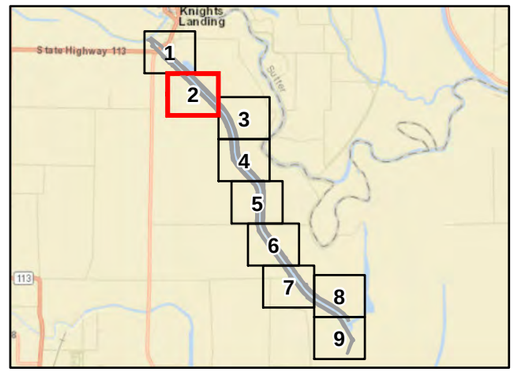

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Map Date: 8/23/2021

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Scale in Feet
0 400

Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

Agricultural Ditch

Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
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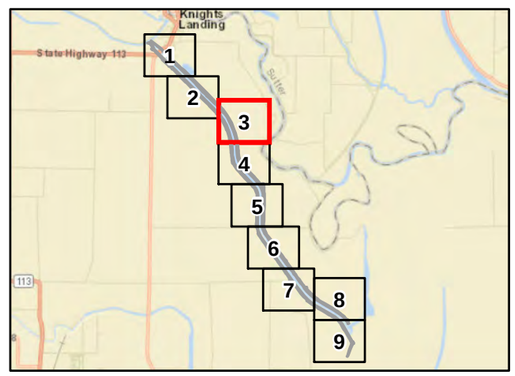

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Scale in Feet
0 400

Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

Agricultural Ditch

Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
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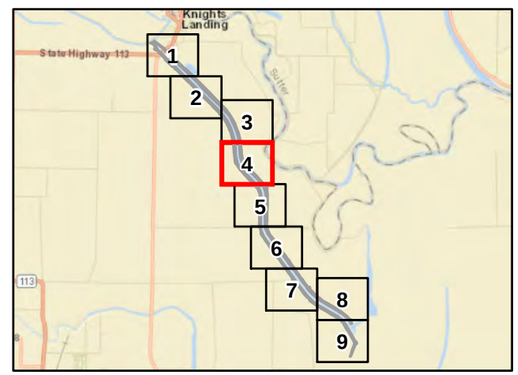

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Scale in Feet
0 400

Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

Knights Landing Ridge Cut

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Boundary Source: KSN, Inc.
Delineator(s): E. Mecke, D. Wong
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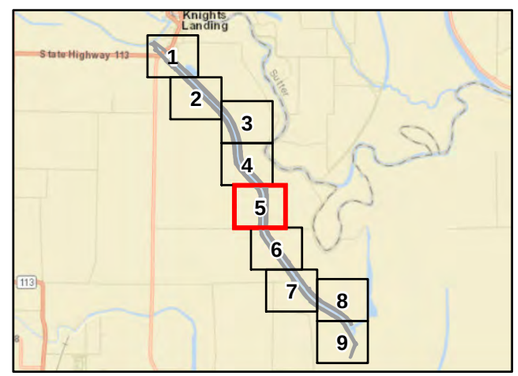

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Scale in Feet
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Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

Knights Landing Ridge Cut

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Boundary Source: KSN, Inc.
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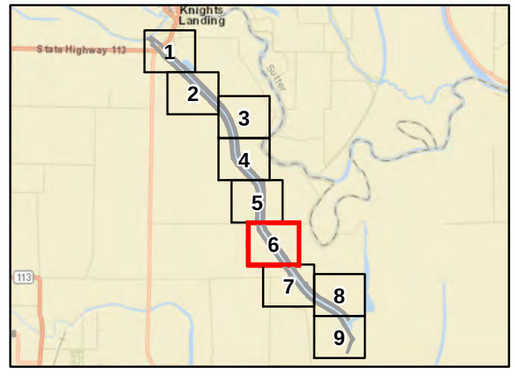

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Map Date: 8/23/2021

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Scale in Feet
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Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

- Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

- Agricultural Ditch
- Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Delineator(s): E. Mecke, D. Wong
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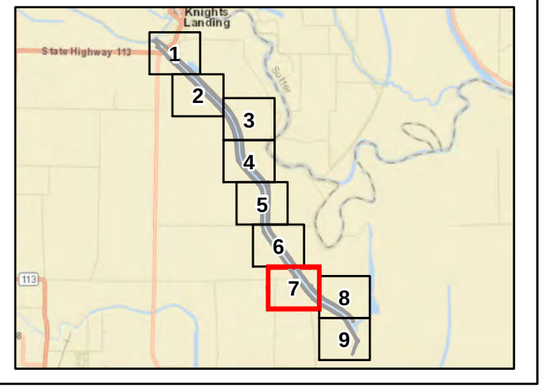

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Scale in Feet
0 400

Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

Other Waters

Agricultural Ditch

Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Delineator(s): E. Mecke, D. Wong
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

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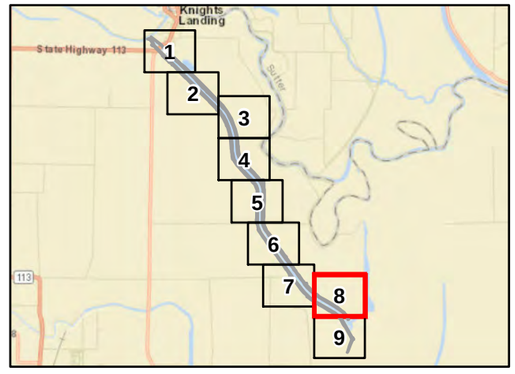

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Map Date: 8/23/2021

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Scale in Feet
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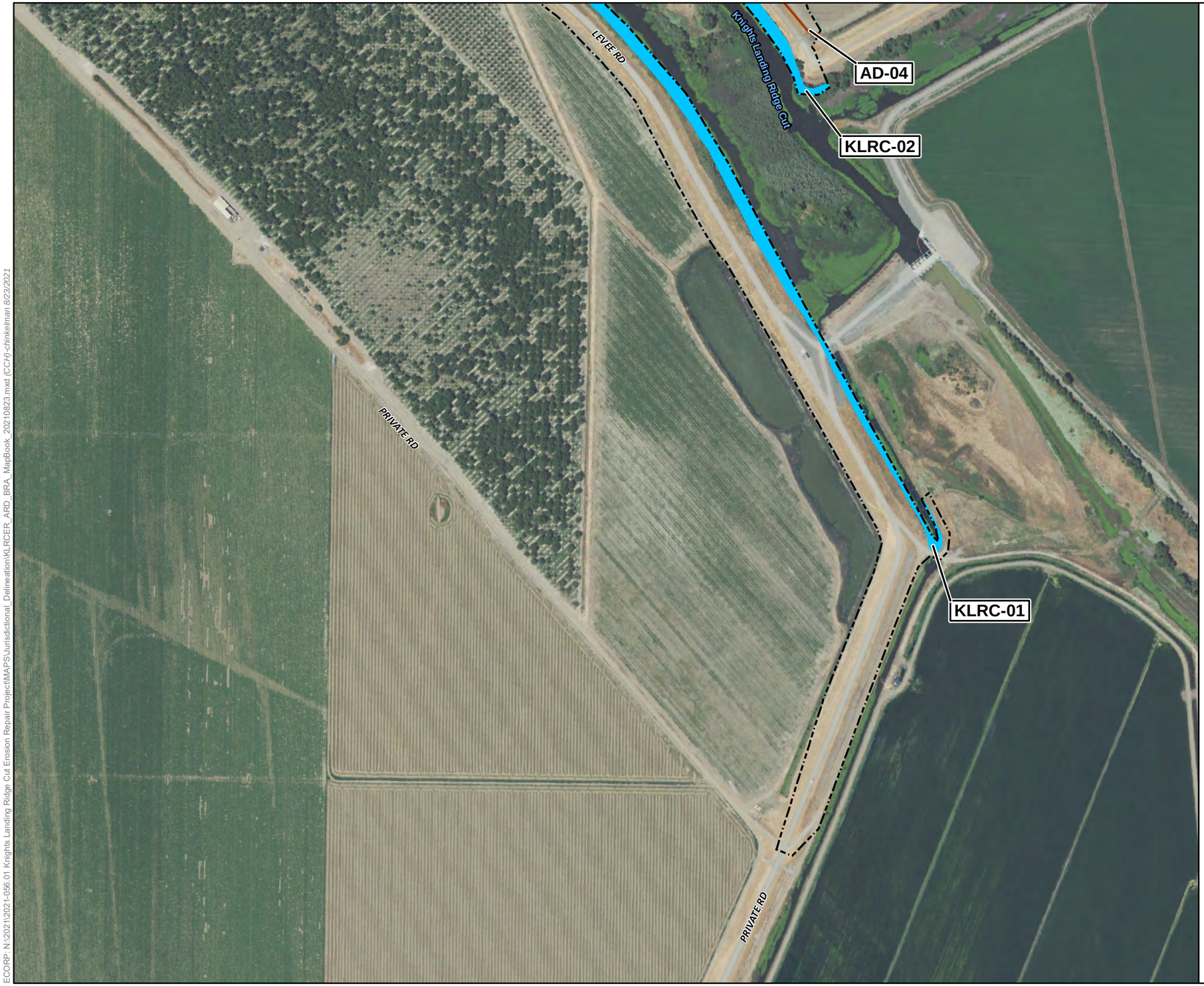
Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair



Map Features

Project Study Area (295.6 acres)

Aquatic Resources Delineation[1*]

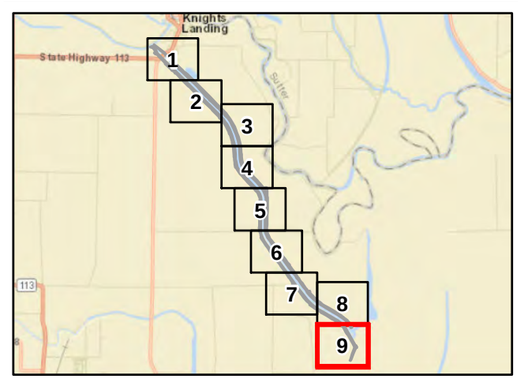
Other Waters

Agricultural Ditch

Knights Landing Ridge Cut

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Delineator(s): E. Mecke, D. Wong
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

[1] Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
** The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*



ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Jurisdictional_Delineation\KLRCER_ARD_BRA_MapBook_20210823.mxd (CCH)-chinkelman 8/23/2021

Map Date: 8/23/2021

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Scale in Feet
0 400

Figure 3. Aquatic Resources Delineation

2021-056.01 Knights Landing Ridge Cut Erosion Repair

4.5.1.2 Agricultural Ditch

A total of 0.623 acre of agricultural ditches was mapped within the Study Area. Constructed agricultural ditches are present along the landside levee toe in Study Area adjacent to agricultural fields. Agricultural ditches AD-01, AD-03, and AD-04 were dry, and water was present in AD-02 during the May 20, 2021, survey. The ditches exhibit a bed and bank and ordinary high-water mark (OHWM) and appear to have been constructed to support agriculture irrigation or drainage.

4.6 Wildlife

Habitats within the Study Area support a variety of common wildlife species. Several species were observed onsite, including the following Yolo HCP/NCCP-covered species: northwestern pond turtle (*Actinemys marmorata*) and Swainson's hawk (*Buteo swainsoni*). A list of all wildlife observed onsite during the site visits is provided as Attachment C.

4.7 Yolo HCP/NCCP Sensitive Natural Communities

The Yolo HCP/NCCP defines four distinct sensitive natural communities: alkali prairie and vernal pool complex; Valley foothill riparian; lacustrine and riverine, and fresh emergent wetland. While riparian vegetation is present within the Study Area, the only aquatic features onsite are the KLRC and agricultural ditches. Manmade ditches and canals are excluded from the definition of lacustrine and riverine sensitive natural community, per the Yolo HCP/NCCP; and no other sensitive natural communities occur onsite. There are no Yolo HCP/NCCP sensitive natural communities within the Study Area.

4.8 Yolo HCP/NCCP Covered Species

The Yolo HCP/NCCP Appendix A, Covered Species Accounts, provides modeled habitat maps for all covered species within the Yolo HCP/NCCP Plan Area. Modeled habitat was mapped within the Study Area and species-specific buffer per the Yolo HCP/NCCP AMMs for the following species: Valley elderberry longhorn beetle, western pond turtle, giant garter snake, Swainson's hawk and white-tailed kite, western burrowing owl, least Bell's vireo, and tricolored blackbird (TRBL; Attachment D). Modeled habitat was not mapped within the Study Area, but was mapped within the species-specific buffer for California tiger salamander (Attachment D). Modeled habitat was not mapped within the Study Area or the species-specific buffer for western yellow-billed cuckoo; however, the map was included in Attachment D for transparency. The closest modeled habitat for bank swallow was over 9 miles from the Study Area and this map was not included.

4.9 Evaluation of Species Identified in the Literature Search

Attachment F lists all plant and wildlife species identified as potentially occurring within the Study Area. Included in this table are the listing status for each species, a brief habitat description, and a determination on the potential to occur onsite. Potential to occur for each species was determined based on suitable habitat criteria acquired from primary literature and species accounts, as well as proximity to known occurrences stored in CNDDB. Following the table is a brief description of each special-status species (as defined in Section 1.2) with potential to occur onsite.

Several species and sensitive habitat types came up in the database and literature searches (Attachment E) but are not included in Attachment F because the species have been formally delisted or are only tracked by the CNDDB and possess no special-status, or because the identified sensitive habitats are not located within the Study Area. They are not discussed further in this report.

4.9.1 Plants

A total of 20 special-status plant species were identified as having the potential to occur within the Study Area based on the literature review (Attachment F). However, upon further analysis and after the site visit, seven species were determined to be absent from the Study Area due to the lack of suitable habitat. No further discussion of these species is provided in this analysis. Brief descriptions of the remaining 13 species that have the potential to occur within the Study Area are presented below.

4.9.1.1 Brittlescale

Brittlescale (*Atriplex depressa*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline and clay soils within chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools (CNPS 2021). Brittlescale blooms from April through October and is known to occur at elevations ranging from 3 feet above mean sea level (MSL) to 1,050 feet above MSL (CNPS 2021). Brittlescale is endemic to California; the current range of this species includes Alameda, Contra Costa, Colusa, Fresno, Glenn, Kings, Merced, Solano, Stanislaus, Tulare, and Yolo counties (CNPS 2021).

There are two CNDDB documented occurrences of Brittlescale within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. Brittlescale has low potential to occur onsite.

4.9.1.2 Pappose Tarplant

Pappose tarplant (*Centromadia parryi* ssp. *parryi*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an annual herb that occurs often in alkaline soils of chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic valley and foothill grassland (CNPS 2021). Pappose tarplant blooms from May through November and is known to occur at elevations ranging from sea level to 1,378 feet above MSL (CNPS 2021). Pappose tarplant is endemic to California; the current range of this species includes Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, Sonoma and Yolo counties (CNPS 2021).

There are no CNDDB documented occurrences of Pappose tarplant within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. Pappose tarplant has low potential to occur onsite.

4.9.1.3 Parry's Rough Tarplant

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs

in vernal pools and valley and foothill grassland with alkaline and vernally mesic soils, seeps, and sometimes roadsides (CNPS 2021). Parry's rough tarplant blooms from May through October and is known to occur at elevations ranging from sea level to 328 feet above MSL (CNPS 2021). Parry's rough tarplant is endemic to California; its current range includes Butte, Colusa, Glenn, Lake, Merced, Modoc, Sacramento, San Joaquin, Solano, Stanislaus and Yolo counties (CNPS 2021).

There are no CNDDB documented occurrences of Parry's rough tarplant within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. Parry's rough tarplant has low potential to occur onsite.

4.9.1.4 Palmate-Bracted Bird's-Beak

Palmate-bracted bird's-beak (*Chloropyron palmatum*) is listed as endangered pursuant to both the federal and California ESAs, is designated as a CRPR 1B.1 species, and is a Yolo HCP/NCCP-covered species. This species is an herbaceous, hemiparasitic annual that occurs in alkaline areas in chenopod scrub and valley and foothill grassland (CNPS 2021). Palmate-bracted bird's-beak blooms from May through October and is known to occur at elevations ranging from 16 feet above MSL to 509 feet above MSL (CNPS 2021). Palmate-bracted bird's-beak is endemic to California; the current range of this species includes Alameda, Colusa, Fresno, Glenn, Madera, San Joaquin, and Yolo counties. It is considered to be extirpated from San Joaquin County (CNPS 2021).

There is one CNDDB documented occurrence of palmate-bracted bird's-beak within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. Palmate-bracted bird's-beak has low potential to occur onsite.

4.9.1.5 San Joaquin Spearscale

San Joaquin spearscale (*Extriplex joaquinana*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an annual herb that often occurs in alkaline soils in chenopod scrub, meadows seeps, playas, and valley and foothill grassland (CNPS 2021). San Joaquin spearscale blooms from April through October and is known to occur at elevations ranging from 3 feet above MSL to 2,740 feet above MSL (CNPS 2021). San Joaquin spearscale is endemic to California; the current range of this species includes Alameda, Colusa, Contra Costa, Fresno, Glenn, Merced, Napa, Sacramento, San Benito, San Joaquin, Solano, Tulare, and Yolo counties, and is considered to be extirpated from San Joaquin county, and uncertain in San Luis Obispo County (CNPS 2021).

There is one CNDDB documented occurrence of San Joaquin spearscale within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. San Joaquin spearscale has low potential to occur onsite.

4.9.1.6 Stinkbells

Stinkbells (*Fritillaria agrestis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial bulbiferous herb that occurs in clay, sometimes serpentinite areas in chaparral, cismontane woodland, pinyon and juniper woodland, and

valley and foothill grassland (CNPS 2021). Stinkbells bloom from March through June and is known to occur at elevations ranging from 33 feet above MSL to 5,102 feet above MSL (CNPS 2021). This species is endemic to California; its current range includes Alameda, Contra Costa, Fresno, Kern, Mendocino, Merced, Monterey, Mariposa, Placer, Sacramento, Santa Barbara, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Stanislaus, Tuolumne, Ventura, and Yuba counties, and is considered to be extirpated from Santa Cruz and San Mateo counties (CNPS 2021).

There are no CNDDB documented occurrences of stinkbells within f5ive miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. Stinkbells has low potential to occur onsite.

4.9.1.7 Woolly Rose-Mallow

Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a rhizomatous, herbaceous perennial that occurs in marshes and freshwater swamps, and often in riprap on sides of levees (CNPS 2021). Rose-mallow blooms from June through September and is known to occur at elevations ranging from sea level to 394 feet above MSL (CNPS 2021). Rose-mallow is endemic to California; the current range of this species in California includes Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties (CNPS 2021).

There are three CNDDB documented occurrences of woolly rose-mallow within 5 miles of the Study Area (CDFW 2021a). The edges of the wetted channel of the ridge cut within the Study Area provide suitable habitat for this species. Woolly rose-mallow has potential to occur onsite.

4.9.1.8 Heckard's Pepper-Grass

Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs on alkaline flats within valley and foothill grasslands (CNPS 2021). Heckard's pepper-grass blooms from March through May and is known to occur at elevations ranging from 7 feet above MSL to 656 feet above MSL (CNPS 2021). Heckard's pepper-grass is endemic to California; the current range of this species includes Glenn, Merced, Sacramento, Solano, and Yolo counties (CNPS 2021).

There are no CNDDB documented occurrences of Heckard's pepper-grass within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. Heckard's pepper-grass has low potential to occur onsite.

4.9.1.9 Woolly-Headed Lessingia

Woolly-headed lessingia (*Lessingia hololeuca*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3 species. This species is an herbaceous annual that occurs in clay or serpentinite soils in broadleaf upland forests, coastal scrub, lower montane coniferous forests, and valley and foothill grassland (CNPS 2021). Woolly-headed lessingia blooms from June through October and is known to occur at elevations ranging from 49 feet above MSL to 1,001 feet above MSL (CNPS 2021).

Woolly-headed lessingia is endemic to California; the current range of this species includes Alameda, Fresno, Monterey, Mendocino, Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma, Tehama, Tuolumne and Yolo counties (CNPS 2021).

There are no CNDDB documented occurrences of woolly-headed lessingia within 5 miles of the Study Area (CDFW 2021a). The ruderal grassland within the Study Area provide marginally suitable habitat for this species. Woolly-headed lessingia has low potential to occur onsite.

4.9.1.10 Cotula Navarretia

Cotula navarretia (*Navarretia cotulifolia*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs on adobe soils in chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2021). Cotula navarretia blooms from May through June and is known to occur at elevations ranging from 13 feet above MSL to 6,004 feet above MSL (CNPS 2021). Cotula navarretia is endemic to California; its current range includes Alameda, Butte, Contra Costa, Colusa, Glenn, Lake, Mendocino, Marin, Napa, San Benito, Santa Clara, Siskiyou, Solano, Sonoma, Sutter, and Yolo counties; distribution and identity are uncertain in Siskiyou County (CNPS 2021).

There are no CNDDB documented occurrences of cotula navarretia within 5 miles of the Study Area (CDFW 2021a). The clay soils in ruderal grassland within the Study Area provide marginally suitable habitat for this species. Cotula navarretia has low potential to occur onsite.

4.9.1.11 California Alkali Grass

California alkali grass (*Puccinellia simplex*) is not listed pursuant to either the federal or California ESAs, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline, vernally mesic chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools along sinks, flats, and lake margins (CNPS 2021). California alkali grass blooms between March and May and is known to occur at elevations ranging from 7 feet above MSL to 3,051 feet above MSL (CNPS 2021). The current range for this species in California includes Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo counties; however, it is presumed extirpated in Kings County (CNPS 2021).

There are no CNDDB documented occurrences of California alkali grass within 5 miles of the Study Area (CDFW 2021a). The slightly to moderately saline soils within the Study Area provide marginally suitable habitat for this species. California alkali grass has low potential to occur onsite.

4.9.1.12 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not listed pursuant to the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in shallow, freshwater marshes and swamps (CNPS 2021). Sanford's arrowhead blooms from May through October, and is known to occur at elevations ranging from sea level to 2,133 feet above MSL (CNPS 2021).

Sanford's arrowhead is endemic to California; the current range of this species includes Butte, Del Norte, El Dorado, Fresno, Madera, Merced, Mariposa, Marin, Napa, Sacramento, San Bernardino, San Joaquin, Shasta, Solano, Sutter, Tehama, Tulare, Ventura, and Yuba counties; it is believed to be extirpated from Ventura County (CNPS 2021).

While there are no CNDDB documented occurrences of Sanford's arrowhead within 5 miles of the Study Area (CDFW 2021a), the edges of the wetted channel of the ridge cut within the Study Area provide suitable habitat for this species. Sanford's arrowhead has potential to occur onsite.

4.9.1.13 Suisun Marsh Aster

Suisun marsh aster (*Symphyotrichum lentum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous rhizomatous perennial that occurs in marshes and swamps in brackish and freshwater (CNPS 2021). Suisun marsh aster blooms between May and November and is known to occur at elevations ranging from sea level to 10 feet above MSL (CNPS 2021). Suisun marsh aster is endemic to California; its current range includes Contra Costa, Napa, Sacramento, San Joaquin, Solano, and Yolo counties (CNPS 2021).

While there are no CNDDB documented occurrences of Suisun marsh aster within 5 miles of the Study Area (CDFW 2021a), the edges of the wetted channel of the ridge cut within the Study Area provide suitable habitat for this species. Suisun marsh aster has potential to occur onsite.

4.9.2 Invertebrates

A total of three special-status invertebrate species were identified as having the potential to occur within the Study Area based on the literature review (Attachment F). However, upon further analysis and after the site visit, two species were determined to be absent from the Study Area due to the lack of suitable habitat. No further discussion of these species is provided in this analysis. A brief description of the remaining species that has the potential to occur within the Study Area is presented below.

4.9.2.1 Valley Elderberry Longhorn Beetle

The VELB is listed as threatened pursuant to the federal ESA (USFWS 1980) and is a Yolo HCP/NCCP-covered species. The VELB is completely dependent on its larval host plant, elderberry (*Sambucus* sp.), which occurs in riparian and other woodland and scrub communities (USFWS 1999a; USFWS 2017). Elderberry plants, located within the range of the beetle, with one or more stems measuring 1.0 inch or greater in diameter at ground level are considered to be habitat for the species (USFWS 1999a). The adult flight season extends from late March through July (USFWS 2017). The adults during the time feed on foliage and perhaps flowers, mate, and females lay eggs on living elderberry plants (Barr 1991). The first instar larvae bore into live elderberry stems, where they develop for one year to two years feeding on the pith. The fifth instar larvae create exit holes in the stems and then plug the holes and remain in the stems through pupation (Talley et al. 2007). The VELB occurs in metapopulations throughout the Central Valley (Collinge et. al 2001 as cited in USFWS 2017). These metapopulations (subpopulations) occur throughout contiguous riparian habitat, which shift temporarily and spatially based on changing environmental conditions. This temporal and spatial shifting of the metapopulations results in a patchy and ever-

changing distribution of the species. Research indicates that dense elderberry shrub clumps in healthy riparian habitat is the primary habitat for the VELB (USFWS 2017). The beetle's current distribution extends from Shasta County in the north to Fresno County in the south and includes everything from the valley floor up into the lower foothills (USFWS 2017). The vast majority of VELB occurrences have been recorded below 500 feet (152 meters), however, rare occurrences have been recorded up to approximately 3,000 feet (USFWS 1999a; 2017).

There are three CNDDB documented occurrences of VELB within 5 miles of the Study Area (CDFW 2021a). Additionally, ECORP biologists conducted a determinate VELB survey onsite concurrent with the site reconnaissance visit. During this survey, 69 elderberry shrubs or shrub clusters were found and surveyed (Figure 4). VELB has potential to occur onsite.

4.9.3 Fish

A total of 13 special-status fish species were identified as having potential to occur within the Study Area based on the literature review (Attachment F). However, upon further analysis and after the site visit, two species were determined to be extirpated from the Study Area. No further discussion of these species is provided in this analysis. Brief descriptions of the remaining 11 species that have the potential to occur within the Study Area are presented below.

Two impassable barriers, the Wallace Weir Fish Rescue Facility and KLOG, preclude access to the Study Area. The Wallace Weir, completed in early 2018, is located a short distance downstream of the southern end of the Study Area on KLRC. The KLOG, completed in 2015, is located a short distance upstream of the northern end of the Study Area and prevents fish from entering the Colusa Basin Drain. KLOG is currently not operational but is anticipated to be reinstalled in 2021. Combined (when both are operational), these barriers prevent special-status anadromous fish (e.g., Chinook salmon, steelhead, green sturgeon, Pacific lamprey, river lamprey) and other seasonally migratory fish (e.g., delta smelt, longfin smelt) from accessing the Study Area. However, because the KLOG is currently not operational, these species have potential to occur within the Study Area and are included in the discussion below. Resident special-status fish with the potential to occur in the Study Area include Sacramento splittail (*Pogonichthys macrolepidotus*), Sacramento hitch (*Lavinia exilicauda*) and hardhead (*Mylopharodon conocephalus*).

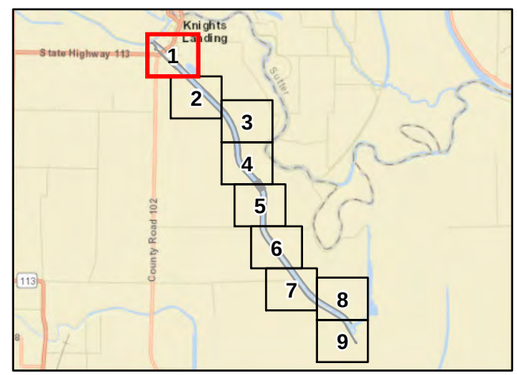
4.9.3.1 Delta Smelt

Delta smelt is listed as threatened pursuant to the federal ESA and endangered pursuant to California ESA. The historical range of this species extended from Suisan Bay upstream to the city of Sacramento on the Sacramento River. However, currently it is only known to occur in the lower reaches of the Sacramento River below Isleton, the San Joaquin River below Mossdale, throughout the Delta and into Suisun Bay (Moyle 2002). It is most abundant in the fresher waters of the Delta and Suisun Bay (Ganssle 1966; Messersmith 1966).

Map Features

- Project Study Area (295.6 acres)
- 165' Buffer
- Elderberry Shrub Locations (69)

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet



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Map Date: 6/7/2021

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Scale in Feet
0 400

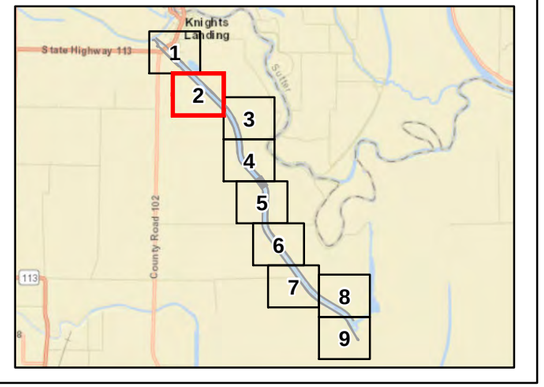
Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

- Project Study Area (295.6 acres)
- 165' Buffer

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet



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2021-056.01 Knights Landing Ridge Cut Erosion Repair

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- 165' Buffer

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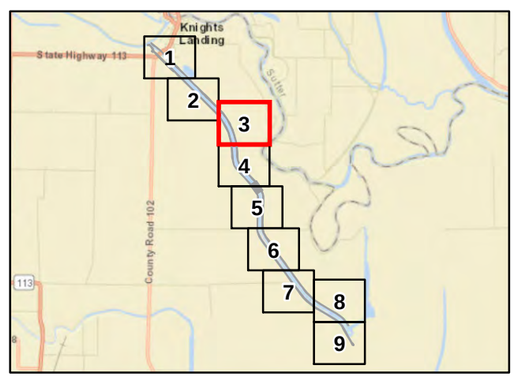

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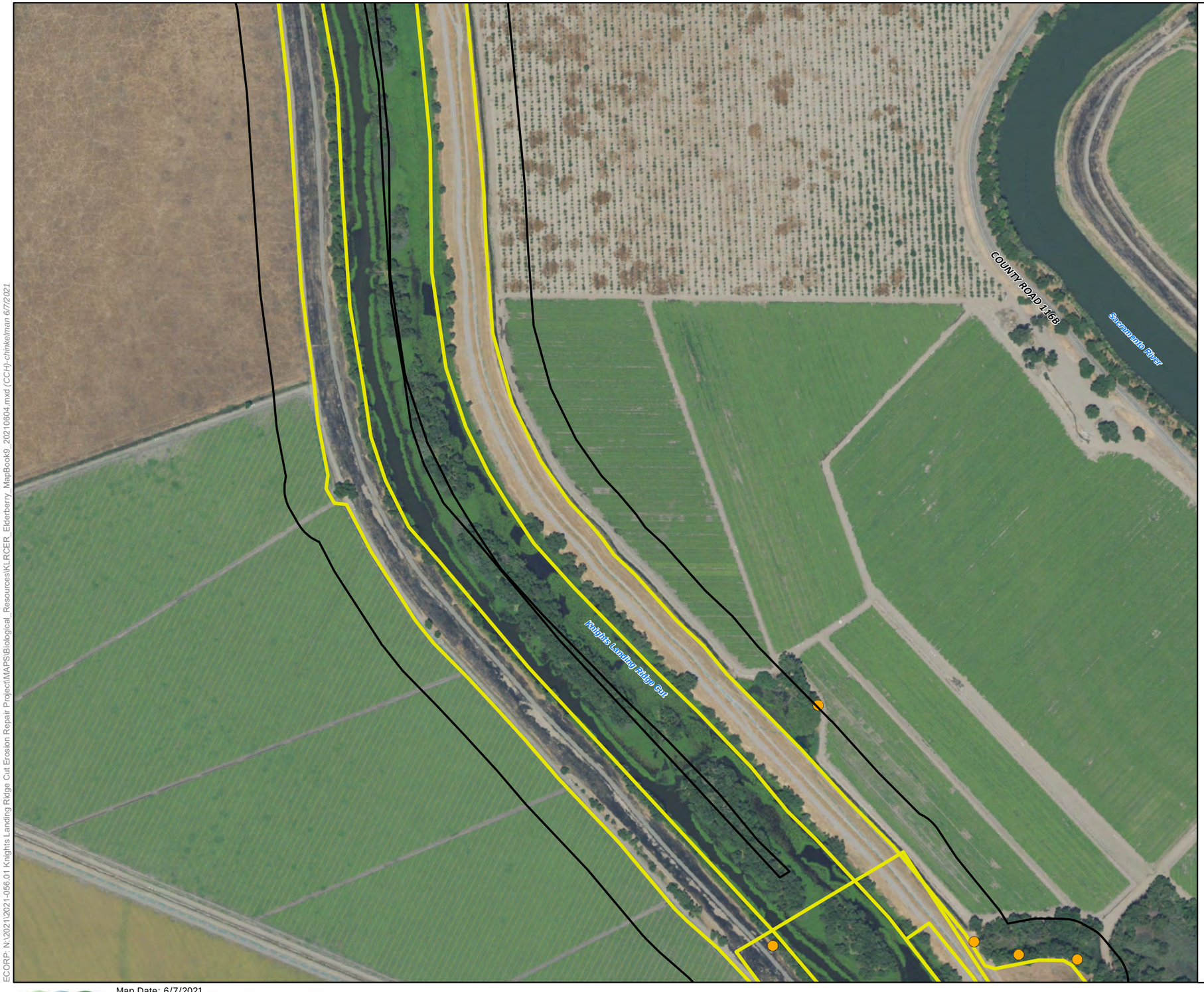
Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair



Map Features

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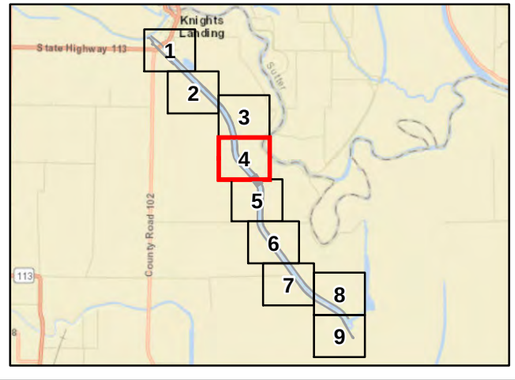
- 165' Buffer
- Elderberry Shrub Locations (69)

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet



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Map Date: 6/7/2021

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Scale in Feet
0 400

Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

- Project Study Area (295.6 acres)
- 165' Buffer
- Elderberry Shrub Locations (69)

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

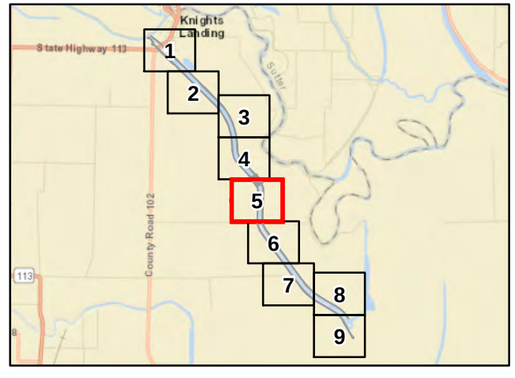

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Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

- Project Study Area (295.6 acres)
- 165' Buffer

Photo Source: Yolo County NAIP (2018)
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Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet

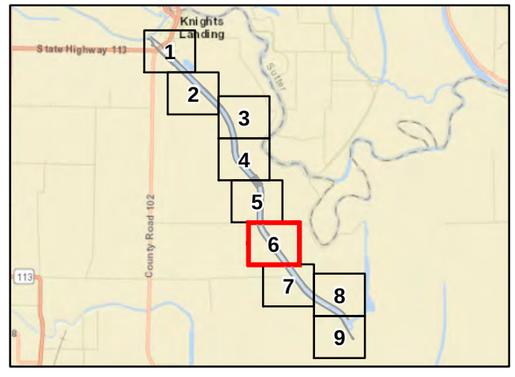

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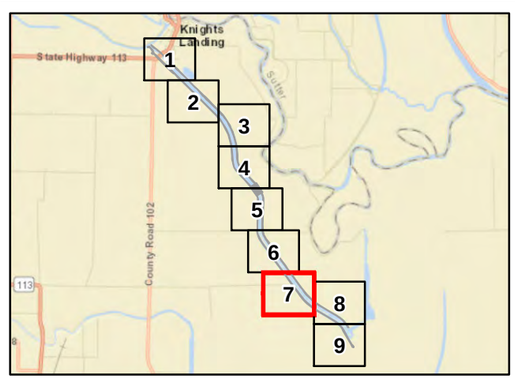
Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

- Project Study Area (295.6 acres)
- 165' Buffer
- Elderberry Shrub Locations (69)

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet



ECORP- N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Elderberry_MapBook9_20210604.mxd (CCH)-chinkelman 6/7/2021

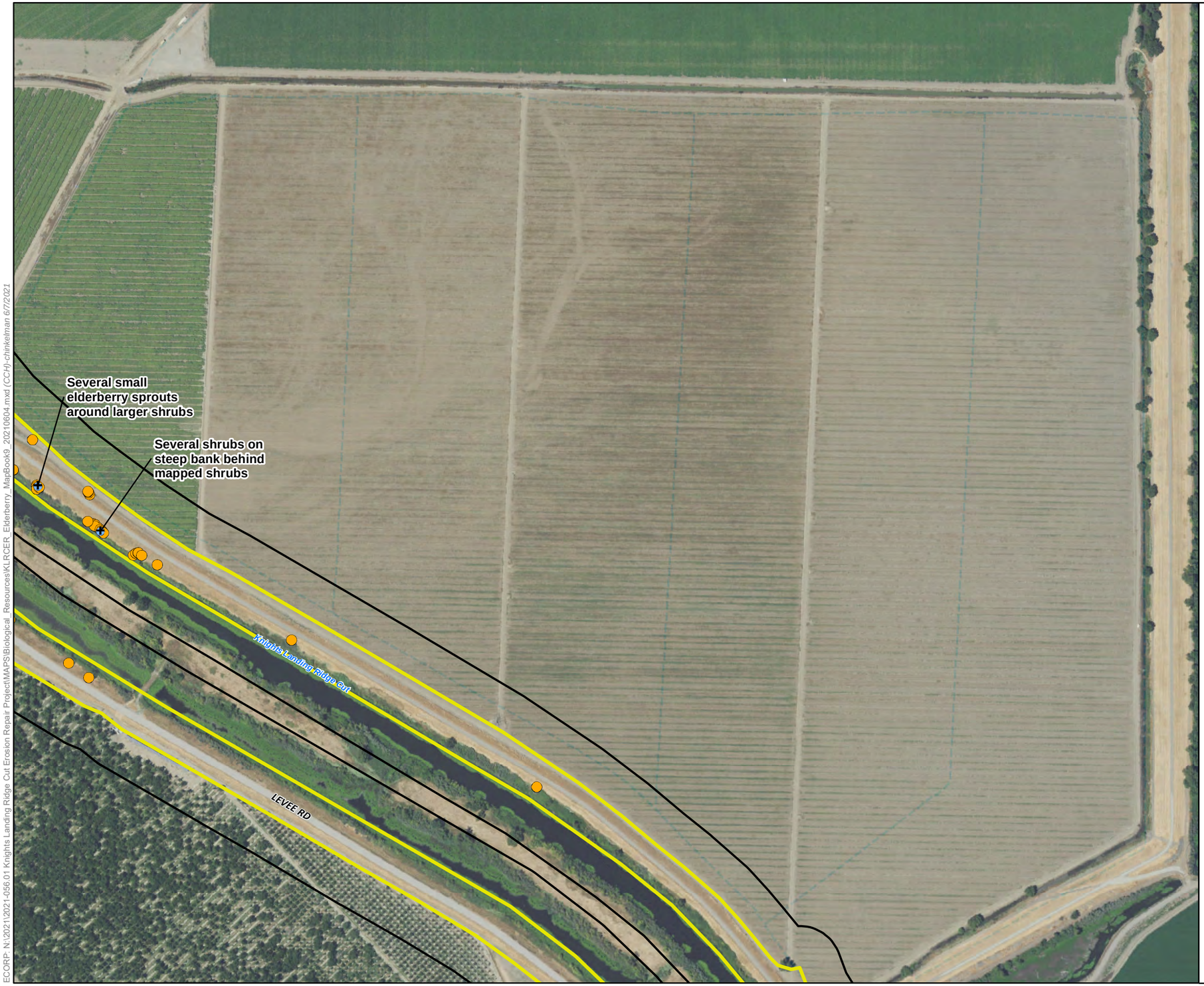
Map Date: 6/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 400

Figure 4. Elderberry Shrub Locations

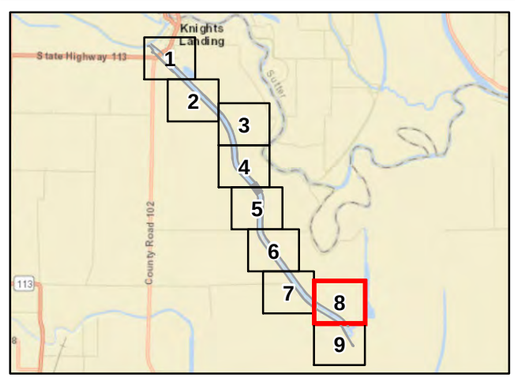
2021-056.01 Knights Landing Ridge Cut Erosion Repair



Map Features

- Project Study Area (295.6 acres)
- 165' Buffer
- Additional Elderberry Findings
- Elderberry Shrub Locations (69)

Photo Source: Yolo County NAIP (2018)
Boundary Source: KSN, Inc.
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet



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Map Date: 6/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 400

Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Map Features

- Project Study Area (295.6 acres)
- 165' Buffer

Photo Source: Yolo County NAIP (2018)
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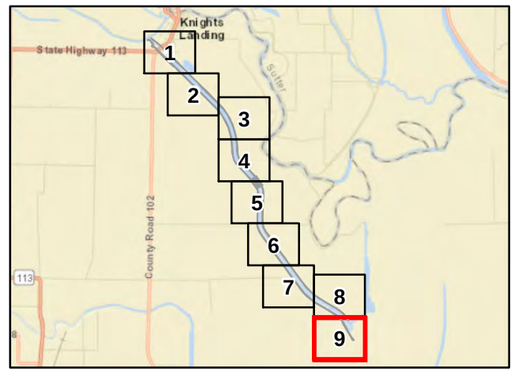
Coordinate System: NAD 1983 StatePlane California II FIPS 0402 Feet



ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Elderberry_MapBook9_20210604.mxd (CCH) chinkelman 6/7/2021

Map Date: 6/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 400

Figure 4. Elderberry Shrub Locations

2021-056.01 Knights Landing Ridge Cut Erosion Repair

Delta smelt spawn is a small, slender-bodied fish that is found in freshwater from late winter to early summer. Optimal spawning conditions occur during high outflow events that flood vegetated areas of the Delta and Suisun Bay. Female delta smelt produce between 1,000 eggs and 2,600 eggs that sink and attach to the bottom substrate, primarily in sandy and hard-bottom substrates (Wang 1986). Larvae hatch between 10 days and 14 days, and float downstream to areas near the entrapment zone (where salt and fresh water mix). This zone fluctuates depending on outflow and occurs anywhere from the lower Delta, near Antioch, westward to Carquinez Straights, near San Pablo Bay. Delta smelt forage on zooplankton and crustaceans, which are abundant in the area near the entrapment zone. Delta smelt grow rapidly and generally die in their first year following spawning. Some delta smelt, however, survive to a second year.

There are no CNDDB documented occurrences of delta smelt within 5 miles of the Study Area (CDFW 2021a). Delta Smelt have low potential to occur onsite.

4.9.3.2 Green Sturgeon (Southern Distinct Population Segment)

NMFS proposed on April 7, 2006, the Southern Distinct Population Segment (sDPS) of green sturgeon, which includes all fish populations south of the Eel River, California, as threatened under the ESA (71 FR 17757). The agency determined that the Northern DPS, which includes all populations north of the Eel River (inclusive), do not warrant listing. The designation of the sDPS was based on information demonstrating: (1) the majority of spawning adults are concentrated into one spawning river (i.e., the Sacramento River), (2) existence of continued threats that had not been adequately addressed since the previous green sturgeon status review, (3) downward trends in juvenile abundance, and (4) habitat loss in the upper Sacramento and Feather rivers. The Final Rule establishing take prohibitions for the sDPS was promulgated on June 2, 2010 (75 FR 30714).

Although little is known about the spawning habits of green sturgeon in the Sacramento-San Joaquin system, spawning times are thought to be similar to those documented for the Klamath River (Emmett et al. 1991). There are three general phases in green sturgeon life history: 1) freshwater stage (<three years old), 2) coastal migrants (three years to 13 years old for females; three years to nine years old for males); and 3) adults (>13 years old for females, >nine years old for males) (Environmental Protection Information Center [EPIC] et al. 2001). Adults typically migrate into fresh water beginning in late February; spawning occurs from March to July, with peak activity from April to June (Moyle et al. 2015). Emigration typically occurs after a period of over-summering followed by out-migration in the fall and winter periods coinciding with increases in flow.

Based on information from catches of green sturgeon eggs, larvae, and juveniles, and additional data derived from monitoring studies of white sturgeon, it appears that green sturgeon in the Sacramento River spawn from above Hamilton City to above Red Bluff Diversion Dam, maybe as far upstream as Keswick Dam (California Department of Fish and Game [CDFG] 2002). Juvenile green sturgeon are believed to reside in freshwater habitats from one year to three years, before emigrating to the Delta under winter high-flow events. However, the timing of emigration is unknown (EPIC et al. 2001). Following emigration from the upper Sacramento River, juvenile green sturgeon are widely distributed throughout the Delta (Radtke 1966).

While there are no CNDDB documented occurrences of sDPS green sturgeon within 5 miles of the Study Area (CDFW 2021a), the wetted channel of the ridge cut provides potential short-term holding and non-natal rearing habitat for the species during the migration periods. The sDPS green sturgeon is considered absent when barriers are functioning and has potential to occur within the Study Area when they are not.

4.9.3.3 Steelhead (Central Valley Distinct Population Segment)

Central Valley DPS steelhead is listed as threatened under the federal ESA. Steelhead, the anadromous form of rainbow trout, were once abundant in California coastal and Central Valley drainages from the Mexican to Oregon borders. Populations have declined substantially in recent years as a result of habitat loss stemming from dam construction. Existing wild steelhead stocks in the Central Valley are now mostly confined to the upper Sacramento River and its tributaries (McEwan and Jackson 1996).

Adult steelhead, typically averaging 600 millimeters to 800 millimeters in length (Moyle et al. 1989), generally leave the ocean and begin upstream migration to spawning reaches in tributaries to the Sacramento River system from November through January. Spawning generally occurs from December through April (McEwan and Jackson 1996). Juvenile steelhead rear in their natal streams for 1 year to 3 years prior to emigrating from the river. Emigration of 1-year to 3-year-old, subadult fish primarily occurs from January through April (Snider and Titus 1996; Sommer 2001). Unlike Chinook salmon, steelhead are iteroparous (i.e., able to spawn repeatedly) and may spawn for up to four consecutive years before dying; however, it is rare for steelhead to spawn more than twice and the majority of repeat spawners are females (Busby et al. 1996). Although one-time spawners comprise the majority, Shapovalov and Taft (1954) report that repeat spawners are relatively numerous (i.e., 17.2 percent) in California streams. Thus, kelts (post-spawning adults) may be present in the action area shortly after spawning (i.e., January through mid-April).

There are two CNDDB documented occurrences of Central Valley DPS steelhead within 5 miles of the Study Area (CDFW 2021a) and the wetted channel of the ridge cut provides potential short-term holding and non-natal rearing habitat for the species during the migration periods. Central Valley DPS steelhead is considered absent when barriers are functioning and has potential to occur within the Study Area when they are not.

4.9.3.4 Chinook Salmon (Central Valley Spring-Run Evolutionarily Significant Unit)

Central Valley spring-run Evolutionarily Significant Unit [ESU] Chinook salmon (*Oncorhynchus tshawytscha*; Salmon River Challenge [SRC] salmon) is listed as threatened pursuant to the California and federal ESAs. Historically, SRC salmon were abundant throughout the Sacramento and San Joaquin river systems but were extirpated from the San Joaquin River watershed and are currently being reintroduced to this system. Naturally spawning populations of SRC salmon are currently believed to be restricted to accessible reaches of the upper Sacramento River, Antelope Creek, Battle Creek, Beegum Creek, Big Chico Creek, Butte Creek, Clear Creek, Deer Creek, Mill Creek, the Feather River, and the Yuba River (CDFG 1998).

SRC salmon begin their migrations into the Sacramento River from March through September (Reynolds et al. 1990). Adult SRC salmon migrate into natal streams (i.e., the upper Sacramento River and tributaries).

There, they hold in deep water habitats downstream of spawning grounds during the summer months until their eggs fully develop and become ready for spawning (Reynolds et al. 1990; Yoshiyama et al. 1996). Spawning occurs during mid-August through early October (Reynolds et al. 1990). For habitat to be appropriate for spawning, suitable depths, velocities, and water temperatures must be present (NMFS 2018).

There is one CNDDB documented occurrence of Central Valley spring-run ESU Chinook salmon within 5 miles of the Study Area (CDFW 2021a) and the wetted channel of the ridge cut provides potential short-term holding and non-natal rearing habitat for the species during the migration periods. Central Valley spring-run ESU Chinook salmon is considered absent when barriers are functioning and has potential to occur within the Study Area when they are not.

4.9.3.5 Chinook Salmon (Sacramento River Winter-Run Evolutionarily Significant Unit)

Chinook salmon (Sacramento River winter-run ESU) is listed as endangered pursuant to the California and federal ESAs. The ESU includes all naturally spawned populations of winter-run Chinook salmon in the Sacramento River and its tributaries, as well as two artificial propagation programs: (1) winter-run Chinook salmon from the Livingston Stone National Fish Hatchery (NFH) and (2) winter-run Chinook salmon in a captive broodstock program maintained at Livingston Stone NFH and the University of California Bodega Marine Laboratory.

Adult winter-run ESU Chinook salmon upstream spawning migrations through the lower Sacramento River occur from December through July, with peak immigration occurring during the period January through April. The peak period of juvenile emigration through the lower Sacramento River into the Delta generally occurs between January and April (NMFS 1993). Differences in peak emigration periods between these two locations suggest that juvenile winter-run Chinook salmon may exhibit a sustained residence in the upper or mid-reaches of the Sacramento River prior to entering the lower Sacramento River or Delta. Although the location and extent of rearing in these lower or middle reaches is unknown, it is believed that the duration of fry presence in an area is directly related to the magnitude of river flows during the rearing period (Stevens 1989).

There are no CNDDB documented occurrences of Sacramento River winter-run ESU Chinook salmon within 5 miles of the Study Area (CDFW 2021a); however, the wetted channel of the ridge cut provides potential short-term holding and non-natal rearing habitat for the species during the migration periods. Sacramento River winter-run ESU Chinook salmon is considered absent when barriers are functioning and has potential to occur within the Study Area when they are not.

4.9.3.6 Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*) is listed as threatened pursuant to the California ESA and is a candidate for listing under the federal ESA. Longfin smelt is an anadromous smelt (family Osmeridae) found in California's bay, estuary, and nearshore coastal environments from San Francisco Bay north to Lake Earl, near the Oregon border. The San Francisco Estuary and the Sacramento-San Joaquin Delta supports the largest longfin smelt population in California (CDFG 2009a).

The longfin smelt is a relatively small fish that exhibits a 2-year life history. Though little is known regarding spawning, it is thought longfin smelt may spawn over coarse gravel or sandy substrates similar to other Osmerids. This species also inhabits various depths depending on the time of day and life history stage, with adults inhabiting deeper areas close to the bottom during the day and becoming more associated with surface waters at night. Like other species of Osmerids, population declines are likely due to habitat degradation and loss (CDFG 2009a).

There are two CNDDB documented occurrences of longfin smelt within 5 miles of the Study Area (CDFW 2021a) and the wetted channel of the ridge cut provides potential habitat for the species. Longfin smelt have a low potential to occur onsite.

4.9.3.7 Sacramento Splittail

Sacramento splittail is not listed pursuant to either the federal or California ESAs; however, the USFWS in 1999 had listed it as a threatened species but subsequently delisted it in 2003 in light of new information regarding the biology and status of the species (Moyle et al. 2004). The CDFW has currently designated it as an SSC due to declining abundance and distribution. Major factors that may threaten the abundance and distribution of Sacramento splittail include major dams, water quality degradation associated with agricultural activities, alteration of the Sacramento-San Joaquin River Estuary, and invasive species (Moyle et al. 2015).

Sacramento splittail is a relatively large (i.e., 40 centimeters standard length [SL]) and long-lived (i.e., 7 years to 10 years) warm water fish typically found at water temperatures ranging from 5 degrees Celsius (°C) to 24°C (Moyle 2002). When acclimated to elevated temperatures, splittail can tolerate temperatures up to 33°C (Moyle 2002). Adult splittail typically reach sexual maturity in their second year. Upon reaching maturity, adult splittail migrate upstream from November through February (Moyle 2002). Adults spawn on floodplains or flooded edge habitats in March and April at water temperatures between 14°C to 19°C (Moyle 2002) and then move back downstream. Eggs acquire adhesive properties following exposure to water and adhere to vegetation or other benthic substrates. Fertilized eggs generally hatch in three days to five days and larvae begin feeding on plankton soon thereafter. Juvenile splittail inhabit shallow, low-velocity habitats with abundant vegetation as they migrate downstream to the Delta. Emigration through the lower Sacramento River occurs from February through August, with peak emigration occurring from March through June (Moyle 2002). Splittail are benthic foragers that feed primarily on aquatic invertebrates, although detritus may make up a substantial proportion of their diet (Moyle et al. 2015).

There is one CNDDB documented occurrence of Sacramento splittail within 5 miles of the Study Area (CDFW 2021a). This species has occurred historically in the region and within the Study Area (PISCES 2014) and, thus, Sacramento splittail has potential to occur and is likely present.

4.9.3.8 Sacramento Hitch

Sacramento hitch is not listed pursuant to either the federal or California ESAs; however, the CDFW has designated it as an SSC due to long-term declines in abundance and distribution (Moyle et al. 2015). Major factors that may threaten the abundance and distribution of Sacramento hitch include major dams,

water quality degradation associated with agricultural activities, alteration of the Sacramento-San Joaquin River Estuary, and invasive species (Moyle et al. 2015).

Sacramento hitch are relatively large (i.e., up to 35 centimeters SL), deep bodies cyprinids that occur in warm low-elevation water bodies, including clear streams, turbid sloughs, lakes, and reservoirs (Moyle 2002). They have wide environmental tolerances, capable of withstanding short-term temperatures of nearly 38°C and salinities as high as nine parts per 1,000 (Moyle 2002). Sacramento hitch are omnivorous, feeding on zooplankton, filamentous algae, and aquatic and terrestrial insects (Moyle et al. 2015). Females typically mature in years two or three, while males mature in years one, two, or three. Spawning typically occurs in riffles of streams and in sloughs after spring rains increase flows and temperatures reach 14°C to 18°C (Moyle 2002). Sacramento hitch are broadcast spawners that occur in groups with vigorous splashing. A spawning female releases 9,000 eggs to 63,000 eggs into the water column, which are fertilized by one male to five males immediately after their release. Fertilized eggs swell to approximately four times their initial size after settling into the substrate. Larvae hatch in 3 days to 7 days at 15°C to 22°C and become free-swimming within three days to 4 days (Moyle et al. 2015).

There are no CNDDB documented occurrences of this species within 5 miles of the Study Area (CDFW 2021a). However, the Study Area is within the known range of, and provides suitable habitat for this species and, thus, Sacramento hitch has low potential to occur.

4.9.3.9 Hardhead

Hardhead is not listed pursuant to either the federal or California ESAs; however, the CDFW has designated it as an SSC due to declining numbers and small, isolated populations (Moyle et al. 2015). Primary threats to the species include dams and diversions, water quality degradation associated with agricultural activities, and invasive species (Moyle et al. 2015).

Hardhead occur in relatively undisturbed clear and cool (i.e., up to 20°C maximum summer temperature) low- to mid-elevation streams below approximately 1,500 meters (Moyle et al. 2015). Hardhead are primarily bottom-feeding fish that forage on aquatic invertebrates and aquatic vegetation, but will also prey on drifting invertebrates, plankton, and algae and terrestrial insects (Moyle et al. 2015). Hardhead reach maturity at age two and spawn primarily in April and May (Moyle 2002). Adult fish migrate into smaller tributary streams and aggregate in pools, returning to their home pools in larger rivers after spawning. Females produce over 20,000 eggs, which are deposited in sand or gravel substrates in riffles, runs, or heads of pools (Moyle 2002). After hatching, larval fish are believed to remain in near-shore areas with dense cover, gradually moving downstream and into deeper habitats with increased growth.

There are no CNDDB documented occurrences of this species within 5 miles of the Study Area (CDFW 2021a). However, the Project Area is within the known range of this species. Hardhead has low potential to occur.

4.9.3.10 Pacific Lamprey

Pacific lamprey is not listed pursuant to either the federal or California ESAs; however, the CDFW has designated it as an SSC. Pacific lampreys occur along the Pacific coast from Hokkaido Island, Japan,

through Alaska and south to Rio Santo Domingo in Baja California. Anadromous forms of Pacific lamprey occur below impassable barriers throughout their range. In California, Pacific lampreys occur from Los Angeles to Del Norte counties and the rivers in the Central Valley (Moyle 2002; Moyle et al. 2015).

Adult Pacific lampreys are micropredators (i.e., they feed on prey larger than themselves) during their oceanic existence, consuming the body fluids of a variety of fishes. They share many habitat requirements with Pacific salmonids (*Oncorhynchus* spp); particularly, cold, clear water for spawning and incubation. They also require a wide range of habitats across life stages. Lampreys will migrate considerable distances and only major barriers, such as dams, are able to stop them. Pacific lampreys have more diverse life histories than generally recognized: they may have more than one run or individuals that do not migrate to sea within the same river system. However, the general run trend is low numbers of migrants in October and November and higher numbers in the spring (Moyle et al. 2015).

There are no CNDDB documented occurrences of Pacific lamprey within 5 miles of the Study Area (CDFW 2021a). Pacific Lamprey has low potential to occur onsite.

4.9.3.11 River Lamprey

River lamprey is not listed pursuant to either the federal or California ESAs; however, the CDFW has designated it as an SSC. River lampreys occur in coastal streams from just north of Juneau, Alaska, south to San Francisco Bay. In California, they have been recorded from the Sacramento and San Joaquin Delta while migrating, tributaries to the San Francisco Estuary (Napa River, Sonoma Creek, Alameda Creek), and tributaries to the Sacramento and San Joaquin rivers (e.g., Tuolumne River, Stanislaus River, Cache Creek) (Moyle et al. 2015).

The western river lamprey is a small, predatory species. The habitat requirements and environmental tolerances of spawning adults and ammocoetes have not been studied in California. Presumably, like other lampreys, adults need clean, gravelly riffles in permanent streams for spawning, while ammocoetes require sandy to silty backwaters or stream edges in which to bury themselves, where water quality is continuously high and temperatures do not exceed 25°C (Moyle et al. 2015).

There are no CNDDB documented occurrences of river lamprey within 5 miles of the Study Area (CDFW 2021a); however, the wetted channel of the ridge cut provides potential habitat for the species. River lamprey has low potential to occur onsite

4.9.4 Amphibians

A total of three special-status amphibian species were identified as having potential to occur within the Study Area based on the literature review (Attachment F). However, one species was considered to be absent from the Study Area because the Study Area is located outside of the distributional range of the species, and the other two because there is no suitable habitat onsite. No further discussion of these species is provided within this assessment.

4.9.5 Reptiles

A total of two special-status reptile species were identified as having the potential to occur within Study Areas based on the literature review (Attachment F). Upon further analysis and after the reconnaissance site visit, both species were determined to have potential to occur within the Study Area. Brief descriptions of each of these species are provided below.

4.9.5.1 Northwestern Pond Turtle

The northwestern pond turtle is not listed pursuant to either the federal or California ESAs; however, it is designated as a CDFW SSC and is a Yolo HCP/NCCP-covered species. Northwestern pond turtles occur in a variety of fresh and brackish water habitats, including marshes, lakes, ponds, and slow-moving streams (Jennings and Hayes 1994). This species is primarily aquatic; however, they typically leave aquatic habitats in the fall to reproduce and to overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles and hatchlings require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage. Northwestern pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions (Jennings and Hayes 1994). The majority of nesting sites are located within 650 feet (200 meters) of the aquatic sites; however, nests have been documented as far as 1,310 feet (400 meters) from the aquatic habitat.

There are two CNDDB documented occurrences of northwestern pond turtle within 5 miles of the Study Area (CDFW 2021a). The channel and basking sites (e.g., partially submerged wooden debris) within the ridge cut in the Study Area provides suitable habitat for this species and the species was observed during the reconnaissance survey. Northwestern pond turtle is present onsite.

4.9.5.2 Giant Garter Snake

The giant garter snake is listed as a threatened species pursuant to both the California and federal ESAs and is a Yolo HCP/NCCP-covered species. Giant garter snakes typically inhabit perennial ponds, marshes, slow-moving streams, and agricultural ditches containing adequate water during the spring and summer months. Giant garter snakes are most active from early spring through mid-fall (USFWS 1999b). The giant garter snake is endemic to the floors of the Sacramento and San Joaquin valleys of California and probably occurred historically from Butte County south to Buena Vista Lake in Kern County (USFWS 1999b).

Seasonally, the giant garter snake becomes active in early spring, emerging from overwintering sites to bask on emergent willows, tules, saltbush, and riprap (Hansen and Tremper in Rossman et al. 1996). Generally, by May, all giant garter snakes have emerged from hibernacula and are actively foraging for food. Males immediately start searching for mates (USFWS 1999b). Live young are born in late July through early September (Hansen and Hansen 1990) and, by October, most snakes begin searching for

overwintering sites. Most are in hibernacula by November (Hansen and Hansen 1990). As with most ectothermic vertebrates, the exact timing of activities is dependent on current climatic conditions. Males are sexually mature in approximately 3 years. Females, which achieve sexual maturity at larger size, mature in 5 years (G. Hansen pers. comm. in USFWS 1999b).

The giant garter snake is one of the most aquatic garter snakes (USFWS 1999b). It is rarely found far from water and occupies habitat, such as marshes and sloughs, irrigation and drainage canals, small lakes and ponds, rice agricultural fields, and low gradient streams (USFWS 1999b). Waters inhabited by this species typically feature substrates of soil, mud, or other fines. Giant garter snakes tend to be absent from larger rivers and wetlands with sand, gravel, cobble, or rock substrates, as well as from areas with extensive shading.

Small mammal burrows, crayfish burrows, and soil cracks on south- or west-facing slopes are used as retreats during the active season, as is riprap along drainage ditches and canals (USFWS 1999b). Giant garter snakes use grassy bank-side habitats for basking and use higher elevation uplands for cover and retreat from floodwaters during the inactive winter season (USFWS 1999b). Essential habitat components required are permanent water to support a sufficient prey base, emergent vegetation for escape cover and foraging habitat, near-bank upland habitat for basking, and higher-elevation habitats for winter refugia (USFWS 1999b and references therein). Networks of canals near rice agriculture (aquatic agriculture) are positively associated with giant garter snake presence, however, population density and body condition are lower in rice agriculture than in natural landscapes (Halstead et al. 2010).

There are 30 CNDDB documented occurrences of giant garter snake within 5 miles of the Study Area (CDFW 2021a). The channel within the ridge cut in the Study Area provides suitable aquatic habitat and the level provides suitable upland habitat for this species. Giant garter snake has potential to occur within the Study Area.

4.9.6 Birds

A total of 31 special-status bird species were identified as having potential to occur within the Study Area based on the literature review (Attachment F). Upon further analysis and after the reconnaissance site visit, 19 species were considered to be absent from the Study Area due to the lack of suitable habitat, or the because the Study Area is out of the range for the species. No further discussion of these species is provided in this analysis. A brief description of the remaining 12 species that have the potential to occur within the Study Area is presented below.

4.9.6.1 White-Faced Ibis

The white-faced ibis is not listed pursuant to either the California or federal ESAs; however, is currently tracked in the CNDDB and is a CDFW watch list. In California, white-faced ibis are found locally breeding in suitable habitats throughout the length of the state except for portions of the central and north coast, heavily forested regions, and the Mojave Desert. Suitable nesting habitat includes shallow marshes with islands of emergent vegetation (Ryder and Manry 2020). Nesting typically occurs during May through July.

There is one CNDDB documented occurrence of white-faced ibis within 5 miles of the Study Area (CDFW 2021a). The emergent vegetation within the channel of the Study Area provides suitable habitat for this species. White-faced ibis has potential to occur within the Study Area.

4.9.6.2 White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not listed pursuant to either the California or federal ESAs; however, the species is fully protected pursuant to Section 3511 of the California Fish and Game Code. This species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts (Dunk 2020). In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas, such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands (Dunk 2020).

While there are no CNDDB documented occurrences of white-tailed kite within 5 miles of the Study Area (CDFW 2021a), the trees within the channel of the Study Area provides suitable habitat for this species. White-tailed kite has potential to occur within the Study Area.

4.9.6.3 Northern Harrier

Northern harrier (*Circus hudsonius*) is not listed pursuant to either the California or federal ESAs; however, USFWS considers the species a BCC and the CDFW considers it a SSC. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. The northern harrier is a ground-nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah communities usually in areas with dense vegetation (Smith et al. 2020). Foraging occurs within a variety of open environments, such as marshes, agricultural fields, and grasslands. Nesting occurs during April through September.

While there are no CNDDB documented occurrences of northern harrier within 5 miles of the Study Area (CDFW 2021a), the vegetation within the channel in the Study Area provides suitable habitat for this species. Northern harrier has potential to occur within the Study Area.

4.9.6.4 Swainson's Hawk

The Swainson's hawk is listed as a threatened species, is protected pursuant to the California ESA, and is a Yolo HCP/NCCP-covered species. This species nests in North America (Canada, western U.S., and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (Bechard et al. 2010). In California, the nesting season for Swainson's hawk ranges from mid-March to late August.

Swainson's hawks nest within tall trees in a variety of wooded communities, including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*),

California ground squirrel (*Otospermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanopulus species*). Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, disking, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

There are 96 documented CNDDB occurrences of Swainson's hawk within 5 miles of the Study Area (CDFW 2021a), including at least two that appear to be within the Study Area itself. The trees and established stick nests within the Study Area provide suitable habitat for this species. Swainson's hawk has potential to occur within the Study Area.

4.9.6.5 Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal ESAs; however, USFWS considers the species a BCC and the CDFW considers it a SSC. . It is a Yolo HCP/NCCP-covered species. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas, such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Poulin et al. 2020). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel but may also use manmade structures, such as concrete culverts or pipes; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement (CDFG 2012). The breeding season typically occurs between February 1 and August 31 (California Burrowing Owl Consortium 1993; CDFG 2012).

There is one CNDDB documented occurrence of burrowing owl within 5 miles of the Study Area (CDFW 2021a). The potential for burrows to occur along the maintained banks of the ridge cut within the Study Area provides marginal suitable habitat for this species. Burrowing owl has low potential to occur within the Study Area.

4.9.6.6 Nuttall's Woodpecker

The Nuttall's woodpecker (*Dryobates nuttallii*) is not listed pursuant to either the California or federal ESAs; however, it is considered a USFWS BCC. They are resident from Siskiyou County south to Baja California. Nuttall's woodpeckers nest in tree cavities primarily within oak woodlands, but also can be found in riparian woodlands (Lowther et al. 2020). Breeding occurs during April through July.

While there are no CNDDB documented occurrences of Nuttall's woodpecker within 5 miles of the Study Area (CDFW 2021a), the oak and cottonwood trees provide suitable habitat within the Study Area. Nuttall's woodpecker has potential to occur within the Study Area.

4.9.6.7 Least Bell's Vireo

The least Bell's vireo (*Vireo bellii pusillus*) is listed as endangered pursuant to both the federal and California ESAs and is a Yolo HCP/NCCP-covered species. This subspecies has experienced range contraction in California, and small breeding populations were concentrated in coastal southern California

by the 1980s (Kus et al. 2020). As a result of habitat preservation and restoration, their abundance and distribution has increased throughout central and Southern California from coastal Santa Clara County to San Diego County; and Owens Valley, Death Valley and scattered oases in the Mojave Desert (Kus et al. 2020). Least Bell's vireo builds nests in a variety of shrubs and small trees typically in riparian scrub along drainages or elsewhere near water (Kus et al. 2020). Nesting habitat consists of dense, low, shrubby vegetation in riparian areas, brushy fields, young second-growth forest of woodlands, scrub oak, coastal chaparral, and mesquite brushlands (Kus et al. 2020). Breeding occurs during April through July.

While there are no CNDDB documented occurrences of least Bell's vireo within 5 miles of the Study Area (CDFW 2021a), habitat for the species is mapped within the Study Area (Attachment D). The vegetation and trees within the ridge cut of the Study Area provide marginal suitable habitat for this species. Least Bell's vireo has low potential to occur within the Study Area.

4.9.6.8 Yellow-Billed Magpie

The yellow-billed magpie (*Pica nuttallii*) is not listed pursuant to either the California or federal ESAs; however, it is considered a USFWS BCC. This endemic species is a yearlong resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures or cropland. Nest building begins in late-January to mid-February, which may take up from 6 weeks to 8 weeks to complete, with eggs laid during April-May, and fledging during May-June (Koenig and Reynolds 2020). The young leave the nest at about 30 days after hatching (Koenig and Reynolds 2020). Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies from 2004 to 2006 (Koenig and Reynolds 2020).

While there are no CNDDB documented occurrences of yellow-billed magpie within 5 miles of the Study Area (CDFW 2021a), the oak, cottonwood and willow trees provide suitable habitat within the Study Area. Yellow-billed magpie has potential to occur within the Study Area.

4.9.6.9 Oak Titmouse

The oak titmouse (*Baeolophus inornatus*) is not listed pursuant to either the California or federal ESAs; however, it is considered a USFWS BCC. The oak titmouse breeding range includes southwestern Oregon south through California's Coast, Transverse and Peninsular ranges, western foothills of the Sierra Nevada, into Baja California; they are absent from the humid northwestern coastal region and the San Joaquin Valley (Cicero et al. 2020). They are found in dry oak or oak-pine woodlands but may also use scrub oaks or other brush near woodlands (Cicero et al. 2020). Nesting occurs during March through July.

While there are no CNDDB documented occurrences of oak titmouse within 5 miles of the Study Area (CDFW 2021a), the oak trees provide suitable habitat within the Study Area and the species was observed during surveys. Oak titmouse has potential to occur within the Study Area.

4.9.6.10 Song Sparrow "Modesto"

The song sparrow (*Melospiza melodia*) is considered one of the most polytypic songbirds in North America (Miller 1956 as cited in Arcese et al. 2020). The subspecies *Melospiza melodia heermanni* includes as synonyms *M. m. mailliardi* (the "Modesto song sparrow") and *M. m. cooperi* (Arcese et al. 2020). The "Modesto song sparrow" is not listed and protected pursuant to either the California or federal ESAs; however, it is considered a CDFW SSC. The subspecies *M. m. heermanni* can be found in central and southwestern California to northwestern Baja California (Arcese et al. 2020). Song sparrows in this group may have slight morphological differences but they are genetically indistinguishable from each other. The Modesto song sparrow occurs in the Central Valley from Colusa County south to Stanislaus County, and east of the Suisun Marshes (Grinnell and Miller 1944). Nesting habitat includes riparian thickets and freshwater marsh communities, with nesting occurring from April through June.

There is one documented CNDDB occurrence of this species located within 5 miles of the Study Area (CDFW 2021a). The thickets of the vegetation within the ridge cut of the Study Area provides suitable habitat for this species. Song sparrow has potential to occur within the Study Area.

4.9.6.11 Tricolored Blackbird

The TRBL (*Agelaius tricolor)* was granted emergency listing for protection under the California ESA in December 2014, but the listing status was not renewed in June 2015. After an extensive status review, the California Fish and Game Commission listed TRBLs as a threatened species in 2018. In addition, it is currently considered a USFWS BCC, a CDFW SSC, and is a Yolo HCP/NCCP-covered species. This colonial nesting species is distributed widely throughout the Central Valley, Coast Range, and into Oregon, Washington, Nevada, and Baja California (Beedy et al. 2020). TRBLs nest in colonies that can range from several pairs to several thousand pairs, depending on prey availability, the presence of predators, or level of human disturbance. The TRBL nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields, thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation (Beedy et al. 2020). They feed mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields (Beedy et al. 2020). The nesting season is generally from March through August.

There are nine CNDDB documented occurrences of TRBL within 5 miles of the Study Area (CDFW 2021a). The emergent vegetation within the ridge cut of the Study Area provides suitable habitat for this species. The TRBL has potential to occur within the Study Area.

4.9.6.12 Bullock's Oriole

The Bullock's oriole (*Icterus bullockii*) is not listed pursuant to either the California or federal ESAs; however, it is considered a USFWS BCC. The species' breeding range includes much of western North America from southern Canada into northern Mexico (Flood et al. 2020). Bullock's orioles breed throughout much of California except at higher elevations of larger mountain ranges and in eastern desert

ranges from Oregon to Baja California. Nests are placed in isolated trees, often at woodland edges, along wooded waterways, or in urban habitat such as shelterbelts and parks (Flood et al. 2020). Common nest tree species include sycamores (*Platanus*), cottonwoods (*Populus*), willows, as well as deciduous oaks. This species can nest as a single pair or colonially (Flood et al. 2020). Breeding occurs from April through June.

While there are no CNDDB documented occurrences of Bullock's oriole within 5 miles of the Study Area (CDFW 2021a), the cottonwood and willow trees within the Study Area provide suitable habitat for this species. Bullock's oriole has potential to occur within the Study Area.

4.9.7 Mammals

A total of three special-status mammal species were identified as having the potential to occur within Study Areas based on the literature review (Attachment F). Upon further analysis and after the reconnaissance site visit, one species was determined to not have potential to occur within the Study Area due to the absence of suitable habitat. No further discussion of the species is provided in this analysis. A brief description of the two remaining species that have potential to occur within the Study Area is presented below.

4.9.7.1 Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the federal or California ESAs; however, CDFW considers this species an SSC. This is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America, from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures, such as bridges, and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although this species uses echolocation to locate prey, often they use only passive acoustic cues. This species is not thought to migrate long distances between summer and winter sites (Western Bat Working Group [WBWG] 2021).

There are no CNDDB documented occurrences of pallid bat within 5 miles of the Study Area (CDFW 2021a); however, the trees within the ridge cut and bridges that cross the wetted ridge cut channel within the Study Area provide suitable habitat for this species. Pallid bat has potential to occur within the Study Area.

4.9.7.2 Western Red Bat

The western red bat (*Lasiurus blossevillii*) is not listed pursuant to either the California or federal ESAs; however, this the CDFW considers this species an SSC. The western red bat is easily distinguished from other western bat species by its distinctive red coloration. This species is broadly distributed, its range extending from southern British Columbia in Canada through Argentina and Chile in South America, and including much of the western United States. This solitary species day roosts primarily in the foliage of

trees or shrubs in edge habitats bordering streams or open fields, in orchards, and occasionally urban areas. They may be associated with intact riparian habitat, especially with willows, cottonwoods, and sycamores. This species may occasionally utilize caves for roosting as well. They feed on a variety of insects, and generally begin to forage one hour to two hours after sunset. This species is considered highly migratory; however, the timing of migration and the summer ranges of males and females may be different. Winter behavior of this species is poorly understood (WBWG 2021).

There is one CNDDB documented occurrence of western red bat within 5 miles of the Study Area (CDFW 2021a). The willow and cottonwood trees within the ridge cut of the Study Area provide suitable habitat for this species. Western red bat has potential to occur within the Study Area.

4.10 Wildlife Movement/Corridors

The Study Area is located within a matrix of agricultural fields, dirt access roads and paved roads, and rural residences (Figure 3). The wetted channel, vegetation and banks of the ridge cut within the Study Area have the potential to serve as a wildlife corridor for both aquatic and terrestrial wildlife species.

4.11 Critical Habitat and Essential Fish Habitat

The Study Area is not located within the range of designated Critical Habitat for special-status species (USFWS 2021c). The Study Area is located within designated Essential Fish Habitat (EFH) for Chinook salmon.

5.0 IMPACT ANALYSIS

This section specifically addresses the questions raised by the CEQA - Appendix G Environmental Checklist Form, IV. Biological Resources. This section also identifies the appropriate recommendations to reduce potential impacts of the actions to less than significant. The recommendations are described in detail in Section 6.0.

5.1 Special-Status Species, Designated Critical Habitat, and Essential Fish Habitat

Would the Project result in effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

The Project would result in temporary and permanent construction-related impacts to the upland and aquatic resources that provide habitat for special-status species within the Study Area. Potential impacts to upland habitats include temporary disturbance associated with the use of excavators to remove and reshape the ridge cut bank in erosion repair areas. The Project would result in permanent and temporary impacts to aquatic habitat and the associated bank from construction activities, such as using a small boat to install a silt curtain within the canal, or excavation of soil and placement of soil and rocks along the bank. As such, the Project would potentially have an adverse effect, either directly or through habitat modifications, on special-status species identified by CDFW, USFWS, and NMFS. However, no permanent

effects on Critical Habitat or EFH as identified by NMFS will occur. Impacts by species or habitat group are summarized below.

5.1.1 Impacts to Special-Status Plants

There is potential for 13 special-status plant species to occur within the Study Area. Upland staging and erosion stabilization areas would generate a temporary disturbance, but would not result in permanent habitat modifications. Vegetation removal and/or placement of soil and rocks along the bank could result in permanent habitat modifications that could impact special-status plants. Implementation of the recommendations described in Sections 6.1 and 6.2.1 would avoid or minimize potential effects to special-status plants.

5.1.2 Impacts to Valley Elderberry Longhorn Beetle

There are numerous elderberry shrubs, the host species for VELB, in the Study Area. Because the shrubs occur in riparian habitat, they are suitable habitat for VELB and potentially occupied habitat (USFWS 2017). The Project may result in adverse effects to VELB through construction activities within 165 feet of elderberry shrubs and/or removal of elderberry shrubs. The Project would avoid direct impacts (removal) of elderberry shrubs when practicable, and will implement the recommendations outlined in Sections 6.1 and 6.2.2 to minimize the potential for direct effects on VELB.

5.1.3 Impacts to Special-Status Fish Species, Critical Habitat, and Essential Fish Habitat

Eleven special-status fish species, including five federally listed species and one species that is a candidate for federal listing (four of which are also state-listed species), have potential to occur in the Study Area. Direct impacts to special-status fish species could occur as a result of erosion control measures (e.g., soil or rock removal and revetment placement) through scraping bottom substrates and causing downstream turbidity. Implementation of the recommendations outlined in Section 6.2.4 would minimize the effects of the Project on listed and special-status fish species.

The Study Area does not include designated Critical Habitat for special-status species; however, it does include designated EFH for Chinook salmon. Erosion control operations (e.g., soil or rock removal and revetment placement) would temporarily disturb designated EFH by scraping bottom substrates and causing turbidity downstream. These temporary effects would not result in permanent impacts or loss of EFH. Implementation of the recommendations outlined in Section 6.2.4 would minimize the effects of the Project on EFH to the minimum practicable.

5.1.4 Impacts to Northwestern Pond Turtles

Northwestern pond turtles may occur in the upland (levee banks) and wetted channel portions of the Study Area. The upland areas (i.e., banks of the ridge cut levee) provide suitable nesting habitat. Disturbance of the bank during rock and soil removal and or replacement could adversely affect nesting turtles. However, implementation of recommendations outlined in Sections 6.1 and 6.2.4 are expected to avoid or minimize potential effects to this species in upland portions of the Study Area. In aquatic habitat,

direct mortality is not anticipated. More likely, this species may inadvertently be disturbed from basking sites or foraging activities due to noise and disturbance associated with erosion control operations. Overall, the effects are expected to be temporary and minimized by the implementation of recommendations outlined in Sections 6.1 and 6.2.4.

5.1.5 Impacts to Giant Garter Snake

Giant garter snake has the potential to occur in the wetted channel of the Study Area. Direct impacts to giant garter snake could occur as a result of erosion control measures (e.g., soil or rock removal and revetment placement) through scraping bottom substrates and causing downstream turbidity. Direct mortality could also occur due to the presence of equipment within the channel during erosion control and/or vegetation removal activities. However, implementation of recommendations outlined in Sections 6.1 and 6.2.4 are expected to avoid or minimize potential effects to this species to the minimum practicable.

5.1.6 Impacts to Special-Status Birds

Two state-listed and one federal- and state-listed bird species have the potential to occur in the Study Area and there is potential for additional special-status bird species in the Study Area. Upland staging areas would generate a temporary disturbance that could displace nesting birds from the Study Area for the duration of construction but would not result in permanent habitat modifications. Existing roadways will be used for vehicle and construction access. The Project may require removal of riparian vegetation that may provide suitable nesting habitat; however, vegetation removal will be minimized to only the extent necessary to complete the erosion repairs. If special-status birds initiate nesting prior to the start of construction, recommendations outlined in Section 6.2.5 would be implemented to avoid direct effects. This recommendation requires preconstruction surveys and establishment of buffers and monitoring at nest sites until young have fledged or nests are no longer active.

5.1.7 Impacts to Special-status Mammals

There are two special-status mammals with potential to occur in the Study Area. The Project may require vegetation removal and, therefore, could result in temporary or permanent adverse effects of habitat modification for special-status mammals. Impacts would be temporary if vegetation replanting of similar species within the habitat would also occur. Replanting of vegetation will depend on erosion control measures required at each location, such as placement of rock. Implementation of recommendations outlined in Section 6.2.6 would minimize the potential for effects to special-status mammals.

5.2 Riparian Habitat and Sensitive Natural Communities

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

The Study Area supports riparian vegetation along a manmade channel (the ridge cut). Construction access and staging will occur in upland, disturbed areas of the Study Area, such as the established levee

crown gravel road and dirt levee roads, and in the designated 2.5-acre staging area at the base of the east levee. Some vegetation clearing or tree removal may be necessary to implement erosion repairs; however, vegetation removal will be minimized to the extent practicable. The Project would not result in permanent adverse effects to riparian habitats. There are no Sensitive Natural Communities as defined by CDFW or the Yolo HCP/NCCP within the Study Area; therefore, no impacts would occur. Recommendations to further reduce impacts to riparian habitats are provided in Section 6.3.

5.3 Aquatic Resources, Including Waters of the United States and State

Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The Project would have no direct impact on federally protected wetlands; however, the ridge cut and agricultural ditches onsite have an OHWM and are potential waters of the U.S./state. Project implementation would temporarily disturb the banks of the ridge cut during proposed erosion repair measures. Additionally, placement of soil and rock for erosion control may result in permanent impacts to waters of the U.S./state. Recommendations to reduce impacts to aquatic resources are provided in Sections 6.1 and 6.4.

5.4 Wildlife Movement/Corridors

Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The ridge cut channel is a potential migratory corridor for native fish. Project erosion control activities, including the potential use of silt curtains within the canal, have the potential to interfere with natural movements of resident and migratory fish species on a temporary basis. Implementation of recommendations outlined in Sections 6.1 and 6.2.3 are expected to avoid and minimize potential effects to fish.

The ridge cut and associated vegetation, trees, and banks within the Study Area provide migratory opportunities for wildlife. Establishment of the staging areas and operation of equipment is likely to temporarily disturb and displace wildlife from portions of the Study Area. Some wildlife, such as birds or nocturnal species, are likely to continue to use the habitats opportunistically for the duration of construction. Once construction is complete, wildlife movements are expected to resume.

The Study Area does not include a known nursery site. Evidence of a potential wildlife nursery site was observed during the field reconnaissance due to the presence of several juvenile black-crowned night herons (*Nycticorax nycticorax*), along with adults, roosting within the vegetation of the ridge cut. Potential impacts to individual nesting birds and potential wildlife nursery sites would be reduced by implementation of recommendations described in Sections 6.1 and 6.2.5.

5.5 Local Policies, Ordinances, and Other Plans

Does the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

If trees cannot be avoided, they will be removed in compliance with the Yolo County Oak Woodland Conservation and Enhancement Plan, as described in the General Plan. The Project will not conflict with a local policy or ordinance protecting biological resources, including tree ordinances. The Applicant would coordinate with the local jurisdiction (Yolo County) to secure the necessary variance, permit, or approval if a conflict is identified.

Does the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Yolo HCP/NCCP covers the Study Area, as described in Section 2.2.7. This BRA and the recommendations herein regarding covered species were formulated in accordance with the Yolo HCP/NCCP conditions on covered activities. Therefore, the Project would not conflict with a local, regional, or state conservation plan. Additionally, the recommendation provided in Section 6.5 would help avoid the potential for conflict with an adopted HCP. .

6.0 RECOMMENDATIONS

The Study Area is a previously disturbed, maintained ridge cut channel. However, the vegetation and trees, the wetted and vegetated channel, and the banks of the ridge cut all provide potential habitat for multiple special-status species.

6.1 General Recommendations

The Project will implement erosion control measures and Best Management Practices to reduce the potential for sediment or pollutants within the Study Area. Measures may include:

- Erosion control measures will be placed between waters of the U.S., and the outer edge of the staging areas, prior to commencement of construction activities. Such identification and erosion control measures will be properly maintained until construction is completed and the soils have been stabilized.
- The California Department of Food and Agriculture will certify the fiber rolls used for erosion control as weed free.
- Seed mixtures applied for erosion control will not contain California Invasive Plant Council designated invasive species (http://cal-ipc.org/) and will be composed of a KLRDD-approved seed mix.
- Trash generated onsite will be promptly and properly removed.

- Any fueling in the upland portion of the Study Area will use appropriate secondary containment techniques to prevent spills.
- A qualified biologist will conduct a mandatory Worker Environmental Awareness Program for all contractors, work crews, and any onsite personnel on the potential for special-status species to occur in the Study Area. The training will provide an overview of habitat and characteristics of the species, the need to avoid certain areas, and the possible penalties for noncompliance.

6.2 Special-Status Species

6.2.1 Plants

The potential exists for 13 special-status plants to occur within the Study Area (see Section 4.9.1). No special-status plants were found during field surveys; however, protocol-level surveys have not been conducted. If the Project requires ground disturbance (i.e., grading or earthwork) in suitable habitat for the special-status plants, the following mitigation measures are recommended to minimize potential impacts to special-status plants:

6.2.1.1 Yolo Habitat Conservation Plan/Natural Communities Conservation Plan Avoidance and Minimization Measure 11: Palmate-Bracted Bird's Beak

- In accordance with Yolo HCP/NCCP AMM 11, to determine if palmate-bracted bird's-beak is present and could be affected, the Project proponent will conduct a planning-level survey for this species for any covered activities that will take place within 250 feet of suitable habitat. The survey will be conducted during the period from May 31 to September 30 and will be consistent with Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities (CDFG 2009b).
- In accordance with Yolo HCP/NCCP AMM 11, the Project proponent will avoid occupied habitat where palmate-bracted bird's beak has been located within any of the last 15 years (seed viability could be as little as three years and as much as six years, as described in Appendix A of the Yolo HCP/NCCP). The Project proponent also will avoid any new occurrences of this species identified during planning-level surveys. Avoidance will require a 250-foot setback from the occupied habitat, or greater distance, depending on site-specific topography to avoid hydrologic effects. A shorter buffer distance may apply if is determined to avoid effects and is approved by the Yolo Conservancy, USFWS, and CDFW. Mortality of palmate-bracted bird's beak individuals will be avoided, except as needed through management activities that provide an overall benefit to the species.

6.2.1.2 Other Special-Status Plant Species

- Preconstruction floristic surveys shall be conducted for any areas of proposed ground disturbance (i.e., grading or earthwork) in the Study Area with the potential to support special-status plants. A qualified botanist would survey the area of ground disturbance and a 25-foot buffer during the appropriate blooming period prior to the start of Project activity.

- If no special-status plants are found during the preconstruction surveys, no further measures are necessary.
- If surveys identify any special-status plants, they shall be flagged and avoided with a 25-foot no-disturbance buffer during Project activities. If this avoidance is not feasible, the applicant shall consult with CDFW to determine whether alternative avoidance measures that are equally protective are possible.

6.2.2 Invertebrates

There are numerous elderberry shrubs, the host species for VELB, in the Study Area (Figure 4). Construction activities could require removal of shrubs, which could result in direct adverse effects to VELB. Additionally, construction activities could occur in the vicinity (within 165 feet) of elderberry shrubs, which could result in effects to shrubs or VELB flight patterns. In accordance with Yolo HCP/NCCP AMM 12, the following mitigation measures are recommended to minimize potential impacts to VELB:

- Obtain ESA take coverage under the Yolo HCP/NCCP for direct effects to VELB. The Project will be conducted in accordance with the AMMs set forth in the Yolo HCP/NCCP to avoid Project effects to ESA-listed VELB.
- Elderberry shrubs will be avoided to the extent practicable. To avoid take of valley elderberry longhorn beetle fully, the Project proponent will maintain a buffer of at least 100 feet from any elderberry shrubs with stems greater than one inch in diameter at ground level. If necessary, lesser buffers may be applied, in accordance with Yolo HCP/NCCP AMM 1.
- For elderberry shrubs that cannot be avoided with a designated buffer distance as described above, the qualified biologist will quantify the number of stems one inch or greater in diameter that could be affected, and the presence or absence of exit holes. The Conservancy will use this information to determine the number of plants or cuttings to plant on a riparian restoration site to help offset the loss. Additionally, prior to construction, the Project proponent will transplant elderberry shrubs identified within the Project footprint that cannot be avoided.
- Transplantation will only occur if a shrub cannot be avoided and, if indirectly affected, the indirect effects would otherwise result in the death of stems or the entire shrub. If the Project proponent chooses, in coordination with a qualified biologist, not to transplant the shrub because the activity would not likely result in death of stems of the shrub, then the qualified biologist will monitor the shrub annually for a 5-year monitoring period. The monitoring period may be reduced with concurrence from the wildlife agencies if the latest research and best available information at the time indicates that a shorter monitoring period is warranted. If death of stems at least one inch in diameter occurs within the monitoring period, and the qualified biologist determines that the shrub is sufficiently healthy to transplant, the Project proponent will transplant the shrub as described elsewhere in AMM12 in coordination with the qualified biologist. If the shrub dies during the monitoring period, or the qualified biologist determines that the shrub is no longer healthy enough to survive transplanting, then the Conservancy will offset the shrub loss consistent with this measure.

- The Project proponent will transplant the shrubs into a Conservancy-approved location in the Yolo HCP/NCCP reserve system. Elderberry shrubs outside the Project footprint but within the 100-foot buffer will not be transplanted.
- Transplanting will follow the following measures:
    1. Monitor: A qualified biologist will be onsite for the duration of the transplanting of the elderberry shrubs to ensure the effects on elderberry shrubs are minimized.
    2. Timing: The Project proponent will transplant elderberry plants when the plants are dormant, approximately November through the first 2 weeks of February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.
    3. Transplantation procedure:
        a. Cut the plant back 3 feet to 6 feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. Replant the trunk and stems measuring one inch or greater in diameter. Remove leaves that remain on the plants.
        b. Relocate plant to approved location in the reserve system, and replant as described in the Yolo HCP/NCCP Section 6.4.2.4.1.

6.2.3 Fish

The potential exists for three special-status fish species to occur within the Study Area when the upstream and downstream barriers are in place and operational. An additional eight species have potential to occur within the Study Area if barriers that preclude their presence are not in place (see Section 4.9.3). If Project activities occur within the wetted channel of the ridge cut, the following mitigation measures are recommended to minimize potential impacts to special-status fish species:

- If KLOG fish passage barrier is not in place and operational, request USACE to initiate Section 7 consultation with NMFS through the CWA Section 404 process on the Project effects to ESA-listed fish species and acquire a BO for the Project. Implement all conditions of the BO.
- If KLOG fish passage barrier is not in place and operational, implement work within the wetted channel during a limited work window (likely June 15 through October 15) to avoid the most sensitive life stages of ESA-listed anadromous fish species.
- If KLOG fish passage barrier is not in place and operational, consult with CDFW and, if necessary, secure Incidental Take Permit 2081, pursuant to Section 2080 of the California Fish and Game Code for the California ESA-listed fish (i.e., spring-run and winter-run Chinook salmon, delta smelt, and longfin smelt).

- Deploy measures, as practicable, to reduce sediment resuspension, such as a turbidity curtain, if feasible, given the flow volume and velocity in the Study Area.

6.2.4 Reptiles

The potential exists for two special-status reptile species to occur within the Study Area (see Section 4.9.5). The following mitigation measures are recommended to minimize potential impacts to special-status reptile species:

6.2.4.1 Yolo HCP/NCCP AMM14: Western Pond Turtle

If modeled upland habitat will be impacted (see Attachment E), the following should occur:

- A qualified biologist must be present and will assess the likelihood of western pond turtle nests occurring in the disturbance area (based on sun exposure, soil conditions, and other species habitat requirements).
- If a qualified biologist determines that there is a moderate to high likelihood of western pond turtle nests within the disturbance area, the qualified biologist will monitor all initial ground disturbing activity for nests that may be unearthed during the disturbance, and will move out of harm's way any turtles or hatchlings found.

6.2.4.2 Yolo HCP/NCCP AMM15: Giant Garter Snake

- The Project proponent cannot avoid effects of construction activities on aquatic habitat, therefore the Project proponent will implement the measures below to minimize effects of construction projects.
- Conduct preconstruction clearance surveys using USFWS-approved methods within 24 hours prior to construction activities within identified giant garter snake aquatic and adjacent upland habitat. If construction activities stop for a period of two weeks or more, conduct another preconstruction clearance survey within 24 hours prior to resuming construction activity.
- Restrict all construction activity involving disturbance of giant garter snake habitat to the snake's active season, May 1 through October 1. During this period, the potential for direct mortality is reduced because snakes are expected to move and avoid danger.
- Dewatering is not feasible for the KLRC, therefore netting and salvage of giant garter snake prey items may be necessary to discourage use by snakes.
- Provide Conservancy -approved environmental awareness training for construction personnel. Training may consist of showing a video prepared by a qualified biologist, or an in-person presentation by a qualified biologist. In addition to the video or in-person presentation, training may be supplemented with the distribution of approved brochures and other materials that describe resources protected under the Yolo HCP/NCCP and methods for avoiding effects. The training may be conducted simultaneously with the Workers Awareness Training described in Section 5.2.1.

- A qualified biologist will prepare a giant garter snake relocation plan, which must be approved by the Conservancy prior to work in giant garter snake habitat. The qualified biologist will base the relocation plan on criteria provided by CDFW or USFWS, through the Conservancy.
- If a live giant garter snake is encountered during construction activities, immediately notify the Project's biological monitor and USFWS and CDFW. The monitor will stop construction in the vicinity of the snake, monitor the snake, and allow the snake to leave on its own. The monitor will remain in the area for the remainder of the workday to ensure the snake is not harmed or, if it leaves the site, does not return. If the giant garter snake does not leave on its own, the qualified biologist will relocate the snake consistent with the relocation plan described above.
- Implement the following management practices to minimize disturbances to habitat:
- Install temporary fencing to identify and protect adjacent marshes, wetlands, and ditches from encroachment from construction equipment and personnel.
- Maintain water quality and limit construction runoff into wetland areas through the use of hay bales, filter fences, vegetative buffer strips, or other accepted practices. No plastic, monofilament, jute, or similar erosion-control matting that could entangle snakes or other wildlife will be permitted.

6.2.5 Birds

The potential exists for 12 special-status bird species to occur within the Study Area (see Section 4.9.6). The following mitigation measures are recommended to minimize potential impacts to special-status bird species:

6.2.5.1 Yolo HCP/NCCP AMM 16: Swainson's Hawk and White-Tailed Kite

- If the Project cannot avoid potential nest trees (as determined by the qualified biologist) by 1,320 feet, the Project proponent will retain a qualified biologist to conduct preconstruction surveys for active nests consistent with guidelines provided by the Swainson's Hawk Technical Advisory Committee (2000), between March 15 and August 30, within 15 days prior to the beginning of the construction activity. The results of the survey will be submitted to the Conservancy and CDFW.
- If active nests are found during preconstruction surveys, a 1,320-foot initial temporary nest disturbance buffer shall be established. If Project-related activities within the temporary nest disturbance buffer are determined to be necessary during the nesting season, then the qualified biologist will monitor the nest and will, along with the Project proponent, consult with CDFW to determine the best course of action necessary to avoid nest abandonment or take of individuals. Work may be allowed only to proceed within the temporary nest disturbance buffer if Swainson's hawk or white-tailed kite are not exhibiting agitated behavior, such as defensive flights at intruders, getting up from a brooding position, or flying off the nest, and only with the agreement of CDFW and USFWS. The designated onsite biologist or monitor shall be on the site daily while construction-related activities are taking place within the 1,320-foot buffer and shall have the authority to stop work if raptors are exhibiting agitated behavior.

6.2.5.2 Yolo HCP/NCCP AMM 18: Western Burrowing Owl

In accordance with Yolo HCP/NCCP AMM18, planning-level surveys for burrowing owl were conducted within the Study Area. Although no burrowing owl and no suitable burrows were observed, the Study Area provides marginal potential habitat for the species. Therefore, to avoid impacts to western burrowing owl to the maximum extent practicable, the following is recommended:

- Prior to any ground disturbance during the breeding season (February 1 to August 31) related to covered activities, the qualified biologist will conduct preconstruction surveys for western burrowing owl within 14 days prior to ground disturbance consistent with CDFW preconstruction survey guidelines (CDFG 2012).
- If the biologist finds the site to be occupied by western burrowing owls during the breeding season, the Project proponent will avoid all nest sites per the Yolo HCP/NCCP during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups that forage on or near the site following fledging). Construction may occur inside of the disturbance buffer during the breeding season if the nest is not disturbed and the Project proponent develops an AMM plan that is approved by the Conservancy, CDFW, and USFWS prior to project construction, based on the following criteria:
- The Conservancy, CDFW, and USFWS approves the Project proponent's AMM plan.
- A qualified biologist monitors the owls for at least three days prior to construction to determine baseline nesting and foraging behavior (i.e., behavior without construction).
- The same qualified biologist monitors the owls during construction and finds no change in owl nesting and foraging behavior in response to construction activities.
- If the qualified biologist identifies a change in owl nesting and foraging behavior as a result of construction activities, the qualified biologist will have the authority to stop all construction related activities within the non-disturbance buffers described above. The qualified biologist will report this information to the Conservancy, CDFW, and USFWS within 24 hours, and the Conservancy will require that these activities immediately cease within the non-disturbance buffer. Construction cannot resume within the buffer until the adults and juveniles from the occupied burrows have moved out of the Project site, and the Conservancy, CDFW, and USFWS agree.
- If monitoring indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use by owls, the Project proponent may remove the no-disturbance buffer, only with concurrence from CDFW and USFWS. If the burrow cannot be avoided by construction activity, the biologist will excavate and collapse the burrow in accordance with CDFW's 2012 guidelines to prevent reoccupation after receiving approval from the wildlife agencies.
- If evidence of western burrowing owl is detected outside the breeding season (December 1 to January 31), the Project proponent will establish a non-disturbance buffer around occupied burrows, consistent with the Yolo HCP/NCCP, as determined by a qualified biologist. Construction

activities within the disturbance buffer are allowed if the following criteria are met to prevent owls from abandoning important overwintering sites:

- A qualified biologist monitors the owls for at least three days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).
- The same qualified biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.
- If there is any change in owl roosting and foraging behavior as a result of construction activities, these activities will cease within the buffer.
- If the owls are gone for at least one week, the Project proponent may request approval from the Conservancy, CDFW, and USFWS for a qualified biologist to excavate and collapse usable burrows to prevent owls from reoccupying the site if the construction activities cannot avoid the burrow. The qualified biologist will install one-way doors for a 48-hour period prior to collapsing any potentially occupied burrows. After all usable burrows are excavated, the buffer will be removed and construction may continue.

6.2.5.3 Yolo HCP/NCCP AMM 19: Least Bell's Vireo

In accordance with Yolo HCP/NCCP AMM 19, planning-level surveys for least Bell's vireo were conducted within the Study Area. The Study Area provides marginal potential habitat for the species. Therefore, the following is recommended:

- If the activity will encroach within 500 feet of habitat and there are no breeding season records for the species within one-quarter mile of the covered activity within the previous three years, the qualified biologist will conduct planning-level surveys for active territories, consistent with USFWS (2001) guidelines, during the breeding season (April 1 to July 15).
- If an occupied territory is discovered during planning-level surveys, or there is a record of the species occurring within one-quarter mile of the covered activity within the previous three years, the Project proponent will design the Project to avoid activities within 500 feet of suitable habitat, unless the Conservancy, USFWS, and CDFW approve a shorter distance.
- If an activity occurs within 500 feet of suitable habitat during the breeding season, regardless of whether or not the species was detected during planning-level surveys or there are records for the species in the area, a qualified biologist will conduct preconstruction surveys, consistent with USFWS (2001) guidelines, during the same season when the activity will occur. If active territories are found, the Project proponent will avoid activity within 500 feet of the habitat from April 1 to July 15. This buffer may be reduced with approval from the Conservancy, USFWS, and CDFW.
- The Project proponent will avoid disturbance of previous least Bell's vireo territories (up to three years since known nest activity) during the breeding season unless the disturbance is to maintain public safety. Least Bell's vireo uses previous territories; disturbance during the breeding season may preclude birds from using existing unoccupied territories.

- The required buffer may be reduced in areas where barriers or topographic relief features are adequate for protecting the nest from excessive noise or other disturbance. Conservancy staff members will coordinate with the wildlife agencies and evaluate exceptions to the minimum no-disturbance buffer distance on a case-by-case basis. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.
- If occupied territories are identified, a qualified biologist will monitor construction activities in the vicinity of all active territories to ensure that covered activities do not affect nest success.

6.2.5.4 Yolo HCP/NCCP AMM 21: Tricolored Blackbird

- The Project proponent will retain a qualified biologist to identify and quantify (in acres) TRBL nesting and foraging habitat (as defined in Appendix A, Covered Species Accounts) within 1,300 feet of the footprint of the covered activity. If a 1,300-foot buffer from nesting habitat cannot be maintained, the qualified biologist will check records maintained by the Conservancy (which will include CNDDB data and data from the TRBL portal) to determine if TRBL nesting colonies have been active in or within 1,300 feet of the Project footprint during the previous five years.
- If there are no records of nesting TRBLs on the site, the qualified biologist will conduct visual surveys to determine if an active colony is present, during the period from March 1 to July 30, consistent with protocol described by Kelsey (2008).
- If an active TRBL colony is present or has been present within the last five years within the planning-level survey area, the Project proponent will design the Project to avoid adverse effects within 1,300 feet of the colony site(s), unless the Conservancy, USFWS, and CDFW approve a shorter distance. If that is approved, the Project proponent will still maintain a 1,300-foot buffer around active nesting colonies during the nesting season but may apply the approved lesser distance outside the nesting season.

6.2.5.5 Special-Status and MBTA Protected Birds

- A qualified biologist will conduct a preconstruction survey for nesting birds within seven days of commencement of Project activities. The survey will occur within the Study Area and a 100-foot buffer. If an active nest is located, a no-disturbance buffer will be established as determined by the biologist in consultation with CDFW and maintained until the nest is confirmed to be no longer active by the biologist.

6.2.5.6 Raptors

- A qualified wildlife biologist will conduct a preconstruction survey for nesting raptors, within the Study Area and a 500-foot buffer, within 14 days of commencement of Project activities. If an active nest is located, a no-disturbance buffer will be established as determined by the biologist in consultation with CDFW and maintained until a qualified biologist determines the young have fledged and are no longer reliant upon the nest for survival.

6.2.6 Mammals

The potential exists for two special-status mammal species, pallid bat and western red bat, to occur within the Study Area (see Section 4.9.7). The following mitigation measures are recommended to minimize potential impacts to bat species:

- Prior to commencement of Project activities, a qualified biologist will survey for suitable roosting habitat (e.g., trees or artificial structures) within the Study Area. If no suitable roosting habitat is identified, no further measures are necessary.
- If suitable roosting habitat is identified and cannot be avoided appropriately (as determined by a qualified biologist), a qualified biologist will conduct an evening bat emergence survey that may include acoustic monitoring to determine whether or not bats are present. If roosting bats are found, consultation with CDFW is required prior to initiation of Project activities.

6.3 Riparian Habitat and Sensitive Natural Communities

While the Study Area does not support Sensitive Natural Communities (see Section 4.7), riparian vegetation is present within the Study Area. The following mitigation measures are recommended to minimize potential impacts to riparian vegetation:

- A Yolo HCP/NCCP Permit and take coverage must be obtained for covered activities and take of covered species. Permittees must comply with the Avoidance and Minimization Measures set forth in the Yolo HCP/NCCP, and Yolo HCP/NCCP fees must be paid to the Conservancy or in-lieu mitigation provided, subject to Conservancy approval.
- A SAA, pursuant to Section 1602 of the California Fish and Game Code, must be obtained for any activity that will impact riparian habitats. Minimization measures will be developed during consultation with CDFW as part of the SAA process to ensure protections for affected fish and wildlife resources.

6.4 Aquatic Resources

The Study Area supports aquatic resources that have been delineated (Figure 3), and that are potential waters of the U.S. and waters of the state subject to the USACE's and RWQCB's verification, respectively. The following mitigation measures are recommended to minimize potential impacts to waters of the U.S.:

- A permit authorization to fill wetlands under the Section 404 of the federal Clean Water Act (Section 404 Permit) must be obtained from USACE prior to discharging any dredged or fill materials into any waters of the U.S. Final mitigation measures will be developed as part of the Section 404 Permit process to ensure no-net-loss of wetland function and values.
- A permit authorization from the RWQCB pursuant to Section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Act must be obtained prior to the discharge of material in an area that could affect waters of the U.S./state. Mitigation requirements for discharge to waters of the U.S./state will be developed in consultation with the RWQCB.

- A SAA from CDFW pursuant to Section 1602 of the California Fish and Game Code must be obtained for impacts to features (e.g., the bed, channel, or bank of any river, stream, or lake) that may be subject to Section 1600 of the Fish and Game Code.

6.5 Local Policies, Ordinances, and Other Plans

The Study Area occurs within the Yolo HCP/NCCP area. The following mitigation measures are recommended to assure compliance with local plans and policies:

- A Yolo HCP/NCCP Permit and take coverage must be obtained for covered activities and take of covered species. Permittees must comply with the AMMs set forth in the Yolo HCP/NCCP, and Yolo HCP/NCCP fees must be paid to the Conservancy or in-lieu mitigation provided, subject to Conservancy approval.

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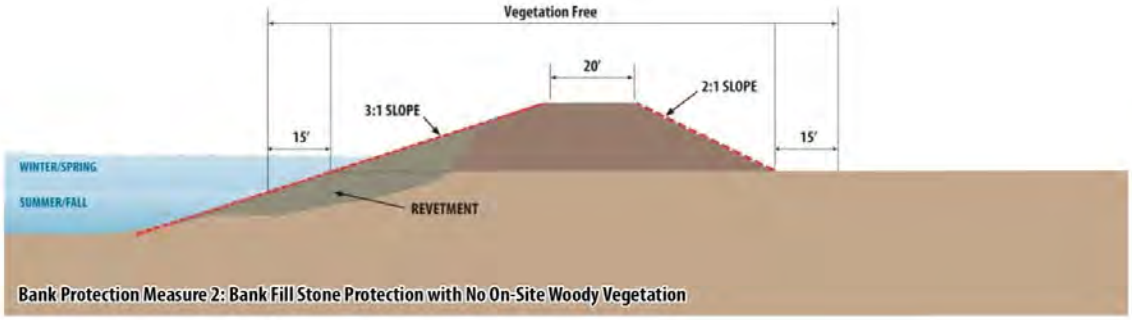
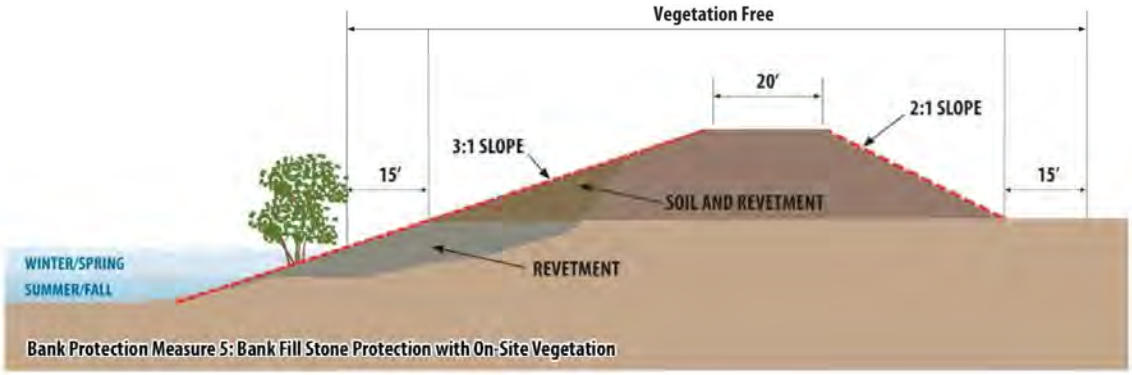
LIST OF ATTACHMENTS

ATTACHMENT A

Typical Bank Protection Measures





Reference: Sacramento River Bank Protection Project Public Draft Environmental Impact Statement/ Environmental Impact Report (U.S. Army Corps of Engineers & HDR Engineering, Inc. November 2014)

Figure 3. Typical Bank Protection Measures
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

ATTACHMENT B

Representative Photographs

Photo 1. View of the emergent vegetation and trees within the ridge cut channel, view west, 03/23/2021.

Photo 2. View of the west ridge cut bank and channel, view northeast, 03/25/2021.

Photo 3. View of the land side of the west ridge cut levee, view northeast, 05/20/2021.

Photo 4. An elderberry shrub growing on the east ridge cut bank, view north. 03/24/2021.

ATTACHMENT C

Wildlife Species Observed Onsite

Attachment C

Wildlife Species Observed during March 23-25 and May 20, 2021

Species Name	Scientific Name
Birds	
Gadwall	*Mareca strepera*
Wild Turkey	*Meleagris gallopavo*
Pied-billed Grebe	*Podilymbus podiceps*
Mallard	*Anas platyrhynchos*
California Quail	*Callipepla californica*
Mourning Dove	*Zenaida macroura*
American Coot	*Fulica americana*
Killdeer	*Charadrius vociferus*
Long-billed Curlew	*Numenius americanus*
Ring-billed Gull	*Larus delawarensis*
Double-crested Cormorant	*Nannopterum auritum*
American White Pelican	*Pelecanus erythrorhynchos*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Black-crowned Night-Heron	*Nycticorax nycticorax*
Turkey Vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
Swainson's Hawk	*Buteo swainsoni*
Red-tailed Hawk	*Buteo jamaicensis*
Belted Kingfisher	*Megaceryle alcyon*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Downy Woodpecker	*Dryobates pubescens*
American Kestrel	*Falco sparverius*
California Scrub-Jay	*Aphelocoma californica*
Northern Flicker	*Colaptes auratus*
Oak Titmouse	*Baeolophus inornatus*
Tree Swallow	*Tachycineta bicolor*
Cliff Swallow	*Petrochelidon pyrrhonota*
Bushtit	*Psaltriparus minimus*
White-breasted Nuthatch	*Sitta carolinensis*
Green Honeycreeper	*Chlorophanes spiza*
California Gnatcatcher	*Polioptila californica*
Marsh Wren	*Cistothorus palustris*
Bewick's Wren	*Thryomanes bewickii*
Ruby-crowned Kinglet	*Corthylio calendula*

Species Name	Scientific Name
Birds	
Northern Mockingbird	*Mimus polyglottos*
European Starling	*Sturnus vulgaris*
American Robin	*Turdus migratorius*
Pine Siskin	*Spinus pinus*
Dark-eyed Junco	*Junco hyemalis*
White-crowned Sparrow	*Zonotrichia leucophrys*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
Song Sparrow	*Melospiza melodia*
California Towhee	*Melozone crissalis*
Spotted Towhee	*Pipilo maculatus*
Red-winged Blackbird	*Agelaius phoeniceus*
Brown-headed Cowbird	*Molothrus ater*
Yellow-rumped Warbler	*Setophaga coronata*
Mammals	
American Mink	*Neovison vison*
River Otter	*Lontra canadensis*
Racoon	*Procyon lotor*
Reptile	
Western Pond Turtle	*Actinemys marmorata*
Valley Garter Snake	*Thamnophis sirtalis fitchi*
Red-Eared Slider	*Trachemys scripta*

ATTACHMENT D

Special-Status Species Queries

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Knights Landing (3812176) OR Grays Bend (3812166) OR Taylor Monument (3812165) OR Woodland (3812167) OR Davis (3812156) OR Sacramento West (3812155) OR Merritt (3812157) OR Verona (3812175) OR Nicolaus (3812185) OR Eldorado Bend (3812177) OR Sutter Causeway (3812186) OR Kirkville (3812187))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3	S2S3	WL
Anthicus antiochensis Antioch Dunes anthicid beetle	IICOL49020	None	None	G1	S1	
Anthicus sacramento Sacramento anthicid beetle	IICOL49010	None	None	G1	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus tener var. ferrisiae Ferris' milk-vetch	PDFAB0F8R3	None	None	G2T1	S1	1B.1
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	IICOL02106	None	None	G5TH	SH	
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S3	
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elderberry Savanna Elderberry Savanna	CTT63440CA	None	None	G2	S2.1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco columbarius merlin	ABNKD06030	None	None	G5	S3S4	WL
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	G2	S2.1	
Great Valley Mixed Riparian Forest Great Valley Mixed Riparian Forest	CTT61420CA	None	None	G2	S2.2	
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lasiurus blossevillii western red bat	AMACC05060	None	None	G4	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lepidium latipes var. heckardii Heckard's pepper-grass	PDBRA1M0K1	None	None	G4T1	S1	1B.2
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Oncorhynchus tshawytscha pop. 11 chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	G5T1T2Q	S2	
Oncorhynchus tshawytscha pop. 7 chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	G5T1Q	S1	
Plegadis chihi white-faced ibis	ABNGE02020	None	None	G5	S3S4	WL
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S2	
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Trichocoronis wrightii var. wrightii Wright's trichocoronis	PDAST9F031	None	None	G4T3	S1	2B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Valley Oak Woodland Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 66

Inventory of Rare and Endangered Plants of California

California Native Plant Society

Search Results

20 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3812176:3812166:3812165:3812167:3812156:3812155:3812157:3812175:3812185:3812177:3812186:3812187**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Astragalus pauperculus	depauperate milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G4	S4	4.3	 ©2012 Tim Kellison
Astragalus tener var. *ferrisiae*	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	None	None	G2T1	S1	1B.1	No Photo Available
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	No Photo Available
Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	No Photo Available
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	No Photo Available
Centromadia parryi ssp. *parryi*	pappose tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.2	No Photo Available
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	No Photo Available
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	No Photo Available
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	No Photo Available
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G4T1	S1	1B.2	No Photo Available
Lessingia hololeuca	woolly-headed	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3	

	lessingia									No Photo Available
Navarretia cotulifolia	cotula navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G4	S4	4.2	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G3	S2	1B.2	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	No Photo Available
Sidalcea keckii	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	1B.1	No Photo Available
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	No Photo Available
Trichocoronis wrightii var. *wrightii*	Wright's trichocoronis	Asteraceae	annual herb	May-Sep	None	None	G4T3	S1	2B.1	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available

Showing 1 to 20 of 20 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v9-01 1.0). Website https://www.rareplants.cnps.org [accessed 6 December 2021].

IPaC **U.S. Fish & Wildlife Service**

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

Yolo County, California

Local offices

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

San Francisco Bay-Delta Fish And Wildlife

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

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814

http://kim_squires@fws.gov

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

Western Snowy Plover Charadrius nivosus nivosus — Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/8035

Yellow-billed Cuckoo Coccyzus americanus — Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/3911

Reptiles

NAME	STATUS

Giant Garter Snake Thamnophis gigas — Threatened

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii — Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/2891

California Tiger Salamander Ambystoma californiense — Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/2076

Fishes

NAME	STATUS

Delta Smelt Hypomesus transpacificus — Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Palmate-bracted Bird's Beak Cordylanthus palmatus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1616	Endangered

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Black Turnstone Arenaria melanocephala — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Burrowing Owl Athene cunicularia — Breeds Mar 15 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9737

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ

"Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

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

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

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

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

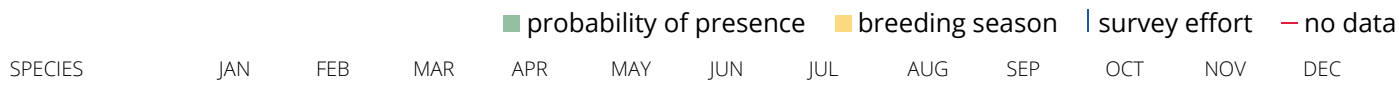
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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

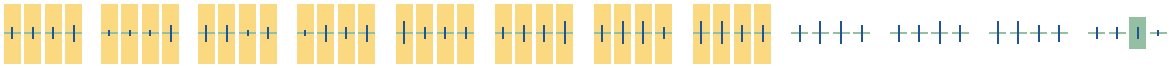
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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

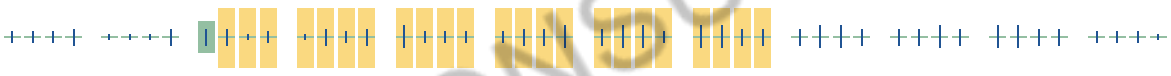


Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

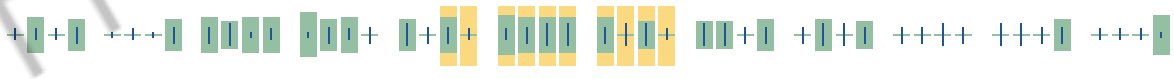


Black Turnstone BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

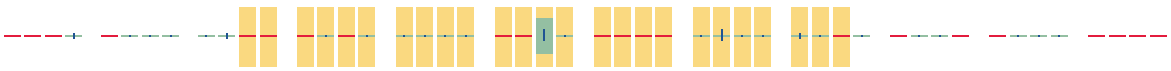
Burrowing Owl BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



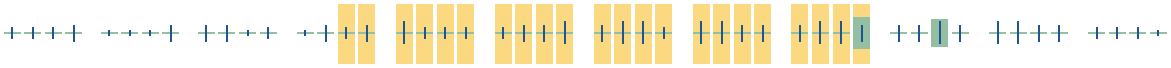
Common Yellowthroat BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Lawrence's Goldfinch BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lewis's Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-billed Curlew BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

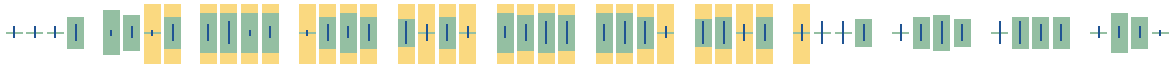
Marbled Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nuttall's Woodpecker BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

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

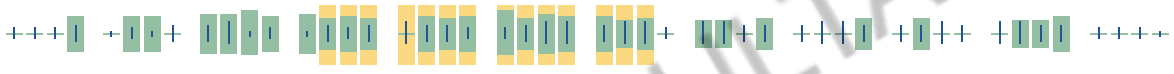
Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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

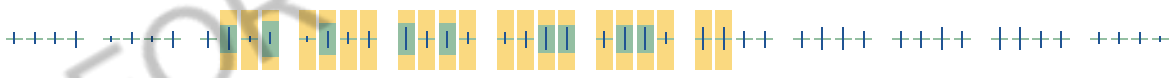


SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

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



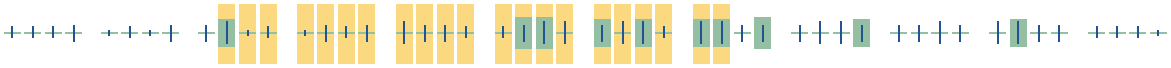
Tricolored Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



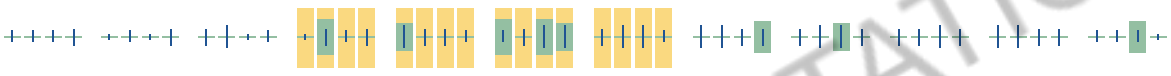
Whimbrel BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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

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



Yellow-billed Magpie BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

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

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

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go 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, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

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

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

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

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Kx
- PEM1F
- PEM1C
- PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND

- PSSKx
- PFOKx

FRESHWATER POND

- PUBFx
- PUBHx

RIVERINE

- R2UBHx
- R5UBFx
- R2USAx
- R4SBCx
- R4SBC
- R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

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 E

Yolo HCP/NCCP Modeled Species Habitat Maps

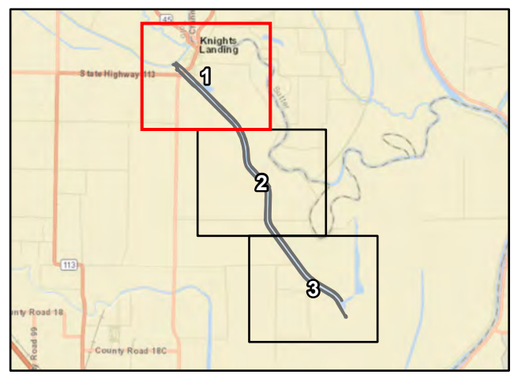
Map Contents

- Project Study Area - 295.6 acres
- 165' Buffer

Valley Elderberry Longhorn Beetle Habitat Type

- Non-riparian Habitat
- Riparian Habitat

Sources: NAIP 2018



ECORP- N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Valley Elderberry Longhorn Beetle
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

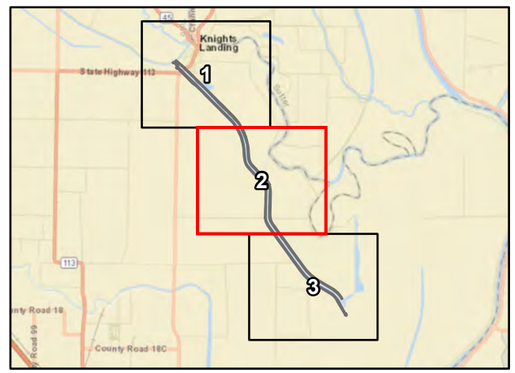
Map Contents

- Project Study Area - 295.6 acres
- 165' Buffer

Valley Elderberry Longhorn Beetle Habitat Type

- Riparian Habitat

Sources: NAIP 2018



Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

N

Modeled Species Habitat
Valley Elderberry Longhorn Beetle
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

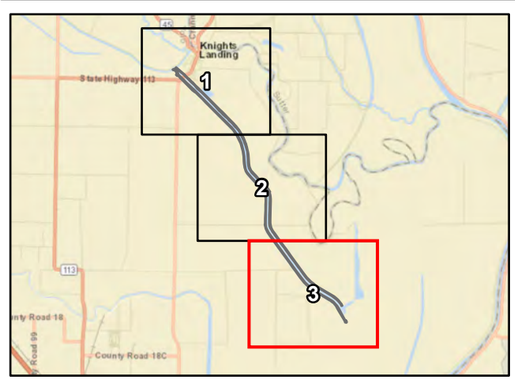
Map Contents

- Project Study Area - 295.6 acres
- 165' Buffer

Valley Elderberry Longhorn Beetle Habitat Type

- Non-riparian Habitat
- Riparian Habitat

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

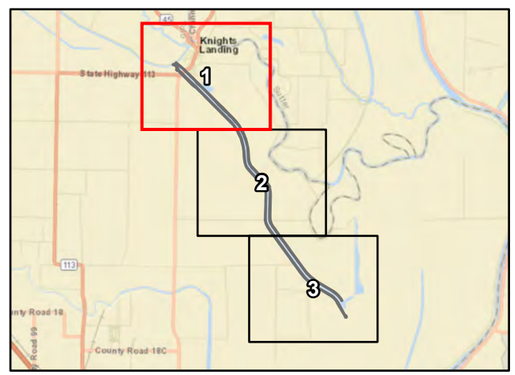
Scale in Feet
0 1,200

Modeled Species Habitat
Valley Elderberry Longhorn Beetle
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
California Tiger Salamander
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

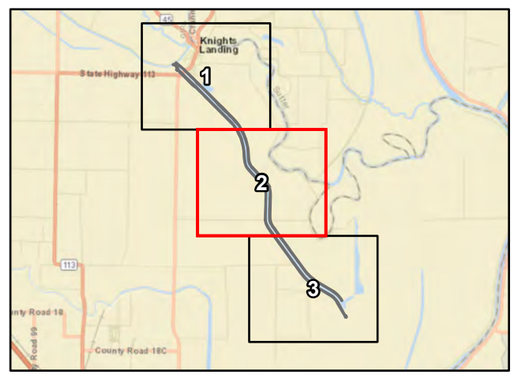
Project Study Area - 295.6 acres

500' Buffer

California Tiger Salamander Habitat Type

Upland Habitat

Sources: NAIP 2018



Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
California Tiger Salamander
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

Map Contents

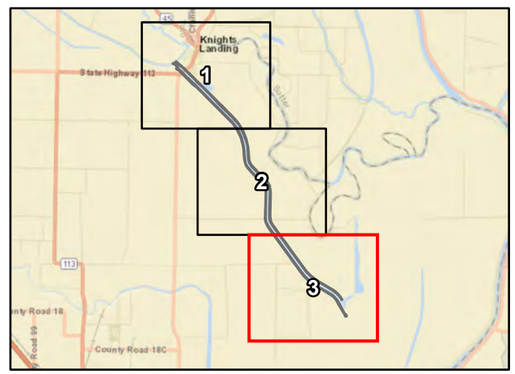
Project Study Area - 295.6 acres

500' Buffer

California Tiger Salamander Habitat Type

Upland Habitat

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
California Tiger Salamander
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

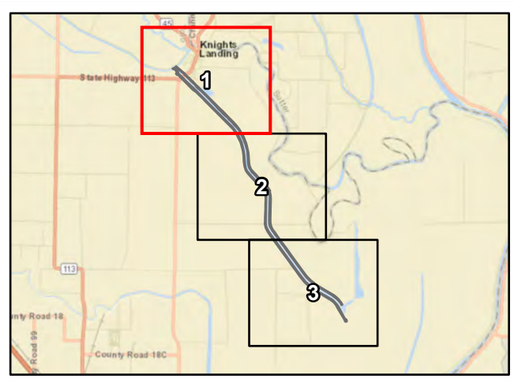
Project Study Area - 295.6 acres

Western Pond Turtle Habitat Type

Aquatic Habitat

Nesting and Overwintering Habitat

Sources: NAIP 2018



ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Western Pond Turtle
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

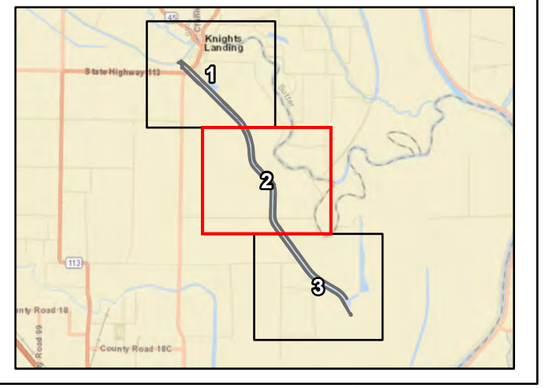
Project Study Area - 295.6 acres

Western Pond Turtle Habitat Type

Aquatic Habitat

Nesting and Overwintering Habitat

Sources: NAIP 2018



ECORP- N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Western Pond Turtle
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

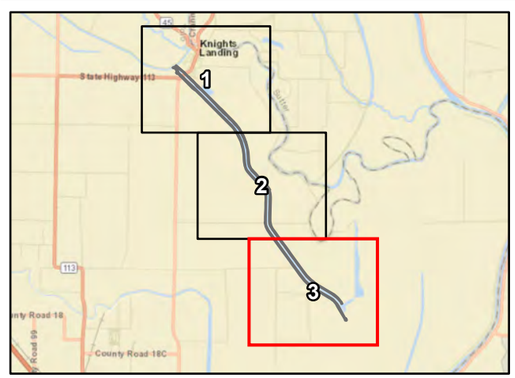
Project Study Area - 295.6 acres

Western Pond Turtle Habitat Type

Aquatic Habitat

Nesting and Overwintering Habitat

Sources: NAIP 2018



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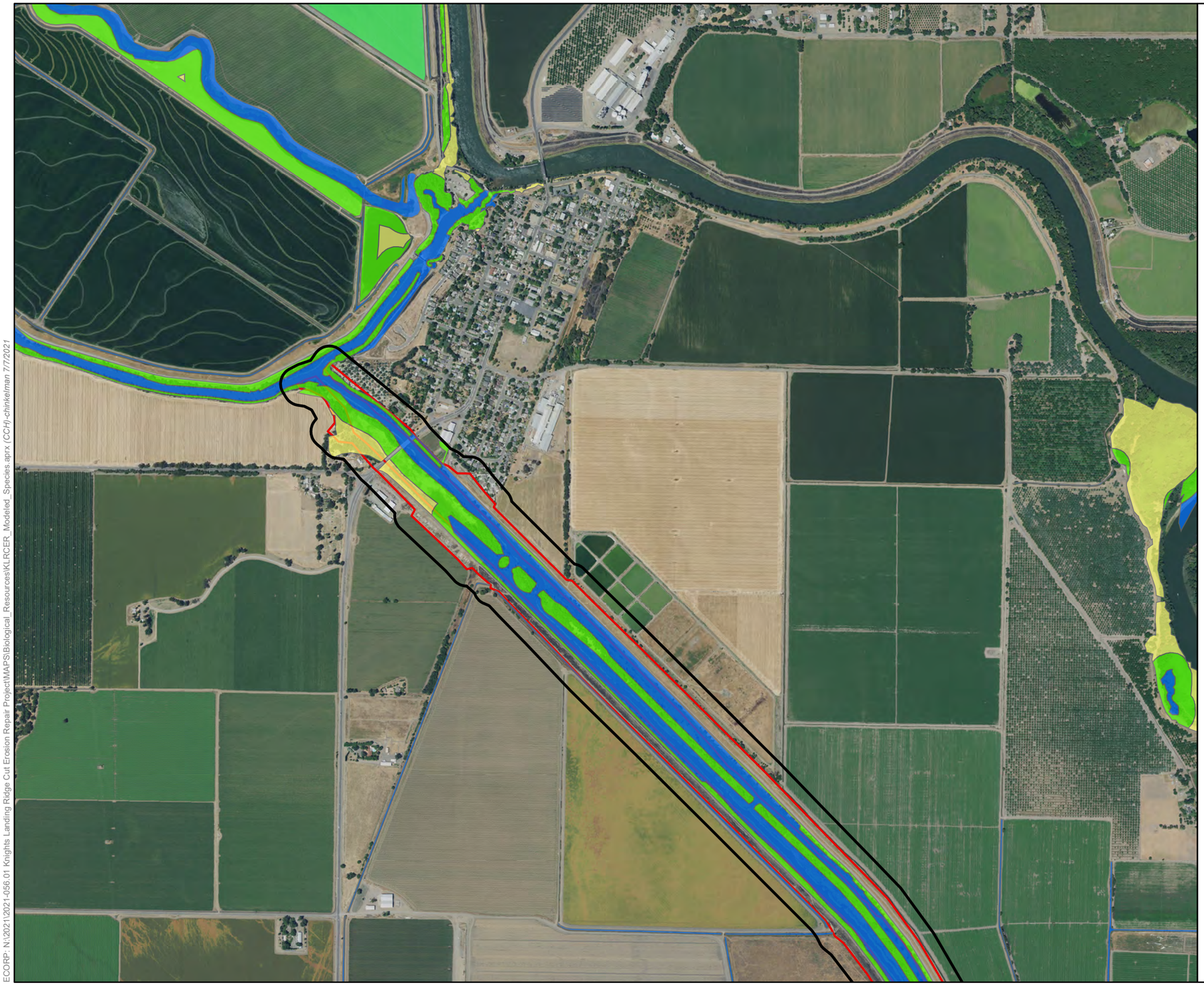
Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Western Pond Turtle
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project



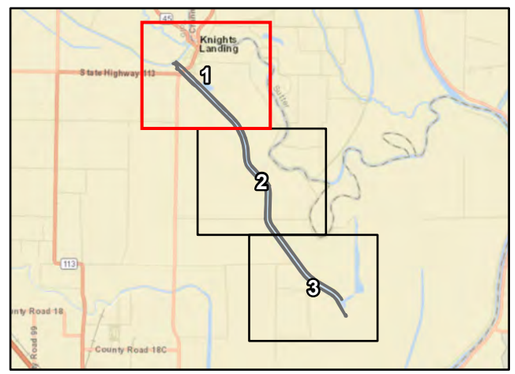
Map Contents

- Project Study Area - 295.6 acres
- 200' Buffer

Giant Garter Snake Habitat Type

- Active Season Upland Movement
- Aquatic Habitat
- Overwintering Habitat
- Rice Habitat

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Giant Garter Snake
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

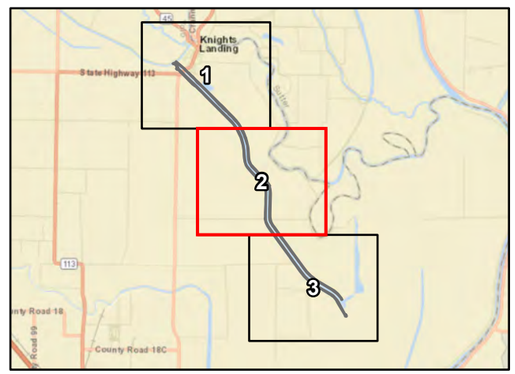
Map Contents

- Project Study Area - 295.6 acres
- 200' Buffer

Giant Garter Snake Habitat Type

- Active Season Upland Movement
- Aquatic Habitat
- Overwintering Habitat

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Giant Garter Snake
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

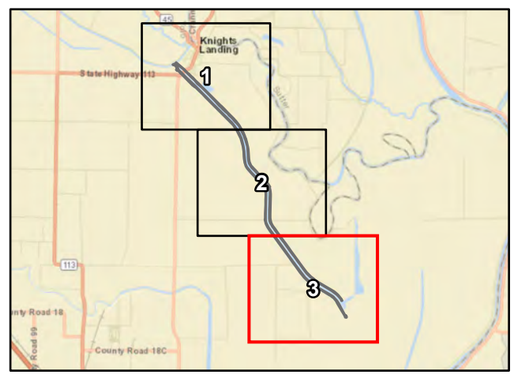
Map Contents

- Project Study Area - 295.6 acres
- 200' Buffer

Giant Garter Snake Habitat Type

- Active Season Upland Movement
- Aquatic Habitat
- Fresh Emergent Wetland
- Overwintering Habitat
- Rice Habitat

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Giant Garter Snake
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

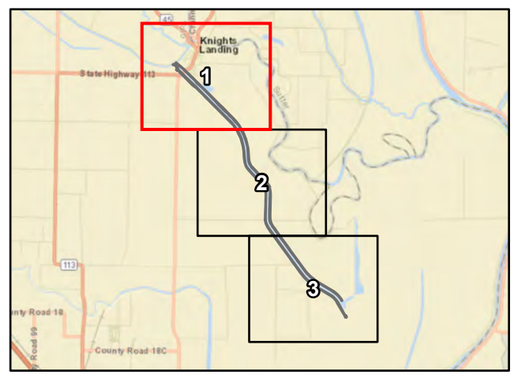
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Yellow-billed Cuckoo Habitat Type

- Nesting/Foraging Habitat

Sources: NAIP 2018



ECORP- N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 8/5/2021

Map Date: 7/7/2021

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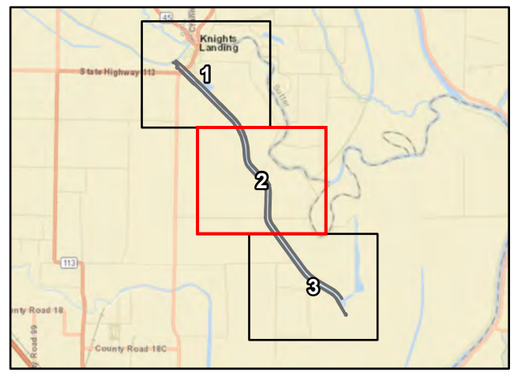
Scale in Feet
0 1,200

Modeled Species Habitat
Yellow-billed Cuckoo
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Sources: NAIP 2018



Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Yellow-billed Cuckoo
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 8/5/2021

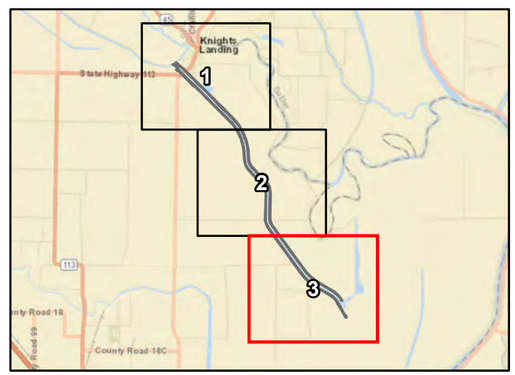
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Yellow-billed Cuckoo Habitat Type

- Nesting/Foraging Habitat

Sources: NAIP 2018



ECORP- N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 8/5/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
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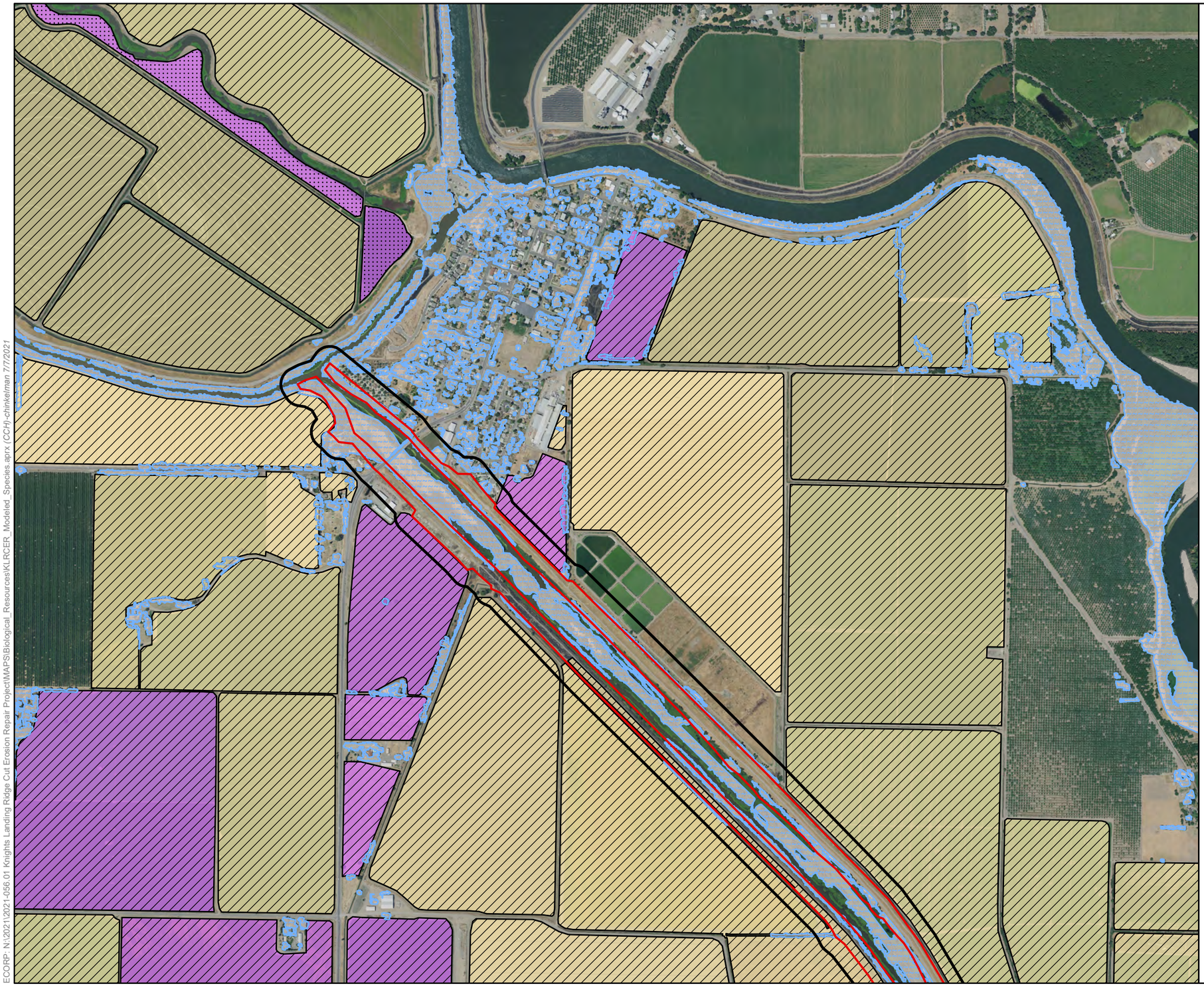
Scale in Feet
0 1,200

Modeled Species Habitat
Yellow-billed Cuckoo
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project



Map Contents

- Project Study Area - 295.6 acres
- 200' Buffer

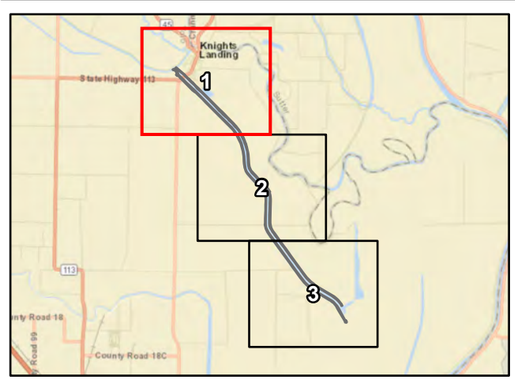
Swainsons Hawk Habitat Type

- Agricultural Foraging
- Natural Foraging
- Nesting Habitat

White-tailed Kite Habitat Type

- Nesting Habitat
- Primary Foraging
- Secondary Foraging

Sources: NAIP 2018



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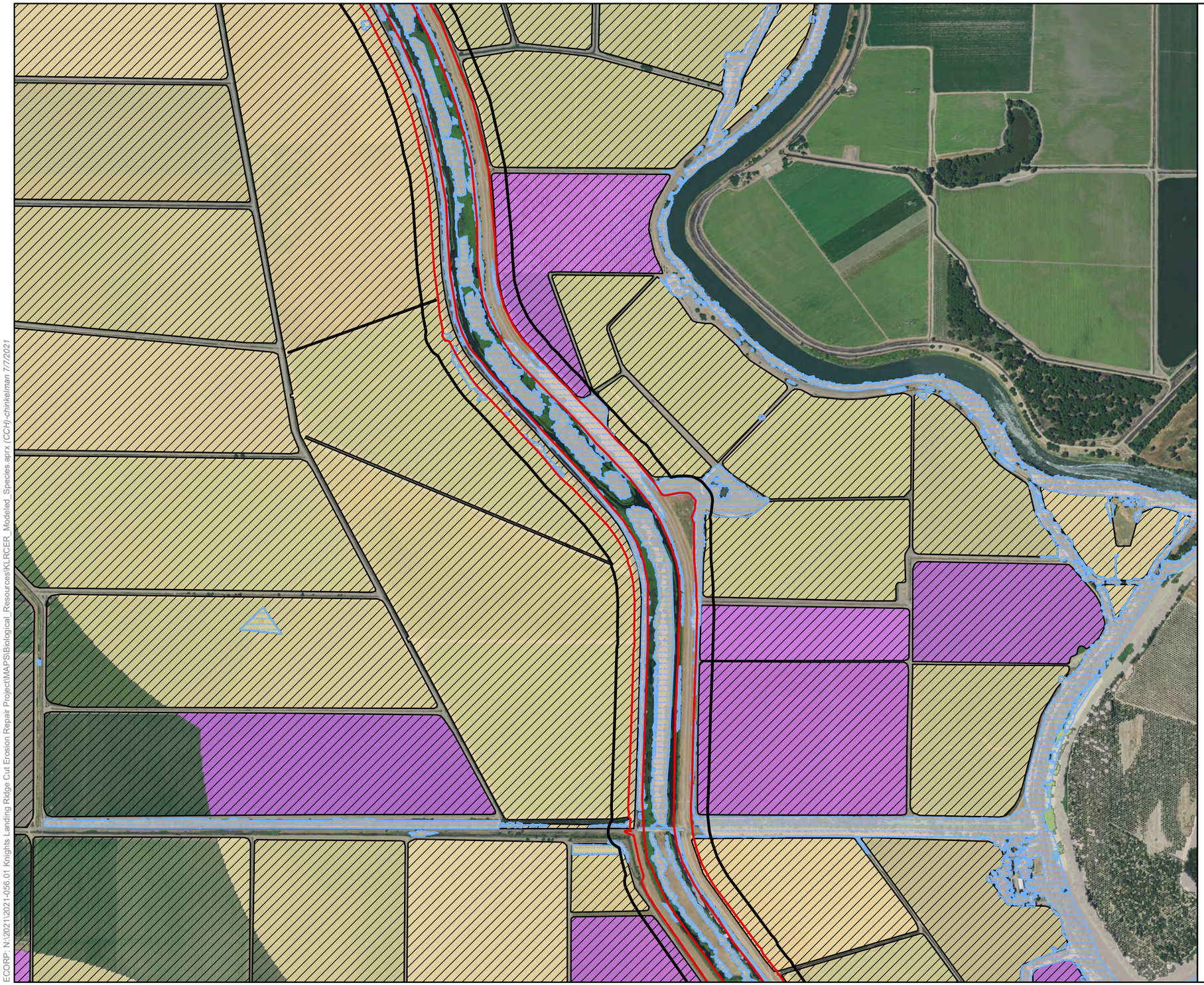
Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Swainson's Hawk and White-tailed Kite
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project



Map Contents

- Project Study Area - 295.6 acres
- 200' Buffer

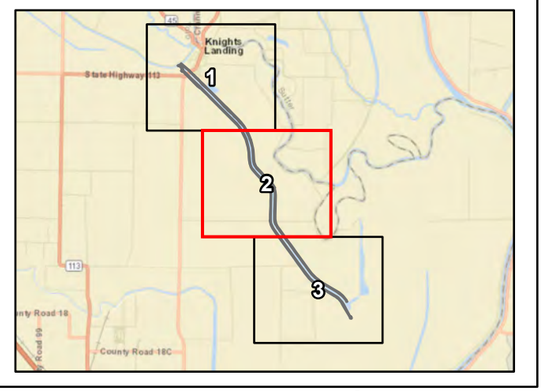
Swainsons Hawk Habitat Type

- Agricultural Foraging
- Nesting Habitat

White-tailed Kite Habitat Type

- Nesting Habitat
- Primary Foraging
- Secondary Foraging

Sources: NAIP 2018



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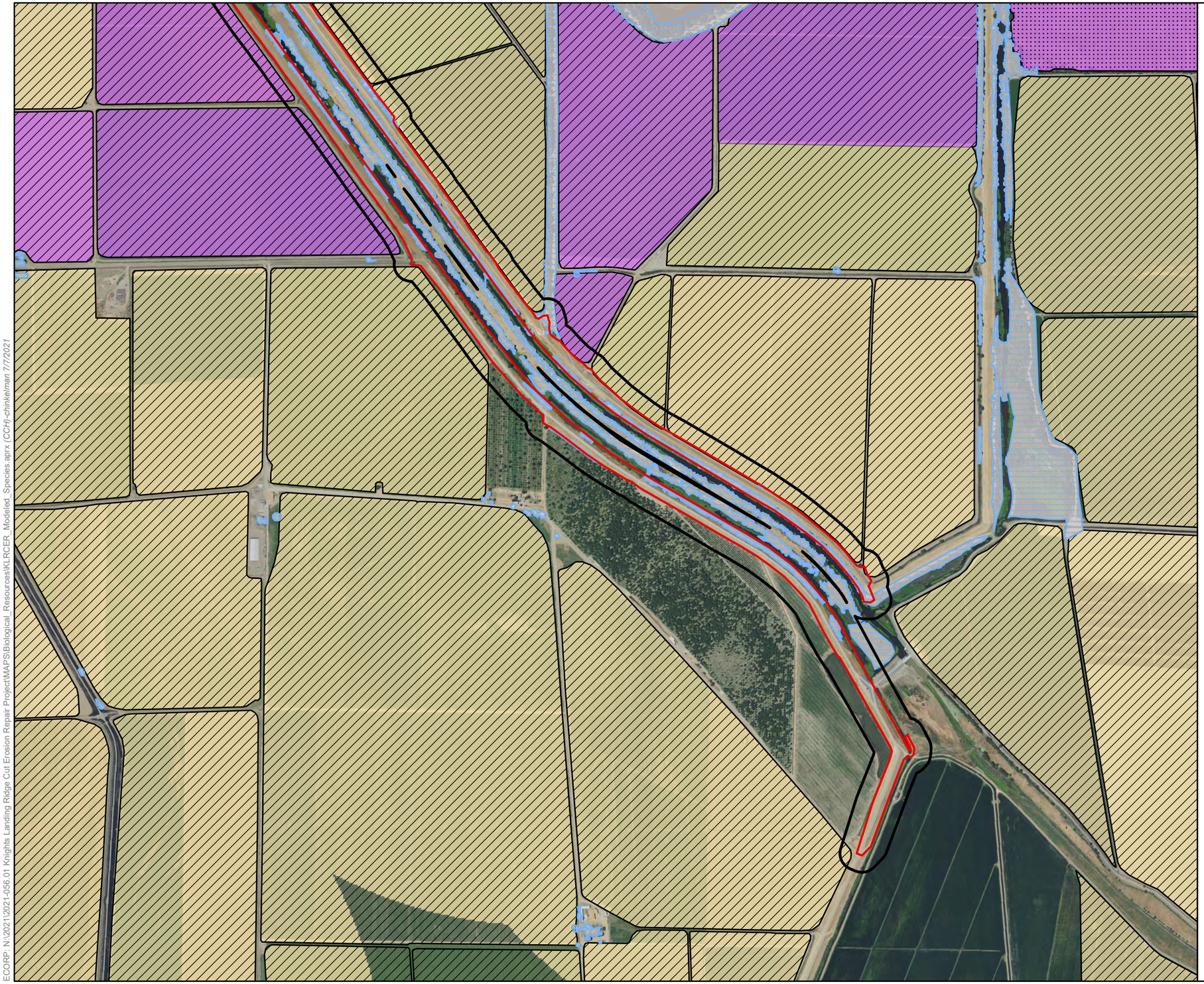
Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

N

Modeled Species Habitat
Swainson's Hawk and White-tailed Kite
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project



Map Contents

- Project Study Area - 295.6 acres
- 200' Buffer

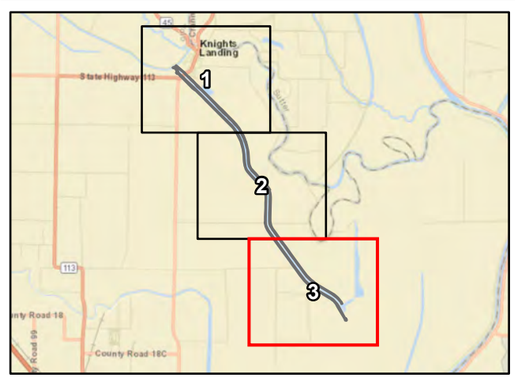
Swainsons Hawk Habitat Type

- Agricultural Foraging
- Natural Foraging
- Nesting Habitat

White-tailed Kite Habitat Type

- Nesting Habitat
- Primary Foraging
- Secondary Foraging

Sources: NAIP 2018



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Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Swainson's Hawk and White-tailed Kite
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

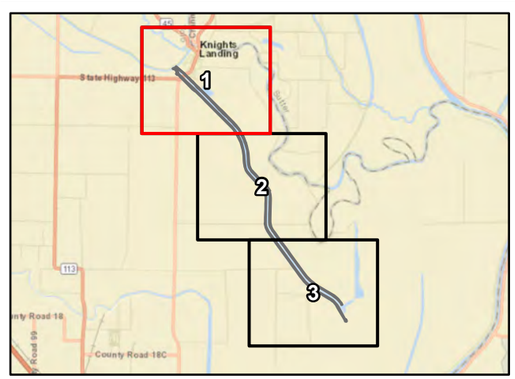
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Western Burrowing Owl Habitat Type

- Primary habitat
- Other habitat

Sources: NAIP 2018



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Map Date: 8/11/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,000

Modeled Species Habitat
Western Burrowing Owl
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

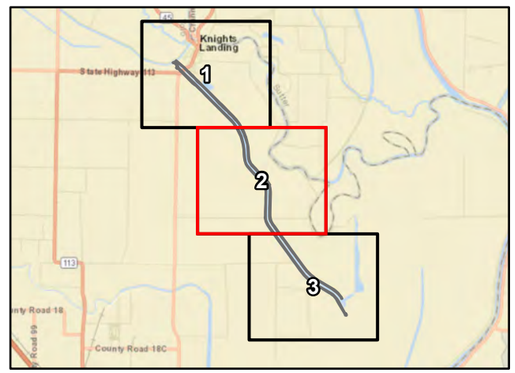
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Western Burrowing Owl Habitat Type

- Other habitat

Sources: NAIP 2018



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Map Date: 8/11/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,000

Modeled Species Habitat
Western Burrowing Owl
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

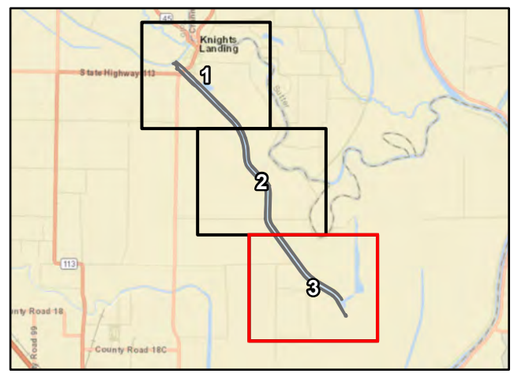
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Western Burrowing Owl Habitat Type

- Primary habitat
- Other habitat

Sources: NAIP 2018



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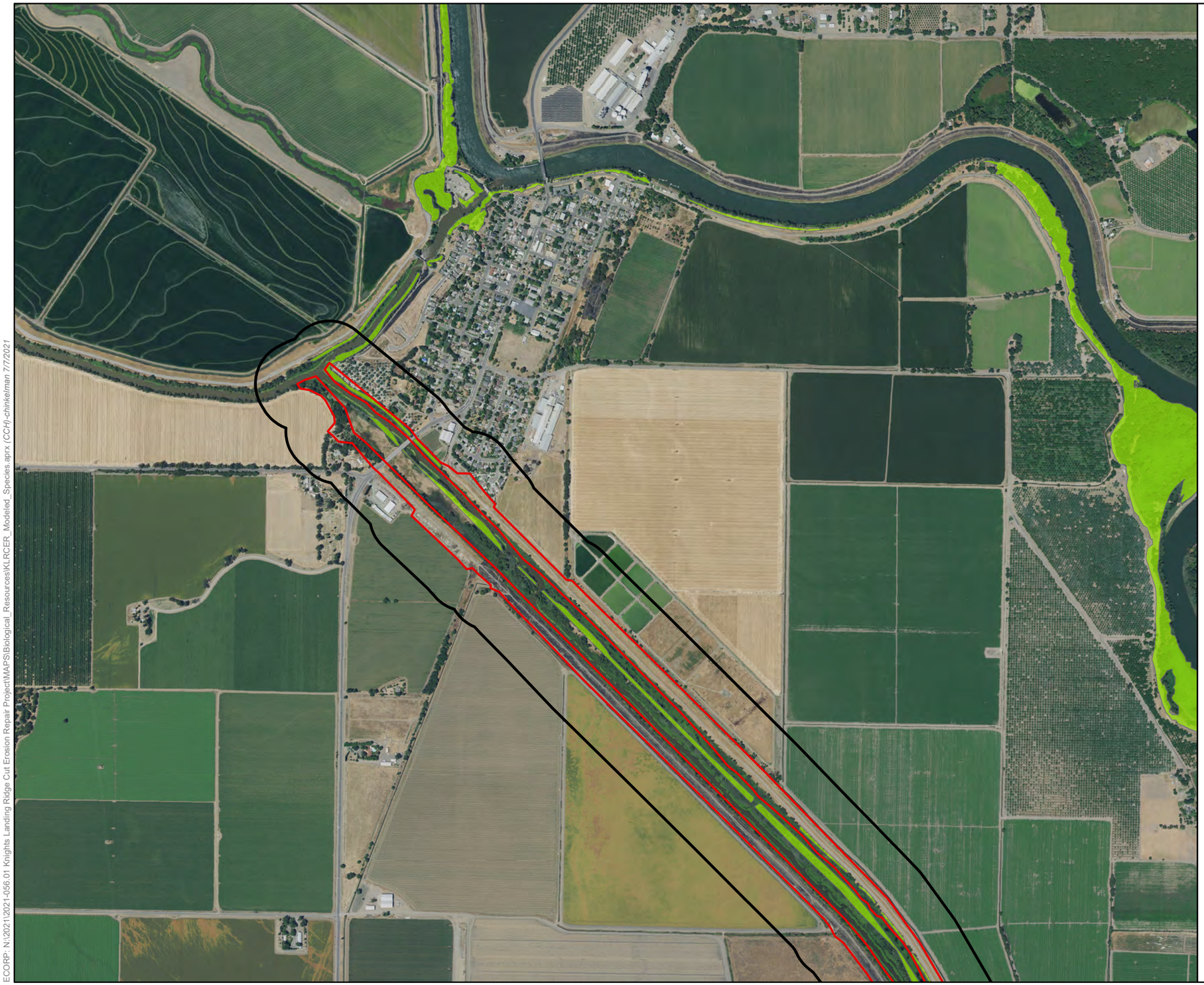
Map Date: 8/11/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,000

Modeled Species Habitat
Western Burrowing Owl
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project



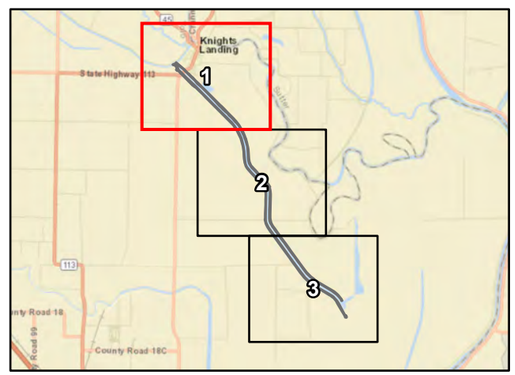
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Least Bells Vireo Habitat Type

- Nesting/Foraging Habitat

Sources: NAIP 2018



ECORP- N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Least Bell's Viero
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

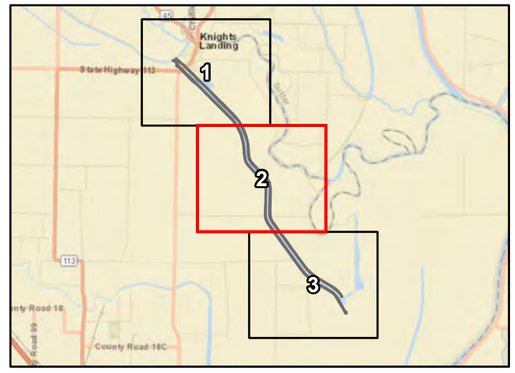
Project Study Area - 295.6 acres

500' Buffer

Least Bells Vireo Habitat Type

Nesting/Foraging Habitat

Sources: NAIP 2018



Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Least Bell's Viero
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH) -chinkelman 7/7/2021

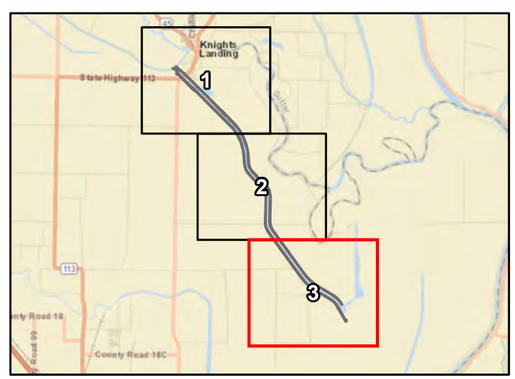
Map Contents

- Project Study Area - 295.6 acres
- 500' Buffer

Least Bells Vireo Habitat Type

- Nesting/Foraging Habitat

Sources: NAIP 2018



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Map Date: 7/7/2021

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Scale in Feet
0 1,200

Modeled Species Habitat
Least Bell's Viero
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

Map Contents

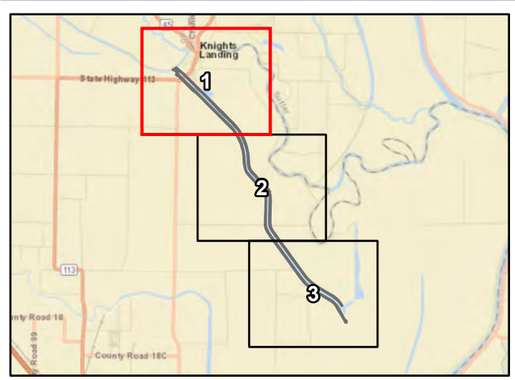
Project Study Area - 295.6 acres

1,300' Buffer

Tricolored Blackbird Habitat Type

Foraging Habitat

Sources: NAIP 2018



ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species.aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Tricolored Blackbird
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

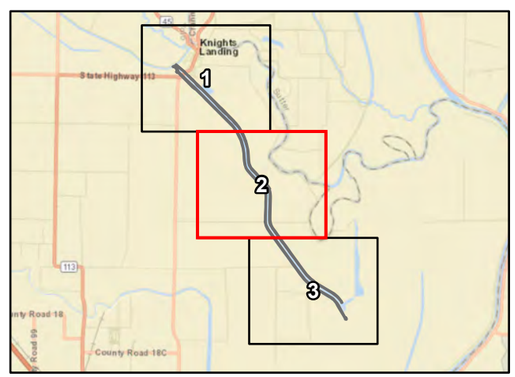
Map Contents

- Project Study Area - 295.6 acres
- 1,300' Buffer

Tricolored Blackbird Habitat Type

- Foraging Habitat
- Nesting Habitat

Sources: NAIP 2018



ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species.aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 1,200

Modeled Species Habitat
Tricolored Blackbird
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

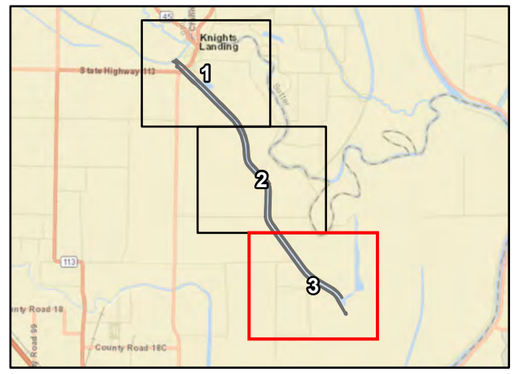
Map Contents

- Project Study Area - 295.6 acres
- 1,300' Buffer

Tricolored Blackbird Habitat Type

- Foraging Habitat
- Nesting Habitat

Sources: NAIP 2018



ECORP: N:\2021\2021-056.01 Knights Landing Ridge Cut Erosion Repair Project\MAPS\Biological_Resources\KLRCER_Modeled_Species aprx (CCH)-chinkelman 7/7/2021

Map Date: 7/7/2021

ECORP Consulting, Inc.
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Scale in Feet
0 1,200

Modeled Species Habitat
Tricolored Blackbird
2021-056.01 Knights Landing Ridge Cut Erosion Repair Project

ATTACHMENT F

Potentially Occurring Special-Status Species

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Plants						
Depauperate milk-vetch (*Astragalus pauperculus*)	-	-	4.3	Occurs within vernally mesic and volcanic soils in chaparral, cismontane woodland, and valley and foothill grasslands (197'-3,986')	March-June	Absent. No suitable habitat within Study Area.
Ferris' milk-vetch (*Astragalus tener* var. *ferrisiae*)	–	–	1B.1	Vernally mesic meadows and seeps and in sub-alkaline flats within valley and foothill grasslands (7'–246').	April–May	Absent. No suitable habitat within Study Area.
Alkali milk-vetch (*Astragalus tener* var. *tener*)	–	–	1B.2	Alkaline soils in playas, valley and foothill grasslands (adobe clay), and vernal pools (3'–197').	March–June	Absent. No suitable habitat within Study Area.
Heartscale (Atriplex cordulata var. cordulata)	–	–	1B.2	Alkaline or saline valley and foothill grasslands, meadows and seeps, and chenopod scrub communities (0'–1,837').	April–October	Absent. Study Area is outside of current known geographical range for this species. The species is presumed extirpated from the vicinity of the Study Area (CDFW 2021)
Brittlescale (*Atriplex depressa*)	–	–	1B.2	Alkaline and clay soils within chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools (3'–1,050').	April–October	Low Potential to Occur. There are two CNDDB records of this species within five miles of the Study Area (CDFW 2021), and marginally suitable potential habitat (slightly to moderately saline soils) occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	–	–	1B.2	Often on alkaline soils within chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, vernally mesic valley and foothill grassland (0'–1,378').	May–November	Low Potential to Occur. Marginally suitable potential habitat (slightly to moderately saline soils) occurs within Study Area.
Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*)	–	–	4.2	Alkaline, vernally mesic areas, and seeps in valley and foothill grassland and vernal pools, sometimes found on roadsides (0'–328').	May–October	Low Potential to Occur. Marginally suitable potential habitat (slightly to moderately saline soils) occurs within Study Area.
Palmate-bracted bird's-beak (*Chloropyron palmatum*)	FE	CE	1B.1; Yolo HCP/ NCCP	Alkaline areas in chenopod scrub and valley and foothill grassland (16'–509').	May–October	Low Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and marginally suitable potential habitat (slightly to moderately saline soils) occurs within Study Area.
San Joaquin spearscale (*Extriplex joaquinana*)	–	–	1B.2	Alkaline soils in chenopod scrub, meadows seeps, playas, and valley and foothill grassland (3'–2,740').	April–October	Low Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and marginally suitable potential habitat (slightly to moderately saline soils) occurs within Study Area.
Stinkbells (*Fritillaria agrestis*)	–	–	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland (33'–5,102').	March–June	Low Potential to Occur. Marginally suitable habitat (clay soils in ruderal grassland) within Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)	–	–	1B.2	Marshes and freshwater swamps. Often in riprap on sides of levees (0'–394').	June–September	Potential to Occur. There are three CNDDB records of this species within five miles of the Study Area (CDFW 2021), and suitable habitat (edges of aquatic resources) occurs within Study Area.
Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*)	–	–	1B.2	Alkaline flats within valley and foothill grasslands (7'–656').	March–May	Low Potential to Occur. Marginally suitable potential habitat (slightly to moderately saline soils) occurs within Study Area.
Woolly-headed lessingia (*Lessingia hololeuca*)	–	–	3	Clay or serpentinite soils in broadleaf upland forests, coastal scrub, lower montane coniferous forests, and valley and foothill grassland (50'–1,000').	June–October	Low Potential to Occur. Marginally suitable habitat (clay soils in ruderal grassland) within Study Area.
Cotula navarretia (*Navarretia cotulifolia*)	–	–	4.2	Adobe soils of chaparral, cismontane woodland, and valley and foothill grassland (13'–6,004').	May–June	Low Potential to Occur. Marginally suitable habitat (clay soils in ruderal grassland) within Study Area.
California alkali grass (*Puccinellia simplex*)	–	–	1B.2	Alkaline, vernally mesic areas and sinks, flats and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools (7'–3,051').	March–May	Low Potential to Occur. Marginally suitable potential habitat (slightly to moderately saline soils) within Study Area.
Keck's checkerbloom (*Sidalcea keckii*)	FE	–	1B.1	Serpentinite and clay soils within cismontane woodland and valley and foothill grasslands (246'–2,133').	April–May	Absent. Study Area is outside of known geographical range for this species (USFWS 2020).

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Sanford's arrowhead (*Sagittaria sanfordii*)	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Potential to Occur. Suitable habitat (edges of aquatic resources) in Study Area.
Suisun marsh aster (*Symphyotrichum lentum*)	–	–	1B.2	Brackish and freshwater marshes and swamps (0'–10').	May–November	Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and suitable habitat (edges of aquatic resources) in Study Area.
Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)	–	–	2B.1	Alkaline soils in meadows and seeps, marshes and swamps, riparian forest, and vernal pools (16'–1,427').	May–September	Absent. Study Area is outside of current known geographical range for this species.
Saline clover (*Trifolium hydrophilum*)	–	–	1B.2	Marshes and swamps, vernal pools, and mesic alkaline valley and foothill grassland (0'–985').	April–June	Absent. No suitable habitat within Study Area.
Invertebrates						
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	-	Vernal pools/wetlands.	November-April	Absent. No suitable habitat occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	-	Yolo HCP/ NCCP	Elderberry shrubs.	Any season	Potential to Occur. There are three CNDDB records of this species within five miles of the Study Area (CDFW 2021), and suitable habitat (elderberry shrubs) occurs within the Study Area. Additionally, modeled habitat for the species is mapped within the Study Area (Attachment D).
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	-	-	Vernal pools/wetlands.	November-April	Absent. No suitable habitat occurs within the Study Area.
Fish						
Sacramento perch (*Archoplites interruptus*)	-	-	SSC	Ponds, rivers, backwaters, and lakes.	N/A	Absent. The species has been extirpated from the Study Area.
Delta smelt (*Hypomesus transpacificus*)	FT	CE	-	Sacramento-San Joaquin delta.	N/A	Low Potential to Occur
Green sturgeon (*Acipenser medirostris*)	FT	--	CDFW: SSC	Anadromous; undammed cold-water rivers having relatively deep pools with large substrates.	N/A	Absent when barriers are present. Currently, there are two barriers that preclude access to the Study Area: Wallace Weir and Knights Landing Outfall Gate (KLOG). KLOG is currently not operational, but is anticipated to be reinstalled in 2021. Potential to Occur while KLOG is offline.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Steelhead (CA Central Valley DPS) (*Oncorhynchus mykiss*)	FT	-	-	Anadromous; undammed rivers, streams, creeks.	N/A	Absent when barriers are present. Currently, there are two barriers that preclude access to the Study Area: Wallace Weir and KLOG. KLOG is currently not operational, but is anticipated to be reinstalled in 2021. There are also two CNDDB records of this species within five miles of the Study Area (CDFW 2021). Potential to occur while KLOG is offline.
Chinook salmon (Central Valley spring-run ESU) (*Oncorhynchus tshawytscha*)	FT	CT	-	Anadromous; undammed rivers, streams, creeks.	N/A	Absent when barriers are present. Currently, there are two barriers that preclude access to the Study Area: Wallace Weir and KLOG. KLOG is currently not operational, but is anticipated to be reinstalled in 2021. Potential to occur while KLOG is offline.
Chinook salmon (Sacramento River winter-run ESU) (*Oncorhynchus tshawytscha*)	FE	CE	-	Anadromous; undammed rivers, streams, creeks.	N/A	Absent when barriers are present. Currently, there are two barriers that preclude access to the Study Area: Wallace Weir and KLOG. KLOG is currently not operational, but is anticipated to be reinstalled in 2021. There is also one CNDDB record of this species within five miles of the Study Area (CDFW 2021). Potential to Occur while KLOG is offline.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Sacramento splittail (*Pogonichthys macrolepidotus*)	-	-	SSC	San Francisco bay estuary. Spawns in upstream floodplains and backwater sloughs.	N/A	Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and suitable habitat occurs within the Study Area.
Hardhead (*Mylopharodon conocephalus*)			SSC	Relatively undisturbed streams at low to mid elevations in the Sacramento-San Joaquin and Russian River drainages. In the San Joaquin River, scattered populations found in tributary streams, but only rarely in the valley reaches of the San Joaquin River.	N/A	Low Potential to Occur. Suitable habitat occurs within the Study Area.
Sacramento hitch (*Lavinia exilicauda*)			SSC	Low-velocity habitats of warm water rivers and lakes.	N/A	Low Potential to Occur. Suitable habitat occurs within the Study Area.
Longfin smelt (*Spirinchus thaleichthys*)	FC	CT	SSC	Freshwater and seawater estuaries.	N/A	Low Potential to Occur
Pacific eulachon - southern DPS (*Thaleichthys pacificus*)	FT	-	-	Undammed rivers, streams, creeks.	N/A	Absent. The species has been extirpated from the Study Area.
Pacific lamprey (*Lampetra tridentata*)	-	-	SSC	Anadromous; undammed streams rivers, streams, and creeks with gravel spawning substrates.	N/A	Low Potential to Occur

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
River lamprey (*Lampetra ayresi*)	-	-	SSC	Anadromous; undammed streams rivers, streams, and creeks with gravel spawning substrates.	N/A	Low Potential to Occur
Amphibians						
California tiger salamander (Central California DPS) (*Ambystoma californiense*)	FT	CT	SSC; Yolo HCP/ NCCP	Vernal pools, wetlands (breeding) and adjacent grassland or oak (*Quercus* sp.) woodland; needs underground refuge (e.g., ground squirrel and/or gopher burrows). Largely terrestrial as adults.	March-May	Absent. No suitable habitat occurs onsite. Upland habitat for the species is mapped within 500' of the Study Area; however, no modeled habitat is mapped within the Study Area (Attachment D).
California red-legged frog (*Rana draytonii*)	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	May 1- November 1	Absent. Outside of the range for this species.
Western spadefoot (*Spea hammondii*)	-	-	SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Absent. No suitable habitat occurs within the Study Area.
Reptiles						
Northwestern pond turtle (*Actinemys marmorata*)	-	-	SSC; Yolo HCP/ NCCP	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Present. Observed onsite during surveys and there are two CNDDB records of this species within five miles of the Study Area (CDFW 2021). Additionally, modeled habitat for the species is mapped within the Study Area (Attachment D).

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Giant garter snake (*Thamnophis gigas*)	FT	CT	Yolo HCP/ NCCP	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April-October	Potential to Occur. There are 30 CNDDB records of this species within five miles of the Study Area (CDFW 2021) and the ridge cut channel provides suitable habitat for this species. Additionally, modeled habitat for the species is mapped within the Study Area (Attachment D).
Birds						
Yellow-billed cuckoo (*Coccyzus americanus*)	FT	CE	BCC; Yolo HCP/ NCCP	Breeds in California, Arizona, Utah, Colorado, and Wyoming. In California, they nest along the upper Sacramento River and the South Fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve. Other known nesting locations include Feather River (Butte, Yuba, Sutter counties), Prado Flood Control Basin (San Bernardino and Riverside County), Amargosa River and Owens Valley (Inyo County), Santa Clara River (Los Angeles County), Mojave River and Colorado River (San Bernardino County). Nests in riparian woodland. Winters in South America.	June 15-August 15	Absent. Although there are two CNDDB records of this species within five miles of the Study Area (CDFW 2021), no suitable habitat occurs onsite. Additionally, no modeled habitat for the species is mapped within the Study Area (Attachment D).
California black rail (*Laterallus jamaicensis coturniculus*)	-	CT	BCC, CFP	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer, El Dorado counties)	March-September (breeding)	Absent. No suitable habitat occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Mountain plover (*Charadrius montanus*)	-	-	BCC, SSC	Breeds in the Great Plains/Midwestern US; winters in California, Arizona, Texas, and Mexico; wintering habitat in California includes tilled fields, heavily grazed open grassland, burned fields, and alfalfa fields.	September-March (wintering)	Absent. Although there are four CNDDB records of this species within five miles of the Study Area (CDFW 2021), no suitable habitat occurs within the Study Area.
Western snowy plover (Coastal population) (*Charadrius nivosus nivosus*)	-	-	BCC, SSC	Nests on the ground, on open sandy, barrens shores of inland saline lakes (e.g., Salton Sea), on river bars, and man-made ponds such as wastewater ponds, dredge spoils, and salt evaporation ponds.	March-September	Absent. Although there is one CNDDB record of this species within five miles of the Study Area from 1970 (CDFW 2021), the Study Area is outside of known range of the population.
Whimbrel (*Numenius phaeopus*)	-	-	BCC	Nesting occurs in Alaska and northern Canada; winters in coastal Oregon, California, south to Central America; wintering habitat includes tidal mudflats, coral reefs, lagoons, marshes, swamps, estuaries, sandy beaches, and rocky shores.	October-March	Absent. No suitable habitat occurs within the Study Area.
Long-billed curlew (*Numenius americanus*)	-	-	BCC	Breeds east of the Cascades in Washington, Oregon, northeastern California (Siskiyou, Modoc, Lassen counties), east-central California (Inyo County), through Great Basin region into Great Plains. Winters in California, Texas, and Louisiana. Wintering habitat includes tidal mudflats and estuaries, wet pastures, sandy beaches, salt marsh, managed wetlands, evaporation ponds, sewage ponds, and grasslands.	September-March (wintering)	Absent. No suitable habitat occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Marbled godwit (*Limosa fedoa*)	-	-	BCC	Nests in Montana, North and South Dakota, Minnesota, into Canada. Winter range along Pacific Coast from British Columbia south to Central America, with small numbers wintering in interior California. Wintering habitat includes coastal mudflats, meadows, estuaries, sandy beaches, sandflats, and salt ponds.	August-April (Migrant/Wintering in CA)	Absent. No suitable habitat occurs within the Study Area.
Black turnstone (*Arenaria melanocephala*)	-	-	BCC	Breeding range includes coastal Alaska. Wintering range is coastal southern Alaska to Mexico. Wintering habitat includes coastal habitats, including rocky shorelines, reefs, sea stacks, and headlands with rock or gravel substrates, mud and sandflats, estuaries, sandy beaches, jetties, rip-rap, piers, pilings, booms, and sewage treatment ponds.	August-April (Migrant/Wintering in California)	Absent. No suitable habitat occurs within the Study Area.
White-faced ibis (*Plegadis chihi*)	-	-	CDFW WL	Colonial nester; nests in shallow marshes with islands of emergent vegetation, flooded shoals and mangrove swamps.	May-August	Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and suitable nesting habitat (vegetation within the ridge cut) occurs within the Study Area.
Short-billed Dowitcher *(Limnodromus griseus)*	-	-	BCC	Nests in Canada, southern Alaska; winters in coastal California south to South America; wintering habitat includes coastal mudflats and brackish lagoons	wintering/migrant period: late-August-May	Absent. No suitable habitat occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Willet (*Tringa semipalmata*)	-	-	BCC	Breeds locally in interior of western North America. In California, breeding range includes the Klamath Basin and Modoc Plateau and portions of Mono and possibly Inyo counties. Breeding habitat includes prairies, Breeds in wetlands and grasslands on semiarid plains; in uplands near brackish or saline wetlands; prefers temporary, seasonal, and alkali wetlands over semipermanent and permanent wetlands.	April-August	Absent. No suitable habitat occurs within the Study Area.
White-tailed kite (*Elanus leucurus*)	-	-	CFP; Yolo HCP/ NCCP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential to Occur. Suitable nesting habitat (trees) within the Study Area. Additionally, modeled habitat for the species is mapped throughout the Study Area (Attachment D).
Northern harrier (*Circus hudsonius*)	-	-	BCC, SSC	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April-September	Potential to Occur. Suitable nesting habitat (vegetation within the ridge cut) occurs within the Study Area.
Bald eagle (*Haliaeetus leucocephalus*)	Delisted	CE	CFP, BCC	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g., rivers, lakes), wetlands, flooded agricultural fields, open grasslands.	February – September (nesting); October-March (wintering)	Absent. No suitable habitat occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Swainson's hawk (*Buteo swainsoni*)	-	CT	BCC; Yolo HCP/ NCCP	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures.	March-August	Potential to Occur. Suitable nesting habitat (trees and established stick nests) occurs onsite. There are multiple CNDDB records of this species within five miles of the Study Area, including two that appear to occur within the Survey Area (CDFW 2021). Additionally, modeled habitat for the species is mapped throughout the Study Area (Attachment D).
Burrowing owl (*Athene cunicularia*)	-	-	BCC, SSC; Yolo HCP/ NCCP	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g., prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Low Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and marginal nesting habitat (potential for burrows in the banks of the ridge cut) is present within the Study Area. Non-primary habitat for the species is mapped within the Study Area (Attachment D).
Lewis' woodpecker (*Melanerpes lewis*)	-	-	BCC	In California, breeds in Siskiyou and Modoc Counties, Warmer Mountains, inner coast ranges from Tehama to San Luis Obispo Counties, San Bernardino Mountains, and Big Pine Mountain (Inyo County); nesting habitat includes open ponderosa pine forest, open riparian woodland, logged/burned forest, and oak woodlands. Does not breed on the west side of Sierran crest (Beedy and Pandalfino 2013).	April-September (breeding); September-March (winter in Central Valley).	Absent. No suitable habitat within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Nuttall's woodpecker *(Dryobates nuttallii)*	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Potential to Occur. Suitable nesting habitat (oak and cottonwood trees) occurs within the Study Area.
Least Bell's vireo (*Vireo bellii pusillus*)	FE	CE	Yolo HCP/ NCCP	In California, breeding range includes Ventura, Los Angeles, Riverside, Orange, San Diego, and San Bernardino counties, and rarely Stanislaus and Santa Clara counties. Nesting habitat includes dense, low shrubby vegetation in riparian areas, brushy fields, young second-growth woodland, scrub oak, coastal chaparral and mesquite brushland. Winters in southern Baja California Sur.	April 1-July 31	Low Potential to Occur. Marginal suitable nesting habitat (vegetation and trees within the channel of the ridge cut) occurs onsite. Modeled habitat for the species is mapped within the Study Area (Attachment D).
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April-June	Potential to Occur. Suitable nesting habitat (cottonwood, willow and oak trees) occurs within the Study Area.
Oak titmouse (*Baeolophus inornatus*)			BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree)	March-July	Present. Observed within the Study Area during surveys and suitable nesting habitat occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Bank swallow (*Riparia riparia*)	-	CT	Yolo HCP/ NCCP	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	May-July	Absent. No suitable habitat occurs within the Study Area. Although there are eight CNDDB records of this species within five miles (CDFW 2021), there is no modeled habitat for the species mapped within the Study Area (Conservancy 2018).
Purple martin (*Progne subis*)	-	-	SSC	In California, breeds along coast range, Cascade-northern Sierra Nevada region and isolated population in Sacramento. Nesting habitat includes montane forests, Pacific lowlands with dead snags; the isolated Sacramento population nests in weep holes under elevated highways/bridges. Winters in South America.	May-August	Absent. No suitable habitat occurs within the Study Area.
Wrentit (*Chamaea fasciata*)	-	-	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	March-August	Absent. No suitable habitat occurs within the Study Area (too much fragmentation).

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Lawrence's goldfinch (*Spinus lawrencei*)	-	-	BCC	Breeds in Sierra Nevada and inner Coast Range foothills surrounding the Central Valley and the southern Coast Range to Santa Barbara County east through southern California to the Mojave Desert and Colorado Desert into the Peninsular Range. Nests in arid and open woodlands with chaparral or other brushy areas, tall annual weed fields, and a water source (e.g., small stream, pond, lake), and to a lesser extent riparian woodland, coastal scrub, evergreen forests, pinyon-juniper woodland, planted conifers, and ranches or rural residences near weedy fields and water.	March-September	Absent. No suitable habitat occurs within the Study Area.
Song sparrow "Modesto" (*Melospiza melodia heermanni*)	-	-	SSC	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat	April-June	Potential to Occur. Suitable nesting habitat (vegetation within the channel of the ridge cut) occurs within the Study Area.
San Clemente spotted towhee (*Pipilo maculatus clementae*)	-	-	BCC, SSC	Resident on Santa Catalina and Santa Rosa Islands; extirpated on San Clemente Island, California. Breeds in dense, broadleaf shrubby brush, thickets, and tangles in chaparral, oak woodland, island woodland, and Bishop pine forest.	Year round resident; breeding season is April-July	Absent. Outside of the range for this species.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Tricolored blackbird (*Agelaius tricolor*)	-	CT	BCC, SSC; Yolo HCP/ NCCP	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta Cos south to San Bernardino, Riverside and San Diego Counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen Counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.	March-August	Potential to Occur. There are nine CNDDB records of this species within five miles of the Study Area (CDFW 2021), and suitable nesting habitat (vegetation within the ridge cut) occurs within the Study Area. Additionally, modeled habitat for the species is mapped within the Study Area (Attachment D).
Bullock's oriole (*Icterus bullockii*)			BCC	Breeding habitat includes riparian and oak woodlands.	March-July	Potential to Occur. Suitable nesting habitat (cottonwood and willow trees) occurs within the Study Area.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	-	-	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County.	March-July	Absent. Outside of range for this species.
Mammals						
Pallid bat (*Antrozous pallidus*)	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2017).	April-September	Potential to Occur. Suitable roosting habitat (trees and bridges within the ridge cut) occurs within the Study Area.

Common Name (*Scientific Name*)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA/ NPPA	Other			
Western red bat (*Lasiurus blossevillii*)	-	-	SSC	Roosts in foliage of trees or shrubs; day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2021).	April-September	Potential to Occur. There is one CNDDB record of this species within five miles of the Study Area (CDFW 2021), and suitable roosting habitat (willow and cottonwood trees within the ridge cut) occurs within the Study Area.
American badger (*Taxidea taxus*)	-	-	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Absent. No suitable habitat occurs within the Study Area.

Status Codes:

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

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