Upper Mormon Slough Erosion Repair Project
Biological Resources Assessment
San Joaquin County, California

USGS 7.5-minute Topographic Quadrangle Map: *Linden, California*

38.049170°, -121.014997

December 16, 2020

Submitted by:

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INTRODUCTION

Parus Consulting conducted a biological resource assessment (BRA) for the Upper Mormon Slough Flood and Erosion Repair project in San Joaquin County, California. This BRA provides technical information to support environmental compliance and regulatory agency permitting for the proposed project. The purpose of this report is to describe biological resources in the project area, specifically focusing on threatened and endangered species, and the area of potential effect for the project design. This report details the results of general wildlife surveys, focused special status species surveys, vegetation mapping, and wetland delineation work conducted in the project area.

Project Purpose

The purpose of the project is to maintain and repair erosion and flood system controls on the banks of Mormon Slough by installing appropriate revetment and bank restoration and protection measures along the channel. The project is designed to reduce the potential for further degradation of the system.

Project Location

The Project is located in east San Joaquin County, approximately 4 miles east of Linden, on the Linden USGS 7.5 minute series topographic quadrangle (Exhibit 1). The proposed construction areas start just upstream of the Escalon-Bellota Road Bridge and extend downstream approximately ¾ of a mile. A staging area is proposed just upstream of the bridge.

Mormon Slough has been significantly altered and channelized to convey water from the Calaveras River, approximately 1/4 mile upstream from the bridge at the Bellota Weir (Exhibit 2), downstream to the San Joaquin. The channel is highly modified, with a meandering low flow channel, multiple contractions and expansions (particularly at the bridge site), and some areas of dense but discontinuous vegetation on the slopes.

The region is characterized by fruit and nut orchards and open grazing land, interspersed with rural residences. Most of the land has been highly modified for agricultural uses. The channel itself has been modified and re-routed slightly for irrigation, drainage and flood control.

Project Description

The proposed project would consist of repairs to the north and south banks of the upper segment of Mormon Slough near the Escalon-Bellota Bridge in San Joaquin County, California. Mormon Slough accepts flow from the Calaveras River at Bellota and carries it to the Stockton Diverting Canal, which returns the flow to the Calaveras River (Figure 1). Project activities include excavating to remove compromised material in the channel, and then repairing the channel slope with a variety of materials including soil-filled rock slope protection (RSP), a coarse filter bed, earthfill, and launch rock.
Repair work is being completed by the San Joaquin County Department of Public Works with funding and support from the Department of Water Resources' (DWR) Division of Flood Management under its Flood System Repair Program (FSRP). As such, the repairs will be designed in accordance with DWR's Rural Levee Repair Guidelines (March 2014).

The purpose of the proposed project is to stabilize the channel alignment and preserve the general uniformity of the bank lines in order to preserve the function of the channel and to reduce the potential for further lateral migration of the channel. Currently, the channel is eroding toward State Route 26 on its northern bank and toward neighboring structures and orchards on its southern bank. Field observations show that erosion and undermining of the existing slopes is leading to incremental collapse and/or oversteepening of the slopes, which is considered the most prevalent mode of failure of the system to be addressed by the repair design.

The repairs would consist primarily of installing Rock Slope Protection (RSP), which generally consists of rip-rap of varying size, soil, gravel and a textile fabric above the ordinary high water mark to prevent downward migration of the soil. To promote growth of vegetation, the RSP voids would be filled with agricultural soil and seeded with grasses (i.e., soil filled RSP). Excavation prior to placement of RSP would generally be limited to removal of loose surface debris from past slope failures, minor grading to produce relatively smooth surfaces to prepare for RSP, or to key the repairs into the existing slopes.

After grading, workers would install a coarse sand or gravel filter bed that will seal cracks or openings in the base soil. A base of launch rock would be installed at the lower edge of the filter, and RSP would be laid over the filter bed. The riprap size recommendations differ throughout the channel and include class II, III, and IV with a gravel filter and launchable toe.

This project is scheduled to occur within the summer months, sometime between mid-June and mid-September depending on final design completion and permitting status.

Exhibit : Vicinity Map

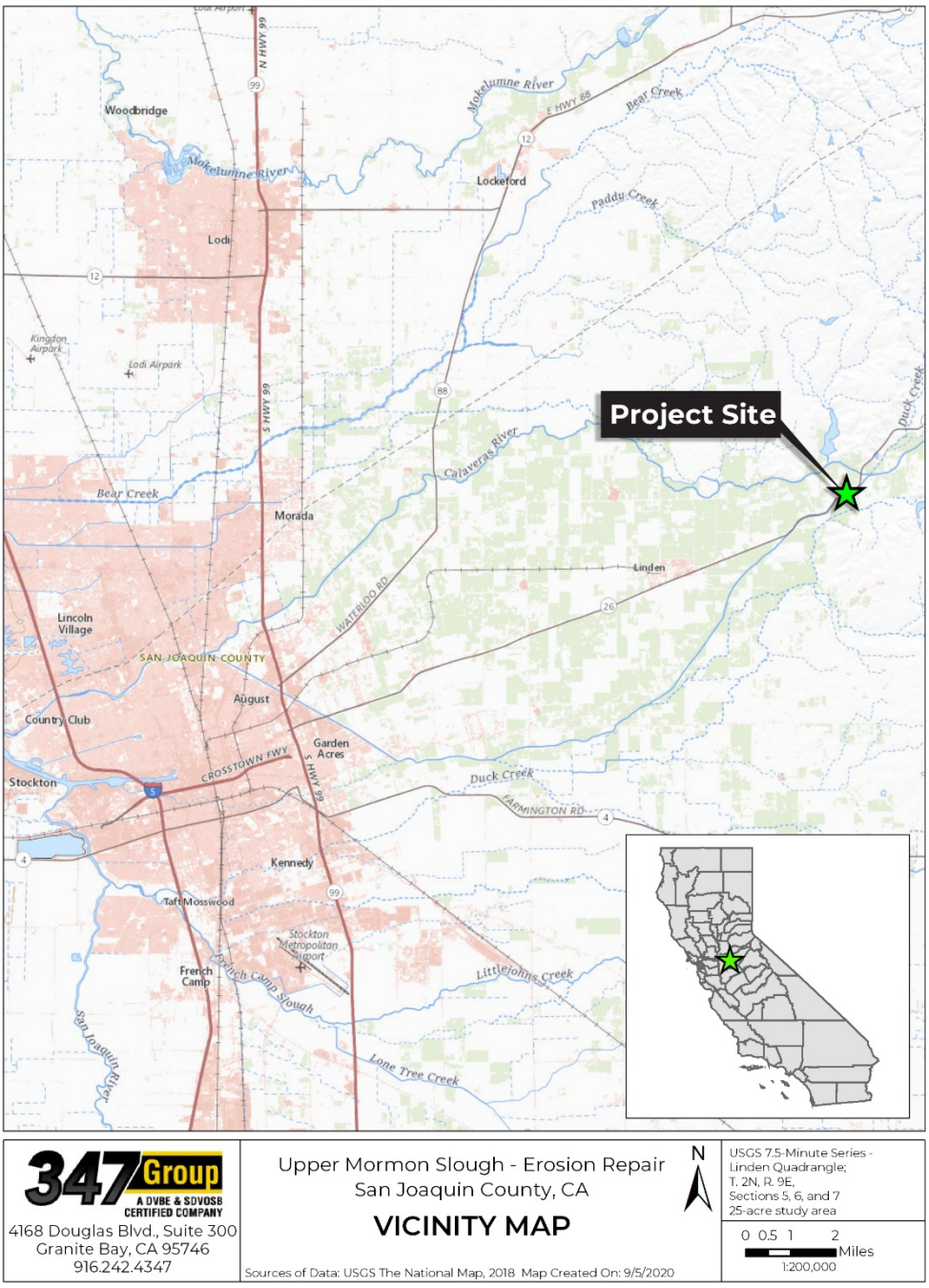
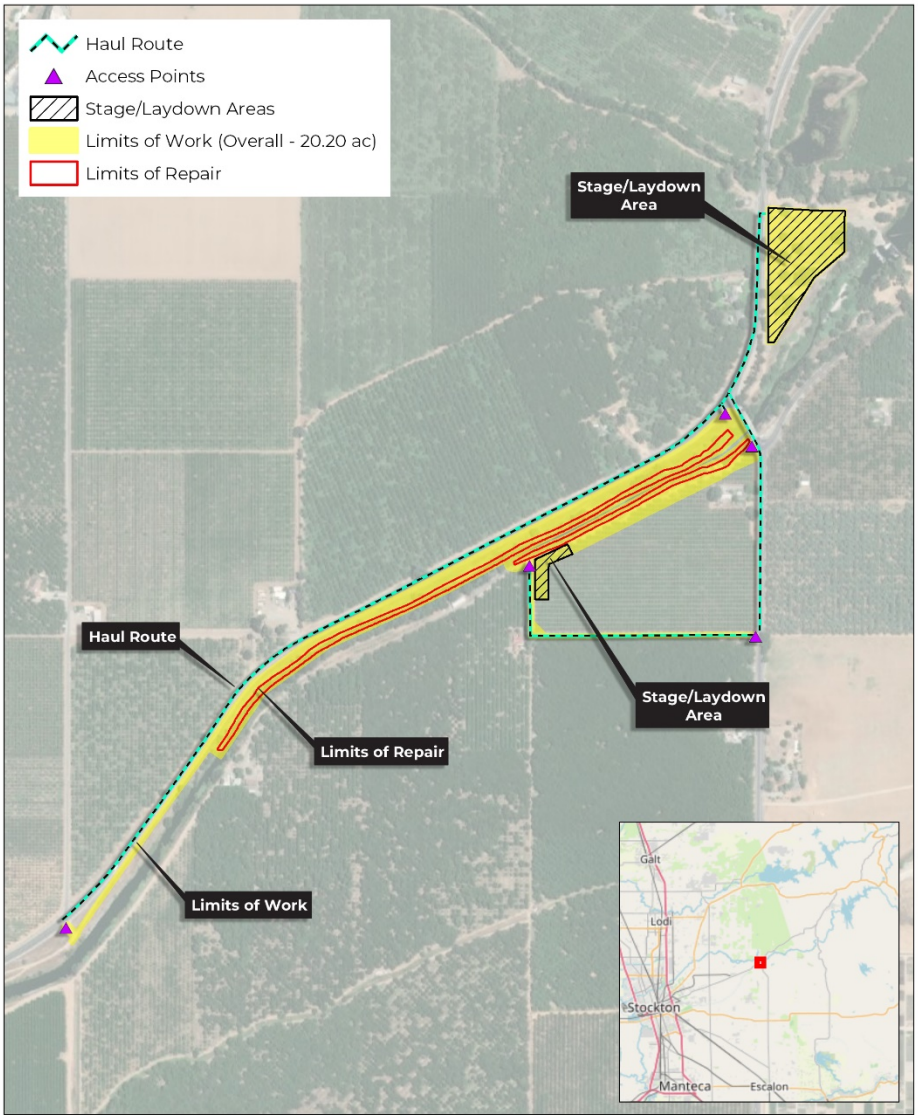


Exhibit : Limits of Disturbance



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Upper Mormon Slough - Erosion Repair
San Joaquin County, CA

LIMITS OF DISTURBANCE

Sources of Data: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, GIS User Community, and Kleinfelder. Map Created On: 9/5/2020

USGS 7.5-Minute Series - Linden Quadrangle;
T. 2N, R. 9E,
Sections 5, 6, and 7
25-acre study area

N

0 200 400 800 Feet

1:9,600

REGULATORY SETTING

Federal

Endangered Species Act

The Federal Endangered Species Act (FESA), Section 9 prohibits take of threatened and endangered species. Take is defined as actions to, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Procedures for addressing impacts to federally listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the FESA for all terrestrial species. The first pathway is the Section 10(a) incidental take permit, which applies to situations where a non-federal government entity must resolve potential adverse impacts to species protected under FESA. The second pathway is Section 7 consultation, which applies to projects undertaken by a federal agency or private projects requiring a federal permit or approval. Since the United States Army Corps of Engineers (USACE) holds regulatory authority for the proposed project under Section 404 of the Clean Water Act, FESA Section 7 will apply.

Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act (MBTA) prohibits trade, possession or damage to migratory birds, their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the Fish and Game Code. All raptors and their nests are protected from take or disturbance under the MBTA (16 United States Code [USC] § 703, *et seq*.) and California statute (Fish and Game Code [FGC] § 3503.5). The Golden Eagle (*Aquila chrysaetos*) and Bald Eagle (*Haliaeetus leucocephalus*) are also afforded additional protection under the Eagle Protection Act, amended in 1973 (16 USC § 669, *et seq*.) and The Bald and Golden Eagle Protection Act (16 USC § 668–668d). With few exceptions, this act (16 USC 668–668d) prohibits take of Bald Eagles and Golden Eagles. Unlike the MBTA, which defines "take" to mean only direct killing or taking of birds or their body parts, eggs, and nests, the Bald and Golden Eagle Protection Act defines "take" in a manner similar to FESA as including, "pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, and disturbing," with "disturb" further defined (50 CFR 22.3) as, ''to agitate or bother a Bald or Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available; (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.'' Therefore, the requirements for guarding against impacts to eagles generally are far more stringent than those required by the MBTA alone.

Clean Water Act

Sections 10 and 404

USACE administers Sections 10 and 404 of the Federal Clean Water Act (CWA), which regulates the discharge of dredge and fill material into waters of the United States. The USACE has established a series of nationwide permits (NWPs) that authorize certain activities in waters of the United States, if a proposed activity can demonstrate compliance with standard conditions. Normally, the USACE requires an individual permit (IP) for an activity that will affect (fill or otherwise remove) an area in excess of 0.5-acre of waters of the United States. Projects that result in impacts less than 0.5 acre can typically be conducted pursuant to one of the nationwide permits, if they are consistent with the standard permit conditions. The USACE also has discretionary authority to require an environmental document (e.g. Environmental Impact Statement (EIS) or Environmental Assessment (EA)) for projects that result in impacts to an area between 0.1 and 0.5 acre and above 0.5-acre.

Section 401

Section 401 of the CWA states: "any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the Federal Permitting Agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act." Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB).

State of California

CEQA Guidelines

The following California Environmental Quality Act (CEQA) Guidelines serve as thresholds of significance for determining potentially significant impacts to the biological resources identified in this report:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or USFWS.

- Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.

- Has a substantial adverse effect on federally protected wetlands as defined by Sections 10 and/or 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impedes the use of native wildlife nursery sites.

- Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, state or federal habitat conservation plan.

California Endangered Species Act

The California Endangered Species Act (CESA) requires State agencies to consult with CDFW on projects or actions that could affect listed species, directs the CDFW to determine whether jeopardy would occur, and allows the CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species (FGC § 2080). CESA allows the CDFW to authorize exceptions to the State’s prohibition against take of a listed species if the “take” of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (FGC § 2081).

California Fish and Game Code

Under CESA, CDFW is responsible for maintaining a list of endangered and threatened species (FGC § 2070). Sections 2050 through 2098 of the Fish and Game Code outline the protection provided to California's rare, endangered, and threatened species.

The Native Plant Protection Act of 1977 (NPPA) prohibits the taking, possessing, or sale of any plants with a state designation of rare, threatened, or endangered (as defined by the CDFW) (FGC § 1900, *et seq*.). An exception to this prohibition in the NPPA allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFW and give the agency at least ten days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed. Fish and Game Code, Section 1913 exempts from "take" prohibition, "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way." Project impacts to these species are not considered significant unless the species are known to have a high potential to occur in the disturbance area associated with construction of the proposed project.

The CDFW also maintains lists of "Species of Special Concern" that serve as species "watch lists." The CDFW has identified many Species of Special Concern. Species with this status have limited distribution or the extent of their habitats has been reduced substantially, such that their populations may be threatened. Thus, their populations are monitored, and they may receive special attention during environmental review. While they do not have statutory protection, they may be considered rare under CEQA and thereby warrant specific protection measures.

Sensitive species that would qualify for listing but are not currently listed are afforded protection under CEQA. CEQA Guidelines Section 15065 (Mandatory Findings of Significance) requires that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines Section 15380 (Rare or Endangered Species) provides for the assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Unlisted plant species on the California Native Plant Society (CNPS) Lists 1A , 1B, and 2 are typically considered under CEQA.

Sections 3500 to 5500 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Under Section 3503.5 of the Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. To comply with the requirements of CESA, an agency reviewing a proposed project

within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation of any proposed project that may adversely affect a candidate species.

Section 1602 of the Fish and Game Code requires any entity to notify CDFW before beginning any activity that, "may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake... [or] deposit debris, waste, or other materials that could pass into any river, stream, or lake." "River, stream, or lake" includes waters that are episodic and perennial; and ephemeral streams, desert washes, and watercourses with a subsurface flow. A Lake or Streambed Alteration Agreement would be required if the CDFW determines that project activities may substantially adversely affect fish or wildlife resources through alterations to a covered body of water.

California Porter-Cologne Water Quality Control Act

The RWQCB regulates actions that would involve, "discharging waste, or proposing to discharge waste, within any region that could affect the water of the State," (Water Code § 13260(a)), pursuant to provisions of the Porter-Cologne Water Quality Act. "Water of the State" is defined as, "any surface water or groundwater, including saline waters, within the boundaries of the state," (Water Code § 13050(e)).

Habitat Conservation Planning

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) comprises all of San Joaquin County. The SJMSCP objectives include balancing the need to conserve open space and the need to convert open space to non-open space uses while protecting the region's agricultural economy, preserving landowner property rights, providing for the long-term management of plant, fish and wildlife species— especially those that are currently listed or may be listed in the future under FESA or CESA, providing and maintaining multiple-use open spaces that contribute to the quality of life of the residents of San Joaquin County, and accommodating a growing population while minimizing costs to project proponents and society at large.

The SJMSCP, in accordance with FESA Section 10(a)(1)(B) and CESA Section 2081(b) Incidental Take Permits, provides compensation for the conversion of open space to non-open space uses that affects the plant, fish and wildlife species covered by the plan.

The mitigation ratios and compensation fees are determined on the basis of the type of lands that are being converted. The plan has established four land cover types: (1) Agricultural Habitat Lands, (2) Natural Lands (non-wetlands), (3) Natural Lands (vernal pools), and (4) Natural Lands (non-vernal pool wetlands). The project intends to mitigate for impacts to habitat through the SJMSHCP

METHODS

The literature review provides a baseline from which to evaluate the biological resources potentially occurring in the project area, as well as the surrounding area.

Literature Review

Existing Documentation

As part of the literature review, Parus Consulting biologists examined existing recent environmental documentation for the project area and local vicinity. This documentation included the previous biological studies for the area; literature pertaining to habitat requirements of special-status species potentially occurring in the vicinity of the project area; and federal register listings, protocols, and species data provided by the USFWS and CDFW. Specifically, these documents included:

- CNDDB 5-mile radius records search of the Linden and adjacent USGS 7.5-minute quadrangles (CNDDB 2019);
- California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants of California records search of the Linden and adjacent USGS 7.5-minute quadrangles (CNPS 2019);
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) was developed and provided a list of Federally protected plants, wildlife, and critical habitat for the limits of the Proposed Project area (IPac 2019);
- The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (San Joaquin Council of Governments 2000); and
- Existing environmental documentation, including the Biological Technical Report and Wetland Delineation prepared by Burleson and other documents prepared by TRC.

Topographic Maps and Aerial Photographs

We also reviewed current USGS 7.5-minute topographic quadrangle map(s) and recently flown aerial photographs as a preliminary analysis of the existing conditions within the project area and immediate vicinity. Information obtained from the review of the topographic maps included elevation range, general watershed information, and potential drainage feature locations. Aerial photographs provided a perspective of the most current site conditions relative to on-site and off-site land use, plant community locations, and potential locations of wildlife movement corridors.

Soil Surveys

The United States Department of Agriculture (USDA) has published soil surveys that describe the soil series (i.e., group of soils with similar profiles) occurring within a particular area (USDA 1980). These profiles include major horizons with similar thickness, arrangement, and other important characteristics. These series are further subdivided into soil mapping units that provide specific information regarding soil characteristics. Many special-status plant species have a limited distribution based exclusively on soil type. Therefore, pertinent USDA soil survey maps were reviewed to determine the existing soil mapping units within the project site and to establish if soil conditions on-site are suitable for any special-status plant species.

Waters and Wetlands

Prior to conducting the field surveys, we reviewed USGS topographic maps and aerial photography to identify any potential natural drainage features and water bodies. In general, all surface drainage features identified as blue-line streams on USGS maps and linear patches of vegetation are expected to exhibit evidence of flows and considered potentially subject to state and federal regulatory authority as "waters of the United States and/or State." A preliminary assessment was conducted to determine the location of any existing drainages and limits of project-related grading activities to aid in preparing a formal delineation of waters of the United States.

Oak Trees

Parus Consulting biologists reviewed the applicable county ordinances pertaining to tree preservation and protective measures and their tree replacement conditions or permits required. The County Tree Preservation ordinance applies to projects over which County Planning has discretionary authority, which does not include this project.

Field Investigation

Biological Surveys

Parus Consulting conducted field surveys from September 23-25, 2019. The purpose of the surveys was to ascertain general site conditions and identify potentially suitable habitat for special-status plant and wildlife species. Concurrent with surveys, we also collected multi-parameter data for the wetland delineation. Special-status or unusual biological resources identified during the literature review were ground-truthed during the field surveys to ensure mapping accuracy. Special attention was paid to sensitive habitats and areas potentially supporting special-status floral and faunal species.

Vegetation

Common plant species observed during surveys were identified by visual characteristics and morphology in the field and recorded in a field notebook. Uncommon and less-familiar plants were identified off-site with the use of taxonomic guides, such as Clarke et al. (2007), Hitchcock (1971), McAuley (1996), and Munz (1974). Vegetation communities and boundaries were noted on current aerial photography and through field observation and digitized using ESRI ArcGIS software® ArcMap 10.0. By incorporating collected field data and interpreting aerial photography, a map of habitat types, land cover types, and other biological resources within the project site was prepared. Habitat types were based on the classification system from *A Guide to Wildlife Habitats of California* (CDFW 1988). Vegetation community and land cover types used to help classify habitat types are based on Holland (1986) and Oberbauer (1996) and cross-referenced with CDFW's *Natural Communities List* (2010). As part of these methods, salmon shrubs as well as oak trees were also mapped in the field.

Wildlife

Wildlife species detected during surveys by sight, calls, tracks, scat, or other signs were recorded in a field notebook. Notations were made regarding suitable habitat for those special-status species determined to potentially occur within the project area. Appropriate field guides were used to assist with species identification during surveys, such as Peterson (2010), Reid (2006), and Stebbins (2003).

Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Urbanization and the resulting fragmentation of open space areas create isolated "islands" of wildlife habitat, forming separated populations. Corridors act as an effective link between populations.

The project area was evaluated for evidence of a wildlife movement corridor during surveys. The scope of the biological resources study did not include a formal wildlife movement corridor study utilizing track plates, camera stations, scent stations, or snares. The focus of the study was to determine if the change of current land use of the project site may have significant impacts on the regional movement of wildlife. These conclusions are made based on the information compiled during the literature review, including aerial photographs, USGS topographic maps and resource maps for the vicinity, the field survey conducted, and professional knowledge of desired topography and resource requirements for wildlife potentially utilizing the project site and vicinity.

RESULTS

Field surveys were conducted between September 23rd and 25th at various times to collect optimal data during daylight and twilight hours. Weather conditions during the field survey were clear and sunny with a range of 75 to 90 degrees Fahrenheit.

Environmental Setting

The project area is mostly composed of an incised, riverine corridor with steep banks and relatively level land at the top of bank. Upper Mormon Slough is a perennial riverine feature that is approximately 75 feet wide at the ordinary high-water mark (OHWM). Extensive riparian vegetation is associated with Mormon Slough at the edge and above the OHWM, with mostly open water below the OHWM. Above the sloped portion of the riparian corridor, the top of bank and surrounding land is relatively level with limited topographical relief. Surrounding land uses consist of vineyards and orchards.

Soils

Soils within the project area are predominantly Cogna loam and Columbia fine sandy loam that are formed in alluvium from mixed rock sources. The Cogna loam is a deep, well-drained soil that is mostly in agricultural production, while the Columbia series are deep, somewhat poorly drained soils that occur in floodplains. Soils in the project area are shown in Exhibit 3.

Vegetation Communities

The project area comprises mixed riparian, riparian wetland (riverine), ruderal grassland, developed land and roads, and agriculture/orchards. A complete description of the community type is based on Holland (1986) and the extent to which it occurs on and within the project area is provided below. Vegetation in the project area is shown in Exhibit 4.

Mixed Riparian Woodland

Mixed riparian woodland is the dominant native vegetation community present in the project area. This community occurs consistently throughout the project area and is mostly developed along the southern (north-facing) banks of the slough. Specifically, vegetation tends to occur along the lower banks and channel of Mormon Slough above the OHWM. In areas that transition to below the OHWM, some stands of sandbar willow (Salix exigua) are established in association with riparian wetland vegetation and open water. Tree and shrub canopy is predominantly composed mostly of native Valley oak (Quercus lobata), with interspersed Fremont's cottonwood (Populus fremontii), white alder (Alnus rhombifolia), box elder (Acer negundo), Oregon ash (Fraxinus latifolia), and arroyo willow (Salix lasiolepis) trees. Non-native, invasive species include tree of heaven (Ailanthus altissima), black locust (Robinia pseudoacacia), and giant reed (Arundo donax) also occur here. Several elderberry shrubs (Sambucus mexicana) were also identified within this vegetation

community onsite. Other associated species include California wild grape (Vitis californica), Himalayan blackberry (Rubus discolor), mugwort (Artemisia douglasiana), and miner's lettuce (Claytonia perfoliata). Mixed riparian woodland covers approximately 9.87 acres of the project area.

Exhibit 3: Soils Map

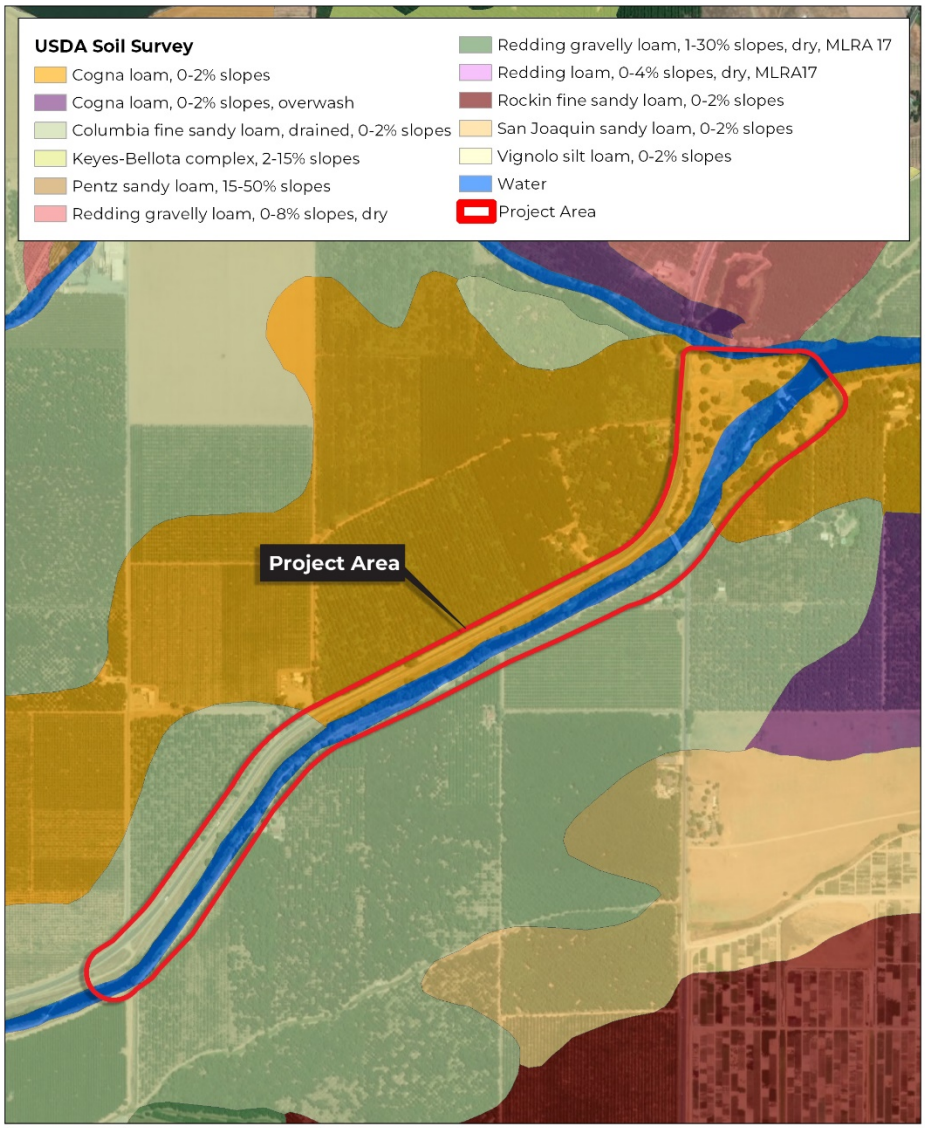
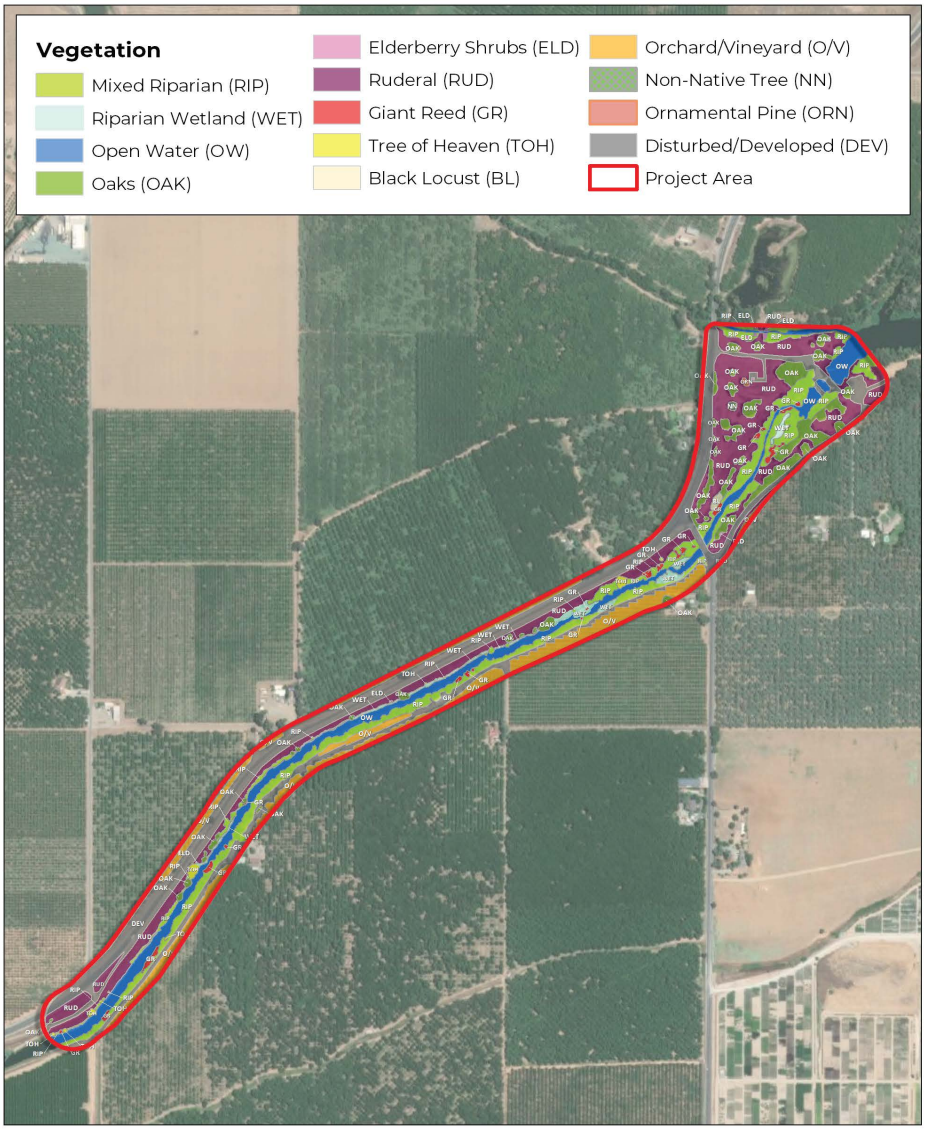


Exhibit 4: Vegetation Map



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VEGETATION

Sources of Data: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, GIS User Community, and Parus Consulting, Inc. Map Created On: 9/7/2020

USGS 7.5-Minute Series - Linden Quadrangle;
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25-acre study area

N

0 225 450 900 Feet
1:10,800

Riparian Habitat, Wetlands and Waters

The wetland and aquatic habitat within the project area consist of upper Mormon Slough and is characterized by a lower perennial riverine feature that periodically floods. Mormon Slough separates from the Calaveras River at the Bellota Weir, a small dam with removable checks and flow control side gates. Riparian (riverine) habitats are supported by perennial water that is relatively slow moving with a channel substrate of sand and small to medium-sized cobble. During low-flow conditions, water flows in a southeast direction through a narrow channel around gravel bars within the project area, specifically downstream from the bridge. Substrate deposition and vegetation growth patterns observed within the slough indicate that during medium-flow periods, water flows through the project area in a braided pattern. Open water non-vegetated riverine habitat occupies approximately 0.8 acres of the project area, while vegetated habitat that is largely composed of sandbar willow and associated species such as nutsedges (*Cyperus* spp.), smartweeds (Polygonum spp.), and Johnsongrass (*Sorghum halepense*) covers approximately 5.95 acres of the project area.

Ruderal

Ruderal (weedy) herbaceous vegetation occurs on the upper portions of the northern banks of the slough corridor and in some areas along the southern bank. This area is composed of non-native annual grasses such as soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*) and medusahead (*Taeniantherum medusae*) as well as non-native forbs including yellow star thistle (*Centaurea solstialis*), field mustard (*Hirschfedia incana*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), and jimson weed (*Datura stramonium*). These areas appear to be regularly maintained and constitute 11.00 acres of the project area.

Orchard/Vineyard

The surrounding habitat is dominated by orchards and some vineyards and associated agricultural land. The orchards and vineyards are to the north and south of the project area, along both sides of Highway 26. These areas are highly maintained and cultivated and compose approximately 1.55 acres of the project area.

Developed/Disturbed

Disturbed land is classified as areas that have been physically disturbed (by current and/or previous legal human activity) and are no longer recognizable as a native or naturalized vegetation community, but continues to retain a soil substrate. Typically, vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or weedy species that take advantage of disturbance, or shows signs of past or present animal usage that removes any capability of providing viable natural habitat for uses other than dispersal. Examples of disturbed land include areas that have been graded, repeatedly cleared for fuel management purposes and/or

experienced repeated use that prevents natural revegetation (i.e., dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old home-sites.

Developed land is classified as areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported and retains no soil substrate. Developed land is characterized by permanent or semi-permanent structures, pavement, or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident because a large amount of debris or other materials have been placed upon it may also be considered urban/developed (e.g. car recycling plant, quarry). In the project area, this area is composed of portions of upper Mormon Slough that currently have rock slope protection, pump intakes, or where banks are very steep with little to no vegetation. Developed areas consist primarily of rural residential housing and unpaved and paved roads. The primary roadways in the area are Escalon Bellota Road, East Shelton Road, and State Route 26. These cover approximately 7.49 acres of the project area.

Wildlife

The vegetation communities described above support habitat for numerous local wildlife species typical of both open water/riparian, associated upland, ruderal and orchard habitats. Wildlife species observed in the project area include locally common and abundant species such as rock pigeon (*Columba livia*), killdeer (*Charadrius vociferus*), house finch (*Carpodacus mexicanus*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), and common raven (*Corvus corax*). Common merganser (*Mergus merganser*) and great blue heron (*Ardea herodias)* were noted in association within riverine habitat, while red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and turkey vulture (*Cathartes aura*) were also present in the project area. Raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*) are mammals known from the project area. No swallows were observed in the project area during the surveys; however, abandoned mud nests were observed under the bridge.

Special-Status Biological Resources

The following section discusses the existing site conditions and potential for special-status biological resources to occur within the project area. The results of the CNDDB query are shown in Exhibit 5.

Sensitive Plant Communities

Special-status plant communities are considered sensitive biological resources based on Federal, State, or local laws regulating their development, limited distributions, and habitat requirements of special-status plant or wildlife species that occur within them. The riparian woodland and wetland communities within the Mormon Slough corridor are considered potentially sensitive natural

communities within the project area. However, the channel is excavated and frequently maintained which limits its quality.

Special-Status Plants

Special-status plant species are those considered rare, threatened, or endangered by the USFWS, CNPS or CDFW. The Special-Status Plant Species Table 1 identifies 15 special-status plant species and CNPS sensitive species that have been recorded to occur within the region, as recorded by the CNDDB, IPAC and CNPSEI. The table also includes the species' status, required habitat, and potential to occur within the project area.

Exhibit 5: CNDDB Map

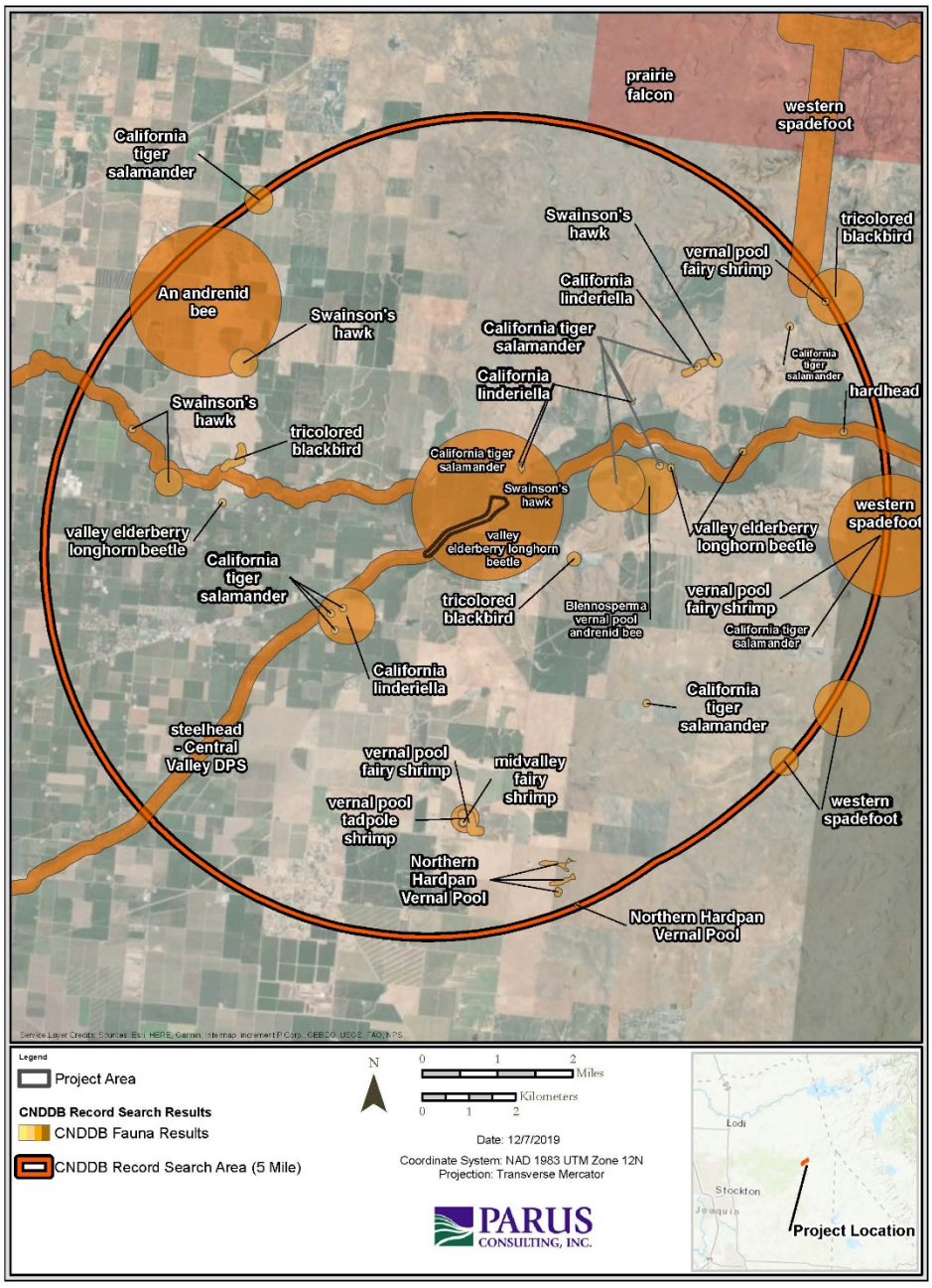


Table : Special-Status Plants

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
	USFWS[1]	CDFW[2]	CNPS[3]			
Astragalus tener var. *tener* tener Alkali milk-vetch	—	—	1B.1	Alkali playa, valley and foothill grassland, vernal pools.	**Unlikely-** no vernal pool or alkali playa habitat is present.	No adverse effects
Atriplex cordulata var. cordulata Heartscale	—	—	1B.2	Chenopod scrub, valley and foothill grassland, meadows and seeps.	**Unlikely-**suitable habitat is not present. No recorded occurrences are within 5 miles of the project area.	No adverse effects
Atriplex depressa Brittlescale	—	—	1B.1	Chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, vernal pools.	**Unlikely-**suitable habitat is not present. No recorded occurrences are within 5 miles of the project area.	No adverse effects
Atriplex joaquiniana San Joaquin spearscale	—	—	1B.1	Chenopod scrub, meadows and seeps, playas, and valley and foothill grasslands.	**Unlikely-**suitable habitat is not present. No recorded occurrences are within 5 miles of the project area.	No adverse effects
Blepharizonia Plumose Big tarplant	FE	—	1B.1	Dry hills & plains in annual grassland. Clay to clay-loam soils; usually on slopes.	**Unlikely-**suitable habitat is not present. No recorded occurrences are within 5 miles of the project area.	No adverse effects
California Macrophylla Round-- leaved filaree	—	—	1B.2	Cismontane woodland, valley and foothill grassland.	**Unlikely-**suitable habitat is not present. No recorded occurrences are within 5 miles of the project area.	No adverse effects
Cirsium crassicaule Slough thistle	—	—	1B.1	Chenopod scrub, marshes and swamps, riparian scrub.	**Low potential-**riparian wetland habitat is suitable; however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
	USFWS[1]	CDFW[2]	CNPS[3]			
Eryngium racemosum Delta button-celery	—	SE	1B.1	Riparian scrub	**Low potential-**riparian wetland habitat is suitable; however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects
Hibiscus lasiocarpos var. occidentalis Wooly rose-mallow	—	—	1B.1	Marshes and freshwater swamps	**Low potential-**riparian wetland habitat is suitable; however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects
Lilaeopsis masonii Mason's lilaeopsis	—	—	1B.1	Marshes and swamps, riparian scrub	**Low potential-**riparian wetland habitat is suitable, however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects
Limosella australis Delta mudwort	—	—	2B.2	Marshes and swamps, riparian scrub	**Low potential-**riparian wetland habitat is suitable; however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects
Navarretia nigeliformis ssp. radians Shining navarretia	—	—	1B.1	Cismontane woodland, valley and foothill grassland, vernal pools	**Unlikely-**suitable habitat is not present. No recorded occurrences are within 5 miles of the project area.	No adverse effects
Sagitaria sanfordii Sanford's arrowhead	—	—	1B.1	Marshes and swamps	**Low potential-**riparian wetland habitat is suitable; however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects
Symphyotrichum lentum Suisun Marsh aster	—	—	1B.1	Marshes and brackish and freshwater swamps	**Low potential-**riparian wetland habitat is suitable; however, this species was not observed and there are no records within 5 miles of the project area.	No adverse effects

Scientific Name Common Name	Status			Habitat Description[4]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
	USFWS[1]	CDFW[2]	CNPS[3]			
Tropidocarpum capparideum Caper-fruited tropidocarpum	—	—	1B.1	Valley and foothill grassland Bloom period: March-April 1-455 m.	**Unlikely**-this species was not observed and there are no records within 5 miles of the project area.	No adverse effects

Code Designations

[1] Federal Status: 2019 USFWS Listing	[2] State Status: 2019 CDFW Listing	[3] CNPS: 2019 CNPS Listing
FE = Listed as endangered under the Endangered Species Act **FT** = Listed as threatened under the Endangered Species Act **FC** = Candidate for listing (threatened or endangered) under Endangered Species Act **FD** = Delisted in accordance with the Endangered Species Act — = Not federally listed	**SE** = Listed as endangered under the California Endangered Species Act **ST** = Listed as threatened under the California Endangered Species Act **SSC** = Species of Special Concern as identified by CDFW **CFP** = Listed as fully protected under FGC **CR** = Species identified as rare by CDFW — = Not state listed	**1A** = Plants species that presumed extinct in California. **1B** = Plant species that are rare, threatened, or endangered in California and elsewhere. **List 2** = Plant species that are rare, threatened, or endangered in California, but more common elsewhere. **List 3=** Plants which we need more information- a review list **Blooming period:** Months in parentheses are uncommon.

[4] **Habitat description:** Habitat description adapted from CNDDB (CDFW 2019) and CNPS online inventory (CNPS 2019).

Special-Status Wildlife

Special-status wildlife species are those considered rare, threatened, or endangered by the USFWS, CNPS or CDFW. The Special-Status Wildlife Species Table 2 identifies 16 federal and state listed threatened and/or endangered wildlife species, recorded in the CNDDB (CDFW 2020) as occurring within 5 miles of the project area within the Linden, California topographic quadrangle. The table also includes the species' status, required habitat, and potential to occur within the project area.

Most of the special-status wildlife species identified are unlikely to occur due to the absence of suitable habitat. Of the 46 special-status species, the following threatened or endangered species could occur in the project area:

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
- Central Valley steelhead DPS (*Oncorhynchus mykiss*)
- Swainson's hawk (*Buteo swainsoni*)

The project area also includes USFWS-designated critical habitat for steelhead (IPac 2019).

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) is federally listed as threatened. The current known range of the valley elderberry longhorn beetle extends throughout California's Central Valley and associated foothills from about the 3,000-foot contour on the east and the watershed of the Central Valley on the west. The VELB is dependent on its host plant, elderberry, which is a common component of riparian corridors and adjacent upland areas in the Central Valley. The VELB has four stages of life: egg, larva, pupa, and adult. Females deposit eggs on or adjacent to the host elderberry. Egg production varies, and females have been observed to lay between 16 and 180 eggs. Eggs hatch within a few days of being deposited and larvae emerge. The larvae bore into the wood of the host plant and create a long feeding gallery in the pith of the elderberry stem. The larvae feed on the pith of the plant for 1–2 years. When a larva is ready to pupate, it chews an exit hole to the outside of the stem and then plugs it with wood shavings. The larva then retreats into the feeding gallery to an enlarged pupal chamber. The larvae metamorphose into pupae between December and April; the pupal stage is thought to last about a month. The adult remains in the chamber for several weeks after the pupal phase and then emerges from the chamber through the exit hole, which is typically 4–10 millimeters in diameter and circular to oval in shape. Adults emerge between mid-March and mid-June, the flowering season of the plant. Adults feed on elderberry leaves and mate within the elderberry canopy (Talley et al. 2006).

Several elderberry shrubs occur in mixed riparian habitat and as individual shrubs in uplands in the project area (Exhibit 6). With avoidance measures, no adverse effects to VELB are expected.

Central Valley Steelhead

Steelhead is an anadromous fish that migrates as juveniles to the ocean where they remain most of their adult lives, then return to freshwater to spawn. Steelhead and fall run chinook (not listed) occur in the Calaveras River. Adult fish access the Calaveras River upstream of Bellota Weir via: 1) the Old Calaveras River channel downstream of Bellota, and 2) Mormon Slough via the Stockton Diverting Canal. Most fish migrate through Mormon because this route receives higher flows (Stillwater Sciences 2004).

The Central Valley Steelhead Distinct Population Segment (DPS) spawn and emerge in the freshwater streams where they were born. This DPS maintains a winter run strategy where migration initiates directly from the ocean when fall and winter rainfall produces significant increases in stream flows. After emergence, juveniles remain in the freshwater environment for 1 to 2 years prior to migrating to the Pacific Ocean. When sexually mature, they migrate back to their natal streams to spawn. Unlike Chinook salmon, steelhead do not necessarily die after spawning, some steelhead survive to return to the ocean and may again ascend a river to spawn. The steelhead young spend 1 to 4 years in their freshwater natal stream before going to the ocean (2 years residence in fresh water is most common). The period of expected migration of adult steelhead in the Calaveras River is October through March, and the outmigration of juvenile steelhead is January through June (DWR 2007). The range of this DPS includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries.

Table : Special-status Wildlife

Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
	USFWS[1]	CDFW[2]			
Invertebrates					
Branchinecta lynchi Vernal pool fairy shrimp	FE	—	Vernal pools of California's Central Valley	**No Potential-**no vernal pools or other seasonal wetlands are present in the project area.	No adverse effects
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	—	Elderberry shrubs	**Low-**several elderberry shrubs the required habitat for this species are present.	No likely adverse effects; discussed in report

Scientific Name Common Name	Status USFWS[1]	Status CDFW[2]	Habitat Description[3]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
Lepidurus packardi Vernal Pool tadpole shrimp	FE	—	Vernal pools, clay flats, roadside ditches, and road ruts	**No Potential-**no vernal pools or other seasonal wetlands are present in the project area.	No adverse effects
Fish					
Oncorhynchus mykiss Steelhead	FE	ST	Cold headwaters, creeks, small to large rivers, cool lakes, estuaries, and oceans comprise the habitats collectively	**No Potential-** suitable habitat for passage is present but salmonids are occluded from accessing the work area during the work period.	No likely adverse effects; discussed in report
Amphibians					
Ambystoma californiense California tiger salamander	FT	ST	Breeds in vernal pools and stock ponds of central California. Adults aestivate in grassland habitats adjacent to the breeding sites.	**No Potential-**no vernal pools or other seasonal wetlands are present in the project area.	No adverse effects
Rana draytonii California red-legged frog	FT		Lowlands & foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	**Unlikely-**the lack of optimal habitat conditions and CNDDB records likely precludes presence.	No adverse effects
Reptiles					
Thamnophis gigas Giant garter snake	FT	ST	Found primarily in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks. Prefers locations with vegetation close to the water for basking.	**Unlikely-**although suitable habitat is present, project area is outside the distributional range of this species.	No adverse effects
Birds					
Aquila chrysaetos Golden eagle	— MBTA	FP FGC	Found in rolling foothills, mountain areas, sage-juniper flats, and desert. Prefers cliff-walled canyons to provide nesting habitat as well as large trees in open areas.	**Low-**species could forage in vicinity of project area; not likely to nest.	No adverse effects

Scientific Name Common Name	Status USFWS[1]	Status CDFW[2]	Habitat Description[3]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
Buteo swainsoni Swainson's hawk	— MBTA	ST FGC	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Potential to Occur-**suitable foraging habitat is present (agricultural fields and suitable prey base) and nesting habitat is available in the trees located in the project area. This species has been observed in the area.	Potential adverse effects include removal of nesting trees, discussed further in report.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	MBTA FC	SE	Nesting habitat is cottonwood/willow riparian forest. Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter Co., the south fork of the Kern River in Kern Co., and along the Santa Ana, Amargosa, and lower Colorado rivers.	**No Potential:** lack of extensive riparian vegetation precludes presence.	No adverse effects
Elanus leucurus White-tailed kite	— MBTA	FP FGC	Found in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Requires open grasslands, meadows, or marshes for foraging close to the isolated, dense-topped trees for nesting and perching.	**Potential to Occur:** Suitable foraging habitat is present (agricultural fields and suitable prey base) and nesting habitat is available in the trees located in the project area. This species has been observed in the area.	Potential adverse effects include removal of nesting trees, discussed further in report.
Falco peregrinus Peregrine falcon	-- MBTA	FP	Coastal sage scrub communities that are associated with coastal dunes, perennial grasslands, annual grasslands, croplands, pastures, coast Douglas-fir hardwood forests, coastal oak woodlands, montane hardwood woodlands, closed-cone pine-cypress woodlands, chamise-red shank chaparral, and mixed-chaparral communities.. East of San Francisco Bay, peregrine falcons occupy cliffs and rocky areas in coastal sage scrub habitat on southwest-facing slopes.	**Unlikely:** suitable habitats are limited and no recorded occurrences are within 5 miles.	No adverse effects

Scientific Name Common Name	Status USFWS[1]	Status CDFW[2]	Habitat Description[3]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
Haliaeetus leucocephalus Bald eagle	FD MBTA	SE FP FGC	Occurs along ocean shoreline, lake margins, and rivers for nesting and wintering. Most nests are within one mile of water. Nest in large, old-growth or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**Unlikely:** suitable habitats are limited and no recorded occurrences are within 5 miles.	No adverse effects
Laterallus jamaicensis coturniculus California black rail	— MBTA	ST FP	Inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. Requires water depth of about 1 inch that does not fluctuate during the year, and dense vegetation for nesting.	**Unlikely-**no suitable habitats are present. No recorded occurrences are within 5 miles.	No adverse effects
Mammals					
Neotoma fuscipes riparia Riparian woodrat	FE	—	Rivers, creeks and stock ponds of the Sierra foothills and coast range, preferring pools with overhanging vegetation.	**Unlikely-**riparian habitat is not extensive enough to support this species.	No adverse effects
Sylvilagus bachmani riparius Riparian brush rabbit	FE	SE	Riparian oak forests with a dense understory of wild roses, grapes, and blackberries.	**Unlikely-**riparian habitat is not extensive enough to support this species.	No adverse effects
Vulpes macrotis mutica San Joaquin kit fox	FE	ST	Arid and semi-arid regions encompassing desert scrub, chaparral, halophytic, and grassland communities. Areas with sparse ground cover are preferred. It is found in elevations ranging from 400–1,900 m	**Unlikely-**no evidence found and habitat is not optimal for this species.	No adverse effects

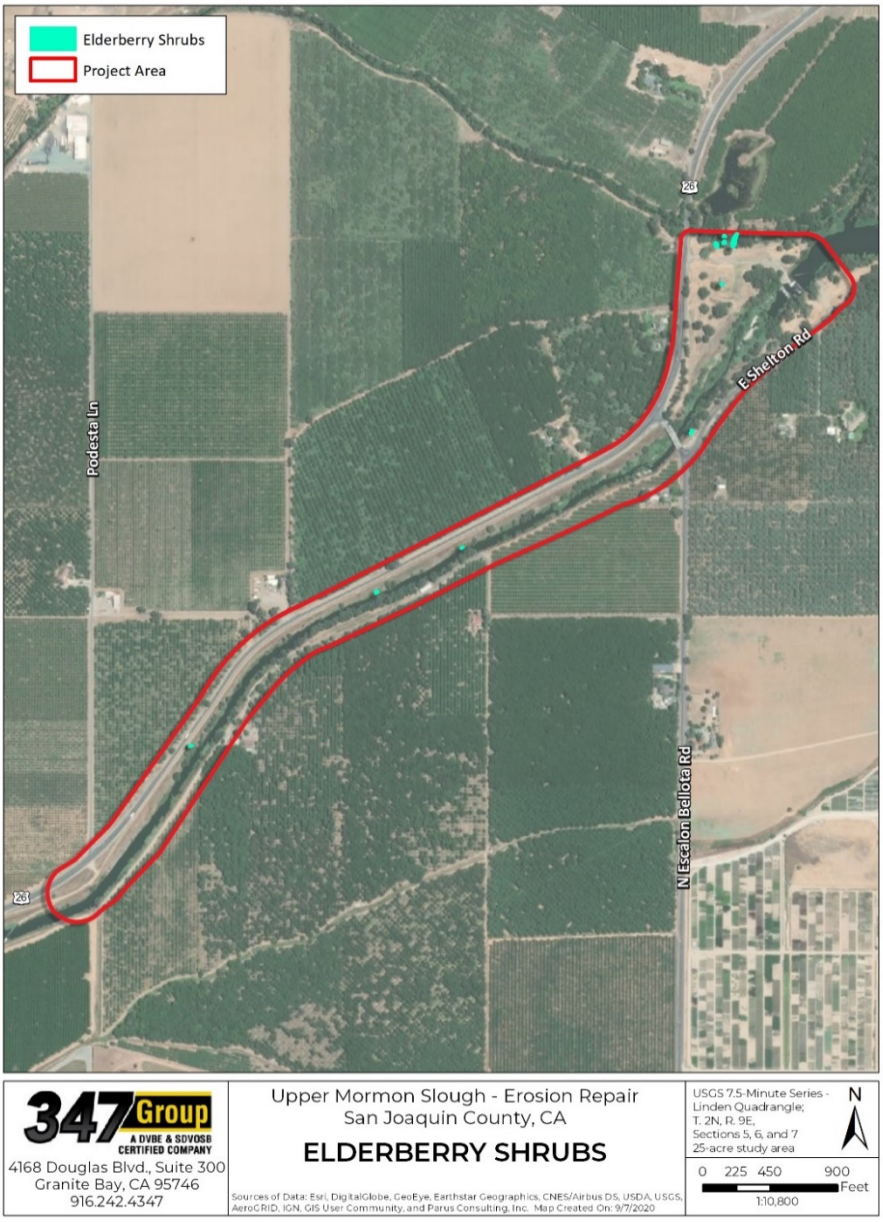
Scientific Name Common Name	Status		Habitat Description[3]	Potential to Occur	Potential for Adverse Effects/Inclusion in Recommendations
	USFWS[1]	CDFW[2]			

Code Designations

[1] Federal Status: 2019 USFWS Listing	[2] State Status: 2019 CDFW Listing
ESU = Evolutionary Significant Unit is a distinctive population.	**SE** = Listed as endangered under the CESA.
FE = Listed as endangered under the FESA.	**ST** = Listed as threatened under the CESA.
FT = Listed as threatened under the FESA.	**FP** = Listed as fully protected under FGC.
.	**CFG** = FGC =protected by FGC 3503.5
FD = Delisted in accordance with the FESA.	**—** = Not state listed
— = Not federally listed	

[3] **Habitat description**: Habitat description adapted from CNDDB (CDFW 2019).

Exhibit 6: Elderberry Shrubs



While Mormon Slough provides upstream migration passage to anadromous salmonids, it is too warm in the summer to be suitable rearing habitat. As part of Stockton East Water District's agricultural water delivery operations, flashboard dams are installed at twelve locations throughout Mormon Slough, beginning April 15 and being removed from the river by November 1. This would effectively occlude all migrating adult steelhead from the project area during the anticipated June through September work window. Juvenile steelhead rearing does not occur in the project area and migration during the spring does not overlap with the proposed summer work window. Therefore juvenile steelhead will not be affected by the project. .

Swainson's Hawk

SWHA is state listed as threatened. SWHA forage in grasslands, grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Vineyards, orchards, rice, and cotton crops are generally unsuitable for foraging because of the density of the vegetation (CDFG 1992). Most SWHA winter in South America. SWHA arrive in California in early March to establish nesting territories and breed (CDFG 1994). They usually nest in large, mature trees. Most nest sites (87 percent) in the Central Valley are found in riparian habitats (Estep 1989), primarily because trees are more available there. SWHA also nest in mature roadside trees and in isolated trees in agricultural fields or pastures. The breeding season is from March through August (Estep 1989). This species was seen soaring overhead during surveys and trees in the project area but no nest sites are recorded in the project area.

Special-Status Birds

Eagles, raptors and fully protected species (such as white-tailed kite) could nest in the project area. Nearly all other birds are protected under the MBTA, and shrubs and trees along the slough could be occupied by nesting birds. Most native, breeding birds are protected under Section 3503 of the FGC, and raptors specifically are protected under Section 3503.5 of the FGC. Both Section 3513 of the FGC and the Federal MBTA prohibit the killing, possession, or trading of migratory birds. Section 3800 of the FGC prohibits taking of nongame birds and State Fully Protected species.

Wildlife Movement Corridors

The project area was evaluated for evidence of a wildlife movement corridor during surveys. Since Upper Mormon Slough provides ample cover and a permanent water source for wildlife, it is likely a significant corridor for wildlife movement. As the project design is not expected to result in impedance of wildlife movement, the use of this corridor is not expected to be adversely affected.

Potentially Jurisdictional Waters of the U.S.

Potentially jurisdictional wetlands were delineated in accordance with the multi-parameter methodology set forth by the USACE. Since Upper Mormon Slough is a named perennial river, it is considered jurisdictional under the federal CWA. Associated riparian wetland vegetation is also likely

jurisdictional and is regulated by the USACE. A separate jurisdictional delineation report provides details to support permitting this project.

DISCUSSION AND RECOMMENDATIONS

The following discussion addresses potential adverse effects/impacts to biological resources resulting from the proposed project and recommends mitigation measures where appropriate to minimize those impacts to a level of "less than significant" under CEQA.

Special Status Plants

Because of the lack of rare species found, the somewhat disturbed nature of the project area and lack of suitable habitat for some species, as described in Table 1, special-status plant species are not expected to occur within the project area. For these reasons, no special-status plant species would be adversely affected by the proposed project and no further studies are necessary.

Special Status Wildlife

Since many of the wildlife species described in Table 2 would not be found or expected to be adversely affected by the project, no further studies for these species were done. Species that may be affected are discussed below.

Valley Elderberry Longhorn Beetle

Although elderberry shrubs are not expected to be removed and can be avoided, the following measures would minimize any potential adverse effects to VELB:

- Fence avoided elderberry shrubs to minimize any potential effects on elderberry plants, establishing a setback of 20 feet from the dripline
- Conduct a worker's awareness program (WEAP) on the need to avoid damaging elderberry plants, the status of the VELB, and the possible penalties for not complying with these requirements.

If the project design is revised and may subsequently remove or adversely affect shrubs, then the project will likely need to adhere to the following SJMSCP compensation measures in addition to the general minimization measures described above:

- For all shrubs without evidence of VELB exit holes which cannot be retained on the project site, the JPA shall, during preconstruction surveys, count all stems of one inch or greater in diameter at ground level. Compensation for removal of these stems shall be provided by the JPA within SJMSCP Preserves as provided in SJMSCP Section 5.5.4(B) (SJCOG 2000).
    - 5.5.4 (B) For all elderberry bushes without exit holes which cannot be avoided on a project sites pursuant to Section 5.2.4.1, the JPA shall: Shall provide mitigation within SJMSCP Preserves of three new plants for each stem over one inch in

diameter at ground level to be removed on the project site. Mitigation shall be based upon JPA preconstruction surveys requiring counts of all stems of elderberry shrubs with stems one inch or greater in diameter at ground level per Section 5.2.4.1(SJCOG 2000).

- For all shrubs with evidence of VELB exit holes, the JPA shall undertake transplanting of elderberry shrubs displaying evidence of VELB occupation to VELB mitigation sites during the dormant period for elderberry shrubs (November 1 - February 15). For elderberry shrubs displaying evidence of VELB occupation which cannot be transplanted, compensation for removal of shrubs shall be as provided in SJMSCP Section 5.5.4 (C) (SJCOG 2000).
    - 5.5.4 (C) For shrubs with exit holes, a 3:1 compensation requirement (three new plants for each stem one inch or greater in diameter which is removed from a project site) shall be provided, in addition to compensation required pursuant to B above (an overall compensation ratio of 6:1), for elderberry shrubs which are not transplanted to VELB mitigation sites and which display evidence of VELB occupation based on a preconstruction survey by the JPA.

It is anticipated that this compensation shall be required for elderberry shrubs removed between February 15 and October 31 of each year when transplanting of non-dormant shrubs have a low likelihood of survival (SJCOG 2000).

Steelhead

As part of Stockton East Water District's agricultural water delivery operations, flashboard dams are installed at twelve locations throughout Mormon Slough, beginning April 15 and being removed from the river by November 1. This would effectively occlude all migrating adult steelhead from the project area during the anticipated June through September work window

Swainson's Hawk

Swainson's hawk could nest in or near the project area. Loss or alteration of habitat or nest site disturbance could result in (1) nest abandonment, (2) loss of young, (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates); and (4) may ultimately result in the take (killing) of nestling or fledgling Swainson's hawks incidental to otherwise lawful activities.

The project will implement mitigation as recommended by the SJMSCP to ensure that any nest impacts from construction will not result in adverse effects on this species. Measures to minimize project-related impacts to SWHA include the following:

- Prior to ground disturbance, a qualified biologist will conduct pre-construction Swainson's hawk surveys during the appropriate time of year using approved methods. As part of these surveys, the biologist will also identify any known nest using the CDFW's CNDDB. If no Swainson's hawk nests are detected on site or nearby the site during pre-construction surveys then no additional measures are required.

- If active Swainson's hawk nests are found within 0.5 mile of the construction footprint during the nesting season (March 1 to September 15), a qualified biologist will determine what nest avoidance buffers may be necessary so that project related activities do not cause nest abandonment. The recommended nest avoidance buffers will be submitted to Joint Powers Authority (JPA) for the SJMSCP for approval. Adjustments to the buffer(s) will require prior approval by JPA, as coordinated by the qualified biologist. The qualified biologist will monitor construction activities to ensure adherence to the buffer and document any adverse effects to the nest, eggs, nestlings, fledged young, or adults. If behavior of the adults or young indicate disturbance that could result in take, construction activities will be adjusted or halted to ensure take is avoided. The project biologist will submit a memorandum documenting compliance to the appropriate agencies on a weekly basis.

- Based on results of the focused Swainson's hawk surveys, construction would not result in loss or removal of any known Swainson's hawk nest trees. If a new nest is found in the future in a tree that would be removed during project construction, removal would not occur during the nesting season. The qualified biologist would coordinate with JPA to determine appropriate measures.

- Under the SJMSCP, the Project applicant has the option of retaining known or potential Swainson's hawk nest trees (i.e., trees that hawks are known to have nested in within the past three years or trees, such as large oaks, which the hawks prefer for nesting) or removing the nest trees. If the Project Proponent elects to retain a nest tree, and in order to encourage tree retention, the following Incidental Take Minimization Measure as noted in the SJMSCP shall be implemented during construction activities:

    a. If a nest tree becomes occupied during construction activities, then all construction activities shall remain a distance of two times the dripline of the tree, measured from the nest. If the Project Proponent elects to remove a nest tree, then nest trees may be removed between September 1 and February 15, when the nests are unoccupied.

- These Incidental Take Minimization Measures are consistent with the provisions of the Migratory Bird Treaty Act.

Tree Nesting Raptors and Other Migratory Birds

Potential impacts could occur to resident and migratory species during project construction, which would render the project temporarily unsuitable for birds because of the noise, vibrations, and increased activity levels associated with various construction activities. The following measures will minimize adverse effects to these species:

- If tree or vegetation removal, structure demolition or ground disturbance activities are scheduled to commence during the breeding season (February 1 through August 31), pre-construction nesting bird surveys will be conducted by a qualified biologist to identify possible nesting activity.

- Pre-construction surveys shall be completed no more than 30 days prior to ground disturbance, structure demolition, or tree removal within the project site and will include a 100-ft buffer area of the project site to be surveyed.

- A construction-free buffer of suitable dimensions must be established around any active raptor and migratory bird nests (up to 250 feet for raptors, depending on the location and species) for the duration of the project or until it has been determined that the chicks have fledged and are independent of their parents.

- As an alternative to the above measures, the project applicant may choose to remove trees and demolish existing structures that provide potential nesting habitat during the non-breeding season from September 1st through January 31st.

Riparian Wetlands and Woodland

Project work that would result in removal or fill in the areas at and below the OHWM would require a Section 404 permit under the CWA. In addition, those areas that would involve substantial alteration to flow are subject to a 1602 Streambed Alteration Agreement with CDFW. The following measures would be required to process permitting:

- A formal delineation of waters of the U.S. that is in preparation is required to document the full extent of jurisdictional waters within the project area. Impacts to streambed and banks would require a Section 1602 Streambed Alteration Agreement from CDFW.

- The applicant shall obtain a Section 404 CWA permit for impacts to waters of the U.S. These permits shall be obtained as part of the project approval process and in the case of the SAA and 401 certifications, require CEQA documentation. The project applicant shall ensure that the project will result in no net loss of waters of the U.S. by providing mitigation through impact avoidance, impact minimization, and/or compensatory mitigation for the impact, as determined in the CWA Section 404/401 permit requirements.

- Compensatory mitigation may consist of (1) obtaining credits from a mitigation bank; (2) making a payment to an in-lieu fee program that will conduct wetland, stream, or other aquatic resource restoration, creation, enhancement, or preservation activities; and/or (3) providing compensatory mitigation through an aquatic resource restoration, establishment, enhancement, and/or preservation activity. This final type of compensatory mitigation may

be provided at or adjacent to the impact site (i.e., on-site mitigation) or at another location, usually within the same watershed as the permitted impact (i.e., off-site mitigation). The project/permit applicant retains responsibility for the implementation and success of the mitigation project.

Furthermore, these measures that are likely to be identified in the permit documents are recommended:

- Demarcate work areas and access routes and fence nearby riparian areas to be avoided. If possible, plan for access to the channel within the same area that would be disturbed by future bridge replacement activities.
- Where possible and necessary, remove giant reed and tree of heaven in whole from the channel by excavating the entire root ball. Replace non-native species with native riparian species.
- Stabilize and replant disturbed areas through natural recruitment and planting of appropriate riparian native species including willows, white alder, elderberry, and Fremont cottonwood.
- Restore areas disturbed during project construction with the amount of habitat created/restored at an appropriate ratio of new plantings per each large woody plant removed that is greater or equal to 6 inches diameter at breast height (dbh). These replanting ratios will help ensure successful establishment of at least one vigorous plant for each large woody plant removed to accommodate the project.
- Determine plant spacing intervals as appropriate based on-site conditions following construction.
- Ensure any seed mixes or other vegetative material used for re-vegetation of disturbed sites consists of locally adapted native plant materials to the extent practicable.

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