APPENDIX D
Biological Resources Studies/ Jurisdictional Delineation

Messick Bridge Replacement Project

Biological Assessment

San Joaquin County, California

San Joaquin County-District 10-Bridge #29C-274

Federal-Aid Project #: 5929(254)

June 2023

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Biological Assessment

San Joaquin County, California

San Joaquin County-District 10-Bridge #29C-274

Federal-Aid Project #: 5929(254)

June 2023

STATE OF CALIFORNIA
Department of Transportation
in cooperation with San Joaquin County

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Table of Contents

Chapter 1. Introduction 2
1.1. Purpose and Need of the Proposed Action 2
1.2. Species and Critical Habitats Assessed 2
1.3. Authorities and Discretion 4
1.3.1. Federal 4
1.3.2. State 7
1.3.3. Local 10
1.4. Consultation History 11
1.5. Resource Agency Coordination and Professional Contacts 12
1.6. Study Methods 13
1.6.1. Personnel and Survey Dates 14
1.6.2. Limitations and Assumptions that May Influence Results 14
Chapter 2. Proposed Agency Action 15
2.1. Proposed Action Location 15
2.2. Description of Proposed Action 15
2.3. Deconstruct the Proposed Action 19
2.3.1. Construction Scenario Summary 19
2.3.2. Project Operation and Maintenance 19
2.3.3. Sequencing and Schedule 19
2.4. Conservation Measures 20
2.4.1. Project Design Modifications for Avoidance and Minimization 20
2.4.2. Species Specific Conservation Measures – California Central Valley Steelhead 20
2.5. Compensation 21
Chapter 3. Environmental Baseline 22
3.1. Summary of Environmental Baseline 22
3.2. Description of the Action Area 22
3.2.1. Physical Conditions 22
3.2.2. Biological Conditions 24
3.3. Habitat Conditions in the Action Area 29
3.4. Status of Federally-Listed/Proposed Species 29
3.4.1. Discussion of California Central Valley Steelhead 29
3.4.2. Survey Results 31

3.4.3. Status of Designated Critical Habitat in the Action Area for California Central Valley Steelhead 31
Chapter 4. Effects of the Action 34
4.1. Stressors from the Action 34
4.2. Exposure to Stressors from the Action 34
4.3. Response to the Exposure 35
4.4. Effects of the Action 36
4.5. Cumulative Effects 37
4.6. Determination 37
4.6.1. Species and critical habitat determination 37
Chapter 5. Essential Fish Habitat Assessment 39
5.1. Essential Fish Habitat 39
5.1.1. Essential Fish Habitat Background 39
5.2. Managed Fishery Habitats with Potential to Occur in the Action Area 40
5.3. Potential Adverse Effects on Essential Fish Habitat 41
5.3.1. Potential Adverse Effects on Essential Fish Habitat for Pacific Salmonids 41
5.4. Essential Fish Habitat Conservation Measures 41
5.5. Essential Fish Habitat Conclusions 42
Chapter 6. Literature Cited 43
Appendix A IPaC Species List 45
Appendix B NOAA Fisheries Species List 46
Appendix C Site Photographs 47

List of Tables

Table 1. Threatened, endangered and proposed species and designated and proposed critical habitat and effect determinations. 3

List of Figures

Figure 1: Regional Vicinity 16
Figure 2: Project Vicinity 17
Figure 3: Proposed Project 18
Figure 4: Action Area 23
Figure 5: Vegetation Communities and Other Land Uses 25
Figure 6: Critical Habitat and Essential Fish Habitat 30

Acronym List

AASHTO	American Association of State Highway and Transportation Officials
BA	biological assessment
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CIDH	cast in drilled hole
CIRP	California Inventory of Rare Plants
CISS	cast in steel shell
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
E	Endangered
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FESA	federal Endangered Species Act (referred to as ESA in USFWS/NOAA Fisheries literature)
FHWA	Federal Highway Administration
FMP	Fishery Management Plan
HCP	Habitat Conservation Plan
IPaC	Information for Planning and Consultation
IS	Initial Study
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
Michael Baker	Michael Baker International
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Protection Act
NOAA Fisheries	National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service branch

OHWM	Ordinary High Water Mark
PBF	Physical and Biological Features
PFMC	Pacific Fisheries Management Council
project	Messick Bridge Replacement Project
RWQCB	Regional Water Quality Control Board
SEWD	Stockton East Water District
SP1	Soil Pit 1
steelhead	California Central Valley steelhead
T	Threatened
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WEAP	Workers Environmental Awareness Program
WoUS	Waters of the United States

Executive Summary

The purpose of this biological assessment (BA) is to provide technical information and to review the proposed project in sufficient detail to determine to what extent the proposed project may potentially affect threatened, endangered, or proposed species listed under the Federal Endangered Species Act (FESA). The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this BA under its assumption of responsibility at 23 United States Code (USC) 326 and 23 USC 327. The BA is also prepared in accordance with 50 Code of Federal Regulations (CFR) 402, legal requirements found in section 7 (a)(2) of the FESA (16 USC 1536[c]), and with FHWA and Caltrans regulations, policy, and guidance. The document presents technical information upon which later decisions regarding project effects are developed.

This BA analyzes the project effects of the Messick Bridge Replacement Project (project), which seeks to replace an existing bridge at the Messick Road crossing over Mosher Creek with a new, larger bridge. This BA specifically addresses the potential of the project to adversely affect California Central Valley steelhead (*Oncorhynchus mykiss*; steelhead), its designated critical habitat, or designated Essential Fish Habitat (EFH) for Chinook salmon (*Oncorhynchus tshawytscha*). As a result of the analysis, it was determined that the project may affect but is not likely to adversely affect steelhead, may affect but is not likely to adversely affect steelhead critical habitat, and will not adversely affect EFH for Chinook salmon.

Chapter 1. Introduction

1.1. Purpose and Need of the Proposed Action

The existing Messick Road Bridge is over 90 years old and does not meet current bridge design standards. Structural and functional deficiencies have been identified for the bridge, such as section loss in substructure, decay in substructure, intolerable deck geometry, and insufficient bridge and approach railings. The proposed project would construct a new bridge meeting current engineering standards to enhance the safety of motorists and bicyclists in the project area.

1.2. Species and Critical Habitats Assessed

An Official Species List from the US Fish and Wildlife Service (USFWS) Sacramento Field Office was received on October 6, 2021, updated on September 19, 2022, and updated again on June 1, 2023 (refer to Appendix A). The National Marine Fisheries Service (NOAA Fisheries) species list was confirmed on September 30, 2022 and reconfirmed on June 1, 2023 (refer to Appendix B). The following species that are listed or proposed for listing under the federal Endangered Species Act (FESA) and/or have designated or proposed critical habitats coinciding with the project were identified on the federal species list and are considered during this analysis:

Threatened (T) and Endangered (E) Species

- California tiger salamander (*Ambystoma californiense*) - T
- Conservancy fairy shrimp (*Branchinecta conservatio*) - E
- Vernal pool fairy shrimp (*Branchinecta lynchi*) - T
- Fleshy owl's-clover (*Castilleja campestris* ssp. *succulenta*) - T
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) - T
- Delta smelt (*Hypomesus transpacificus*) - T
- Vernal pool tadpole shrimp (*Lepidurus packardi*) - E
- California Central Valley steelhead - E

Critical Habitat

The proposed action addressed in this document falls within designated critical habitat for steelhead.

Table 1. Threatened, endangered and proposed species and designated and proposed critical habitat and effect determinations.

Threatened, Endangered, Proposed Species, or Designated Critical Habitat	**Scientific Name**	**Listing Status**	**Presence of Species in Action Area (Yes/No)**	**Presence of Critical Habitat in Action Area (Yes/No)**	**Effect Determination**
California tiger salamander	*Ambystoma californiense*	T	No	No	There is no suitable breeding habitat. No Effect.
Conservancy fairy shrimp	*Branchinecta conservatio*	E	No	No	There are no vernal pools. No Effect.
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	No	No	There are no vernal pools. No Effect.
Fleshy owl's-clover	*Castilleja campestris* ssp. *succulenta*	T	No	No	There are no vernal pools. No Effect.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	No	No	There are no elderberries. No Effect.
Delta smelt	*Hypomesus transpacificus*	T	No	No	The project is outside of the known range of this species. No Effect.
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	No	No	There are no vernal pools. No Effect.
California Central Valley steelhead	*Oncorhynchus mykiss*	E	No	Yes	This species is known to occur in the Calaveras River but not in Mosher Creek. Site is in Critical Habitat but required Physical and Biological Features are absent. May Affect, Not Likely to Adversely Affect.

1.3. Authorities and Discretion

The proposed project as implemented will satisfy the requirements of applicable federal and State regulations, as well as local policies, ordinances, or adopted plans protecting biological resources. Only those regulations and/or environmental protection documents that are directly applicable to the permitting and implementation of this project are outlined below. General environmental regulations that are not applicable to the conditions of this project are not described.

1.3.1. Federal

National Environmental Policy Act

The National Environmental Policy Act (NEPA) directs a "systematic, interdisciplinary approach" to planning and decision making and requires environmental statements for "major federal actions significantly affecting the quality of the human environment." Implementing regulations by the Council of Environmental Quality (40 Code of Federal Regulations [CFR], Parts 1500–1508) require federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts.

Federal Endangered Species Act of 1973

As defined within the FESA of 1973, an endangered species is any animal or plant listed by regulation as being in danger of extinction throughout all or a significant portion of its geographical range. A threatened species is any animal or plant that is likely to become endangered within the foreseeable future throughout all or a significant portion of its geographical range. Without a special permit, federal law prohibits the "take" of any individuals or habitat of federally listed species. Under Section 9 of FESA, take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." The term "harm" has been clarified to include "any act which actually kills or injures fish or wildlife, and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife." Enforcement of FESA is administered by the USFWS.

Critical habitat is designated for the survival and recovery of species listed as threatened or endangered under FESA. Designated critical habitat includes those areas occupied by the species, in which are found physical and biological features that are essential to the conservation of a FESA-listed species and which may require special management considerations or protection. Designated critical habitat may also include unoccupied habitat if it is determined that the unoccupied habitat is essential for the conservation of the species.

Whenever federal agencies authorize, fund, or carry out actions that may adversely modify or destroy designated critical habitat, they must consult with the USFWS under Section 7 of FESA. The designation of critical habitat does not affect private landowners, unless they are proposing uses of federal funds, or require federal authorization or permits (i.e., funding from the Federal Highway Administration (FHWA) or a permit from the US Army Corps of Engineers [USACE]).

If the USFWS determines that designated critical habitat will be lost or adversely modified from a proposed action, the USFWS will develop reasonable and prudent alternatives in cooperation with Caltrans to ensure the purpose of the proposed action can be achieved without loss of designated critical habitat. If the action is not likely to adversely modify or destroy designated critical habitat, the USFWS will include a statement in its biological opinion concerning any incidental take that may be authorized and specify terms and conditions to ensure the agency is in compliance with the opinion.

Migratory Bird Treaty Act

Pursuant to the Migratory Bird Treaty Act (MBTA) (16 US Government Code [USC] 703) of 1918, as amended in 1972, federal law prohibits the taking of migratory birds or their nests or eggs (16 USC 703; 50 CFR 10, 21). The statute states:

> *"Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill...any migratory bird, any part, nest, or egg of any such bird...included in the terms of the [Migratory Bird] conventions."*

The MBTA covers the taking of any nests or eggs of migratory birds, except as allowed by permit pursuant to 50 CFR, Part 21. Disturbances causing nest abandonment and/or loss of reproductive effort (i.e., killing or abandonment of eggs or young) may also be considered a "take." This regulation seeks to protect migratory birds and active nests.

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: Accipitridae (kites, hawks, and eagles); Cathartidae (New World vultures); Falconidae (falcons and caracaras); Pandionidae (ospreys); Strigidae (typical owls); and Tytonidae (barn owls).

The provisions of the 1972 amendment to the MBTA protects all species and subspecies of the families listed above. The MBTA protects over 800 species including geese, ducks, shorebirds, raptors, songbirds and many relatively common species.

Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, issued in 2001, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 Federal Register 3853–3856). Executive Order 13186 requires federal agencies to work with the USFWS to develop a memorandum of understanding.

Executive Order 13112 – Invasive Species

On February 3, 1999, President William J. Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." FHWA guidance issued August 10, 1999, directs the use of the State's invasive species list, maintained by the California Invasive Species Council to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project. Under the Executive Order, federal agencies cannot authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless all reasonable measures to minimize risk of harm have been analyzed and considered.

Clean Water Act

Since 1972, the USACE and US Environmental Protection Agency (EPA) have jointly regulated the filling of "waters of the U.S." (WoUS), including wetlands, pursuant to Section 404 of the Clean Water Act (CWA). The USACE has regulatory authority over the discharge of dredged or fill material into the WoUS under Section 404 of the CWA. The USACE and EPA define "fill material" to include any "material placed in waters of the United States where the material has the effect of: (i) replacing any portion of a water of the United States with dry land; or (ii) changing the bottom elevation of any portion of the waters of the United States." Examples include, but are not limited to, sand, rock, clay, construction debris, wood chips, and "materials used to create any structure or infrastructure in the waters of the United States." The term WoUS is defined under CWA regulations 33 CFR §328.3(a). Wetlands, a subset of jurisdictional waters, are jointly defined by the USACE and EPA under CWA regulations 33 CFR §328.3(b).

In the absence of adjacent wetlands, the limits of the USACE's jurisdiction in non-tidal waters extend to the ordinary high water mark (OHWM), which is defined in CWA regulations 33 CFR §328.3I. Indicators of an OHWM are defined in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008). An OHWM can be determined by, but not limited to, the observation of benches, break in bank slope, particle size distribution, sediment deposits, drift, litter, and/or change in plant community. The Regional Water Quality Control Board (RWQCB) shares the USACE's jurisdictional methodology, unless State waters are present.

Executive Order 11990 Protection of Wetlands

This Executive Order established a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. On federally funded projects, impacts on wetlands must be identified and alternatives that avoid wetlands must be considered. If impacts on wetlands cannot be avoided, all practicable minimization measures must be included.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1976 was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983; and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Under a 1996 amendment to the MSFCMA, numerous science, management, and conservation mandates were enacted in recognition of the importance of healthy habitat for commercial and recreational fisheries. This MSFCMA amendment, known as the Sustainable Fisheries Act, established new requirements for regional fishery management councils previously established under the MSFCMA to identify and describe Essential Fish Habitat (EFH) and work to protect, conserve, and enhance EFH for the benefit of fisheries. EFH is described as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity and may include migratory routes, open waters, wetlands, estuarine habitats, artificial reefs, shipwrecks, mangroves, mussel beds, and coral reefs.

1.3.2. State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California by establishing State policy to prevent significant, avoidable damage to the environment through the use of alternatives or mitigation measures for projects. It applies to actions directly undertaken, financed, or permitted by State lead agencies. If a project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. Section 15380 of the CEQA Guidelines independently defines “endangered” and “rare” species, with “endangered” species defined as those whose survival and reproduction in the wild are in immediate jeopardy, while “rare” species are defined as those who are in such low numbers that they could become endangered if their environment worsens.

California Endangered Species Act

In addition to federal laws, the State of California has its own California Endangered Species Act (CESA), enforced by the California Department of Fish and Wildlife (CDFW). The CESA program maintains a separate listing of species beyond FESA, although the provisions of each act are similar.

State-listed threatened and endangered species are protected under provisions of CESA. Activities that may result in "take" of individuals (defined in CESA as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by the CDFW. Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, the CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection. At the federal level, the USFWS also uses the label species of concern, as an informal term that refers to species that might be in need of concentrated conservation actions.

As the species of concern designated by the USFWS do not receive formal legal protection, the use of the term does not necessarily mean that the species will be proposed for listing as a threatened or endangered species.

California Fish and Game Code

Sections 3503, 3503.5, 3511, and 3513

The CDFW administers the California Fish and Game Code (CFGC). There are particular sections of the CFGC that are applicable to natural resource management. For example, Section 3503 makes it unlawful to destroy any birds' nest or any birds' eggs that are protected under the MBTA. Further, any birds in the orders Falconiformes or Strigiformes (Birds of Prey), such as hawks, eagles, and owls, are protected under Section 3503.5, which makes it unlawful to take, possess, or destroy their nest or eggs. A consultation with the CDFW may be required prior to the removal of any bird of prey nest that may occur on a project site. Section 3511 lists fully protected bird species, where the CDFW is unable to authorize the issuance of permits or licenses to take these species. Pertinent species that are State fully protected include golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*). In addition, Section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Sections 1600 et seq.

Sections 1600 et seq. of the CFGC establishes a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely affect fish and wildlife resources, or when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Section 1602 of the CFGC requires any person, State, or local governmental agency or public utility to notify the CDFW before beginning any activity that will do one or more of the following:

(1) substantially obstruct or divert the natural flow of a river, stream, or lake;

(2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake;

(3) or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

This applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State, including existing drain culverts, outfalls, and other structures. To avoid impacts to such features and the need for a Lake or Streambed Alteration Agreement (LSAA) from the CDFW, all proposed impacts should remain outside of the top of active banks and the canopy/dripline of any associated riparian vegetation, whichever is greater.

California Native Plant Society Rare and Endangered Plant Species

Vascular plants listed as rare or endangered by the California Native Plant Society (CNPS) in the California Inventory of Rare Plants (CIRP) have no designated status under State and federal endangered species legislation, but are assigned a California Rare Plant Rank (CRPR) and generally serve as potential candidates for future listing under CESA. CRPRs are defined as follows:

California Rare Plant Rank

1A- Plants Presumed Extirpated in California and either Rare or Extinct Elsewhere

1B- Plants Rare, Threatened, or Endangered in California and Elsewhere

2A- Plants Presumed Extirpated in California, But More Common Elsewhere

2B- Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

3- Plants about Which More Information is Needed – A Review List

4- Plants of Limited Distribution – A Watch List

Threat Ranks

.1- Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2- Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3- Not very threatened in California (< 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

1.3.3. Local

San Joaquin County General Plan

The San Joaquin County General Plan contains several goals and policies protecting natural resources that may apply to this project (San Joaquin County 2016). These include the following:

- Goal NCR-2: To preserve and protect wildlife habitat areas for the maintenance and enhancement of biological diversity and ecological integrity.
    - NCR-2.1 Protect Significant Biological and Ecological Resources: The County shall protect significant biological and ecological resources including: wetlands; riparian areas; vernal pools; significant oak woodlands and heritage trees; and rare, threatened, and endangered species and their habitats.
    - NCR-2.2 Collaboration for Species Protection: The County shall collaborate with the California Department of Fish and Wildlife during the review of new development proposals to identify methods to protect listed species.
    - NCR-2.5 No Net Loss of Wetlands: The County shall not allow development to result in a net loss of riparian or wetland habitat.
    - NCR-2.9 Protect Fisheries: The County shall encourage and support efforts to protect fisheries, including:
        - reducing the level of pesticides and fertilizers and other harmful substances in agricultural and urban runoff;
        - designing and timing waterway projects to protect fish populations; and
        - operating water projects to provide adequate flows for spawning of anadromous fish.

- Goal NCR-3: To ensure the quality of water for municipal and industrial uses, agriculture, recreation, and fish and wildlife.

    - NCR-3.9 Require Water Projects to Mitigate Impacts: The County shall require water projects to incorporate safeguards for fish and wildlife and mitigate erosion and seepage to adjacent lands.

    - NCR-3.10 Coordination for Waterway Protection: The County shall coordinate with city, State, and Federal agencies to implement policies regarding protection and enhancement of waterways and levees.

1.4. Consultation History

Section 7 consultation to date has included emails, phone calls, and meetings with staff from NOAA Fisheries, Caltrans, San Joaquin County, and Michael Baker International (Michael Baker). Consultation is summarized below.

- November 14, 2022: Project personnel attended an in-person meeting at the project site. The meeting was attended by Brian Newburg (San Joaquin County), Ryan McKenzie (NOAA Fisheries), Elizabeth Hummel (Caltrans), David Moore (Caltrans), Ryan Winkleman (Michael Baker), and Joe Drago (Michael Baker). The purpose of the meeting was to familiarize all attendees on the site characteristics and discuss potential project impacts. Those in attendance determined that the project would likely be permitted as "may affect, not likely to adversely affect" steelhead if constructed during NOAA Fisheries' approved in-water work period of August to October, when Mosher Creek would still be wet but when fish would not be expected to be present due to barriers upstream of the project. If constructed between October and April, those in attendance agreed the project would likely have "no effect" on steelhead due to the lack of in-stream water at this time of year, when the Stockton East Water District closes upstream headworks structures and cuts off all water flow to areas downstream, including the project site.

- November 15, 2022: Ryan McKenzie (NOAA Fisheries) sent an email to project personnel following up on anticipated impacts and consultation. The email was addressed to David Moore (Caltrans), Elizabeth Hummel (Caltrans), Ronen Johnson (Caltrans), Ellen McBride (NOAA Fisheries), Ryan Winkleman (Michael Baker), and Joe Drago (Michael Baker). The email stated that because steelhead were captured at the Tully Bridge Dam downstream of the project site in the Old Calaveras River in October 2021, consultation for impacts to steelhead should be conducted.

- November 15–18, 2022: A series of emails were exchanged regarding the direction of project consultation with NOAA Fisheries. The emails were sent between David Moore (Caltrans), Elizabeth Hummel (Caltrans), Sofia Landis (Michael Baker), and Ryan Winkleman (Michael Baker). In these emails, Caltrans stated that because the project would be required to consult on impacts to both critical habitat and EFH

and because NOAA Fisheries no longer appeared to support a “no effect” determination, the project should also consult on impacts to steelhead.

1.5. Resource Agency Coordination and Professional Contacts

Michael Baker has coordinated with additional environmental scientists and professionals outside of USFWS and NOAA Fisheries regarding steelhead, as summarized below.

- September 27, 2022: Ryan Winkleman (Michael Baker) sent an email to Justin Hopkins (Stockton East Water District [SEWD]) inquiring about any monitoring data or known presence of steelhead in or around the project site based on data compiled for SEWD’s Calaveras River Habitat Conservation Plan (HCP). Mr. Hopkins responded to Mr. Winkleman via email on October 3, 2022, stating that although there are no monitoring data specifically for the areas in and around the project site, a fish net at the Calaveras River Headworks generally prevents fish from migrating downstream into the Old Calaveras River between April and October when the creek is irrigated for agricultural purposes; between October and April, the headworks facilities are closed, shutting off downstream water flow into the project site and again restricting possibilities for fish to occur.

- November 4–7, 2022: In a series of email exchanges, Ryan Winkleman (Michael Baker) and Patrick Cuthbert (FISHBIO) discussed the general presence of steelhead and salmonids in the Old Calaveras River and the possibility of future upgrades to the Calaveras River Headworks.

- November 10, 2022: Ryan Winkleman (Michael Baker) and Patrick Cuthbert (FISHBIO) had a phone call and discussed the hydrologic background of the Calaveras River watershed, the status and distribution of salmonids in the Calaveras River and distributaries, the irrigation regime administered by the SEWD, and the appropriateness of Mosher Creek as critical habitat and EFH for salmonids.

- November 29, 2022: A phone call was held between San Joaquin County staff and Michael Baker staff. Attendees included Michael Chung and Brian Newburg (San Joaquin County), and Sofia Landis, Alan Ashimine, Jessica Ditto, and Ryan Winkleman (Michael Baker). In this meeting, Michael Baker staff updated County staff on consultation negotiations to determine the County’s preferred path forward. County staff ultimately determined that if there would be no strong restrictions or objections from the CDFW against constructing during the rainy season between October and April when upstream water flow to Mosher Creek is turned off, the County would prefer to construct during this time period to reduce the anticipated effects determination on steelhead.

- November 30, 2022: John Parent (Michael Baker) sent an email to Zachary Kearns (CDFW) describing the project site and its typical flow regime and inquiring if the CDFW would restrict or prevent in-stream work during the rainy season. Mr. Kearns responded to this email on December 5, 2022, stating that subject to

approval of upper management during the CFGC Section 1602 permitting process, the CDFW would likely not restrict in-stream work during this period but would require standard Best Management Practices and erosion control measures, as well as additional restrictions on timing of work, if any concrete were to be poured into place, and standard wildlife escape measures for sources of entrapment (e.g., pipes, trenches).

1.6. Study Methods

Prior to conducting a field survey, a literature review and records search was conducted for special-status biological resources potentially occurring on or within the vicinity of the project. Previous special-status plant and animal species occurrence records within the US Geological Survey *Linden*, *Valley Springs SW*, *Peters*, *Stockton East*, and *Waterloo, California* 7.5-minute quadrangles were determined through a query of the CDFW's California Natural Diversity Database RareFind 5 (CDFW 2022), the CNPS CIRP (CNPS 2022), and the Calflora Database (Calflora 2022), and via the USFWS Information for Planning and Consultation (IPaC) project planning tool (Appendix A), and the NOAA Fisheries species list (Appendix B). For the purposes of this Biological Assessment, only those federally listed species and/or candidate species from the IPaC and NOAA Fisheries lists are considered in the analysis.

The field review for the proposed project was conducted on August 10, 2022, to document the extent and conditions of the vegetation communities and plant and wildlife species occurring on-site. The survey was conducted from approximately 1300 to 1500 hours; weather ranged from 79 to 86 degrees Fahrenheit, with wind speeds ranging from 0 to 8 miles per hour and cloudless skies. Vegetation communities preliminarily identified on aerial photographs during the literature review were verified in the field by walking meandering transects through the vegetation communities and along boundaries between vegetation communities. Naturally vegetated areas typically have a higher potential to support special-status plant and wildlife species than areas that are highly disturbed or developed, which usually have lower quality and/or reduced amounts of suitable wildlife habitat. All plant and wildlife species observed during the field survey, as well as dominant plant species within each vegetation community, were recorded in a field notebook, and are described below. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, the overall condition of on-site vegetation, and the presence of potentially regulated jurisdictional features (e.g., streams, flood control channels) were noted within the project site. GIS ArcView software was used to digitize the mapped vegetation communities; the results were transferred onto an aerial photograph to further document existing conditions and quantify the acreage of each vegetation community. Representative photographs are included in Appendix C.

A second field visit was conducted on November 14, 2022, to meet with various agencies on-site. Wildlife species were incidentally recorded during the field meeting to provide a more comprehensive list of wildlife usage of the project site. A comprehensive inventory of plant and wildlife species was not conducted during this field meeting.

1.6.1. Personnel and Survey Dates

Qualified and experienced biologists Tom Millington (Michael Baker; Bachelor of Arts in Environmental Studies, 2010, University of California, Santa Barbara) and John Parent (Michael Baker; Bachelor of Science in Biology, 2012, California State University, Fullerton) inventoried and evaluated the general biological conditions within the project site and surrounding area on August 10, 2022. The November 2022 field meeting was attended by senior biologist Ryan Winkleman (Michael Baker; Bachelor of Science in Ecology and Evolutionary Biology, 2007, University of California, Irvine). No other field surveys or focused surveys were conducted for this project.

1.6.2. Limitations and Assumptions that May Influence Results

The field study was conducted in accordance with applicable protocols and in a way to maximize the detectability of special-status species and vegetation communities that may be present on-site and within a 500-foot buffer at the time of the survey. The survey was conducted during the appropriate season, in good weather conditions, and by qualified personnel. In order for the surveying biologists to access parcels of land surrounding the project, permission for right-of-entry was required from the landowners. However, no right-of-entry was granted for areas outside the public right-of-way and outside of the creek, and no right-of-entry was granted for parcels north of Messick Road within Mosher Creek. Therefore, surveyors walked all accessible areas and otherwise examined all inaccessible areas with binoculars in order to observe and identify vegetation communities and species of plants and wildlife. No other limitations that may influence the results of field studies associated with the proposed project are known to have occurred.

Chapter 2. Proposed Agency Action

2.1. Proposed Action Location

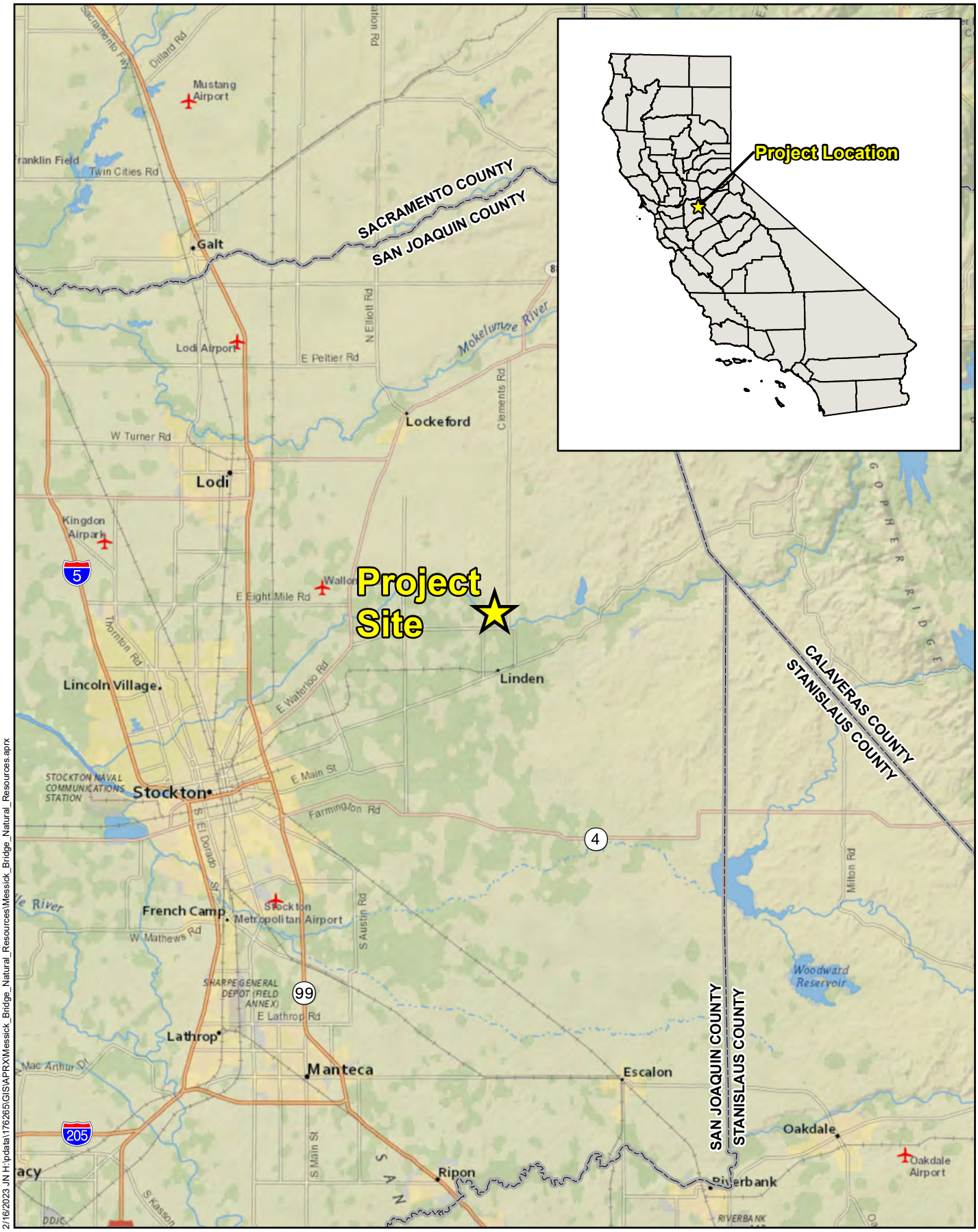
The proposed project is located within San Joaquin County, California (refer to Figure 1, *Regional Vicinity*). It is depicted in Section 3 of Township 2 North, Range 8 East, on the US Geological Survey's *Linden, California* 7.5-minute quadrangle (refer to Figure 2, *Project Vicinity*). It is located approximately 2.15 miles north of East Fremont Street (Highway 26) and 5.50 miles east of Waterloo Road (Highway 88) in San Joaquin County at latitude 38˚03'08.2"N and longitude 121˚05'14.9"W. The area is located at an elevation of approximately 105 feet above sea level and is composed of the paved roadway and Mosher Creek.

2.2. Description of Proposed Action

The County of San Joaquin proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide (refer to Figure 3, *Proposed Project*). The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate 3-foot shoulders within the County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition.

The profile of the proposed bridge would match the existing configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on cast in steel shell (CISS) or cast in drilled hole (CIDH) piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall.

The structure approach areas will require minimal grading and roadway reconstruction to tie into the proposed bridge and accommodate the widened shoulders on the structures. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current AASHTO and Caltrans standards. Three trees will likely need to be removed due to their vicinity to the existing edge of roadway. The other trees in the affected area would be protected during construction.



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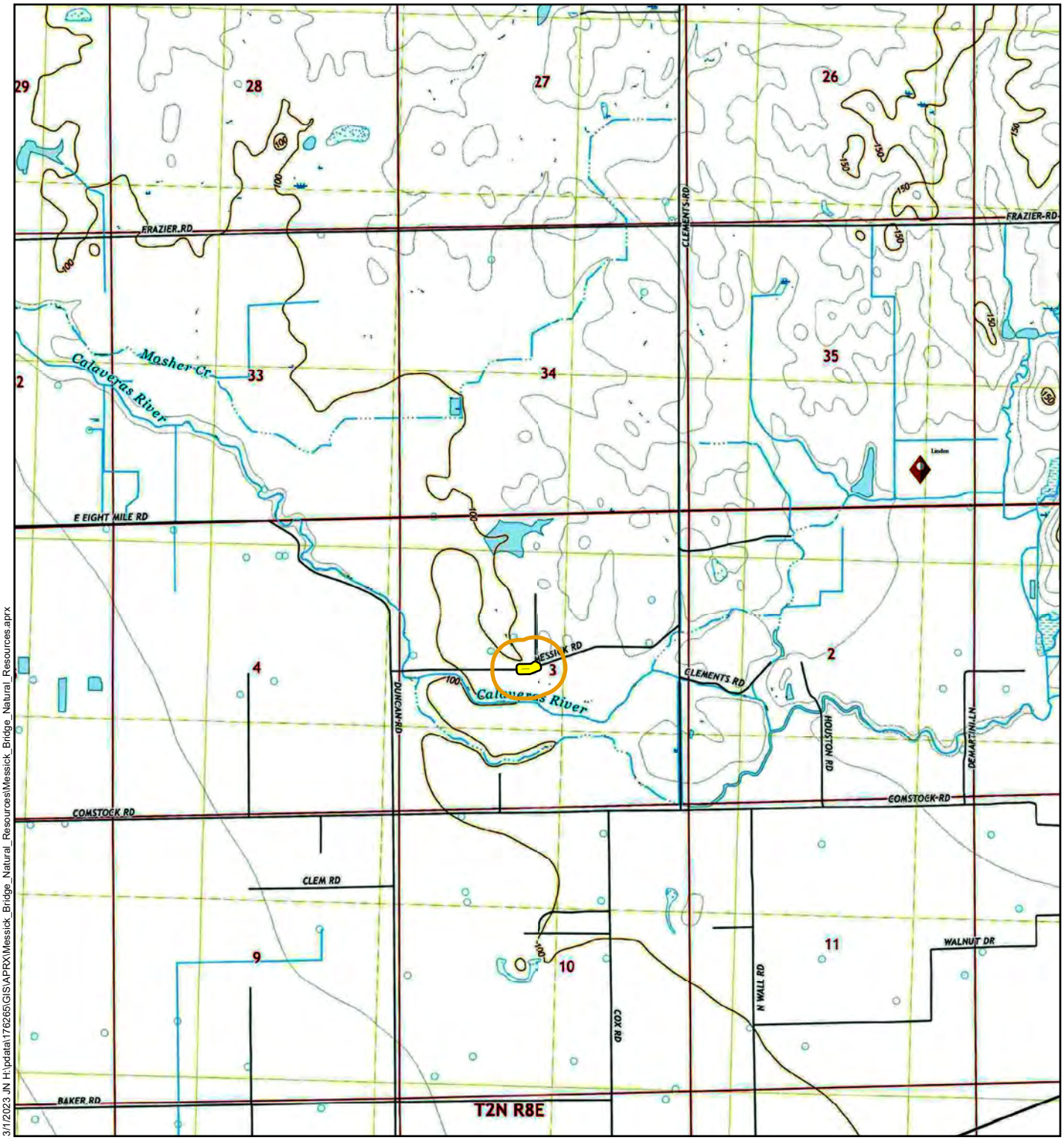
Source: ArcGIS Online, 2018

MESSICK BRIDGE REPLACEMENT PROJECT
BIOLOGICAL ASSESSMENT

Regional Vicinity

Figure 1



3/1/2023 JN H:\pdata\176265\GIS\APRX\Messick_Bridge_Natural_Resources\Messick_Bridge_Natural_Resources.aprx

Legend

- Project Site
- Biological Study Area

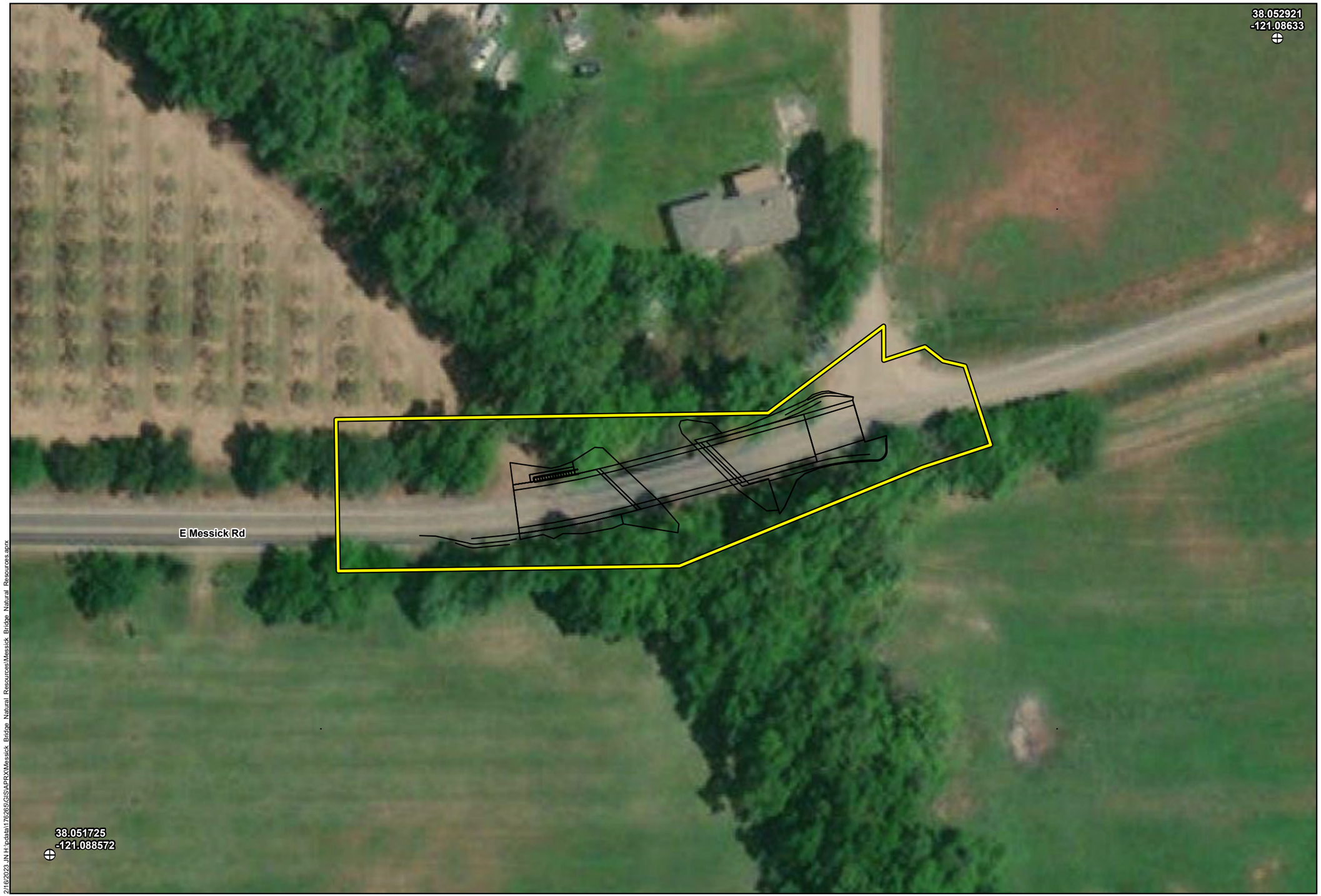
0 0.25 0.5 Miles

MESSICK BRIDGE REPLACEMENT PROJECT
BIOLOGICAL ASSESSMENT

Project Vicinity

Source: USGS 7.5-Minute topographic quadrangle maps: *Linden and Waterloo, California (2022)*

Figure 2



Legend

- Project Site
- Site Plans
- Reference Point

0 25 50 Feet

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MESSICK BRIDGE REPLACEMENT PROJECT
BIOLOGICAL ASSESSMENT

Proposed Project

Source: Esri (04/2021)

Figure 3

2.3. Deconstruct the Proposed Action

2.3.1. Construction Scenario Summary

The existing bridge will be removed, including the existing pier and abutment foundations, to a depth of 3 feet below the existing ground. Construction of the proposed bridge will involve excavation for and construction of concrete abutments founded on CISS or CIDH piles. Construction of the roadway approaches will involve the removal of existing pavement and placement of new roadway fill material, aggregate base, hot mix asphalt pavement, and installation of guard rail. The removal of three trees and removal of the other vegetation along the creek will be necessary for the project. Temporary work within Mosher Creek includes removal of the existing structure, falsework erection and removal, and installation of riprap at the abutments. It is anticipated that excavators, dozers, cranes, pavers, dump trucks, concrete trucks, concrete pumps, and drilling auger equipment will be required to construct the new bridge.

Existing overhead and underground utilities in the project vicinity include cable and telephone lines that will be protected in place or temporarily relocated during construction.

All improvements will occur within the County right-of-way and no right-of-way acquisitions are anticipated for this project. There is a private driveway and orchard entrance close to the project limits. On-site, Messick Road will be fully closed during removal of the existing bridge and construction of the proposed improvement.

A full road closure within the project site boundaries will be necessary to facilitate the removal of the existing structure and construction of the proposed bridge. A detour will reroute traffic to Comstock Road via Duncan Road or Clements Road. Anticipated detour length is approximately 2.5 miles, which would take approximately 4 minutes.

2.3.2. Project Operation and Maintenance

Operation of the bridge will return to existing conditions following the completion of the project. There are no ongoing operation or maintenance activities anticipated that will affect species considered in this document.

2.3.3. Sequencing and Schedule

The project will be completed in one (1) construction season. Construction is anticipated to begin in fall 2025 and have a duration of approximately six months. In-stream work will be limited to October through April when the creek is dry. Ground-disturbing activities including bridge removal, grading, and bridge construction will begin in October.

2.4. Conservation Measures

2.4.1. Project Design Modifications for Avoidance and Minimization

The project has been designed to have as small a footprint as possible while still remaining functional and stable. To this end, whereas the current bridge has two piers in Mosher Creek, the replacement bridge has been designed to be a single span across the creek with no piers. This will reduce the ultimate footprint of the bridge within the creek. Riprap would still be placed on the sides of the creek and on the immediate embankments surrounding the new abutments to provide bank stability.

2.4.2. Species Specific Conservation Measures – California Central Valley Steelhead

The project is expected to be constructed between the months of October and April. This coincides with the period when SEWD annually shuts off water flow to Mosher Creek, and other than from rainfall, the creek is dry during this period (refer to Section 3.4.1 below for more details on the creek's annual hydrologic cycle). As a result, direct impacts to fish, other aquatic species, and aquatic habitat are avoided during this time period.

Avoidance and minimization measures included in the project's Natural Environment Study (Michael Baker 2023) are provided below. These measures are not intended to be project features or part of the project description, but will be implemented to minimize potential impacts to steelhead and habitat within Mosher Creek.

BIO-1: Prior to the commencement of construction, a qualified biologist shall prepare and present a Workers Environmental Awareness Program (WEAP) to all contractors, subcontractors, and workers expected to be on-site throughout the entire construction period. The WEAP shall include a brief review of any special-status vegetation communities and special-status species, including habitat requirements and where they might be found, and other sensitive biological resources that could occur in and adjacent to the project. The WEAP shall address the biological mitigation measures listed in the project's approved Mitigation Monitoring and Reporting Program, as well as applicable conditions and provisions of any associated environmental permits (e.g., Section 404 permit, Section 401 Certification, Section 1602 LSAA), including, but not limited to, preconstruction biological surveys, preconstruction installation of perimeter sediment and erosion control, best management practices per the RWQCB-approved Storm Water Pollution Prevention Plan, and any recurrent nesting bird surveys (as needed).

BIO-2: Project materials shall not be cast from the limits of disturbance into nearby habitats and project-related debris, spoils, and trash shall be contained and removed to a proper disposal facility.

BIO-3: All construction equipment shall be inspected and cleaned prior to use in the project site to minimize the importation of non-native plant material. A post-construction weed abatement program shall be implemented should invasive plant species colonize the area within the limits of disturbance.

BIO-5: The following regulatory approvals will be obtained prior to commencement of any construction activities within the identified jurisdictional areas: 1) a Section 404 permit from the USACE, likely Nationwide Permit No. 3: *Maintenance*; 2) RWQCB CWA Section 401 Water Quality Certification; and 3) CDFW Section 1602 LSAA.

BIO-6: The limits of construction shall be clearly delineated by a survey crew prior to the commencement of project activities. The limits of construction shall be defined with silt fencing or orange construction fencing and checked by a qualified biologist before initiation of construction.

BIO-7: A qualified biological monitor shall be on-site during all vegetation removal, ground disturbance activities, and at other times as determined necessary during the environmental approval process. The biological monitor shall have authority to halt construction should any special-status species be detected within the construction area or its immediate vicinity.

2.5. Compensation

The project's compensation strategy for impacts to EFH for Chinook salmon has not been finalized at this time. Based on preliminary discussions at the November 2022 field meeting and follow-up email correspondence, proposed compensation is likely to focus on the in-kind restoration and enhancement of habitat along the streambanks surrounding the project site. Compensatory mitigation for impacts to steelhead and its designated critical habitat are not expected because although the project may affect this species and its designated critical habitat, it is not likely to adversely affect either.

Chapter 3. Environmental Baseline

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR §402.02).

3.1. Summary of Environmental Baseline

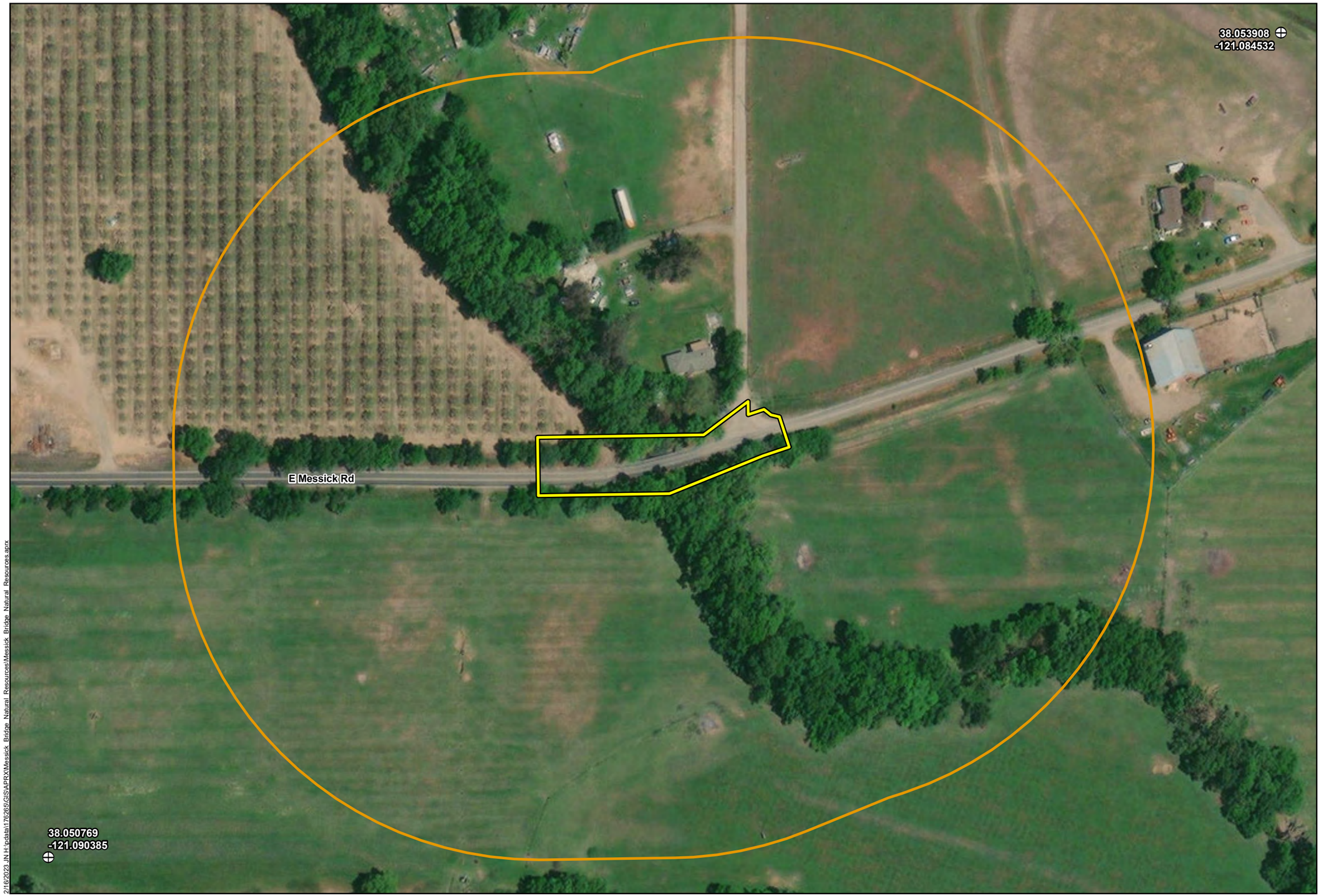
The project occurs in a mostly rural area, and although the project is located within a natural creek, it is surrounded by multiple agricultural fields. Vegetation communities consist of a mixture of one native vegetation community and three (3) man-made land cover types. Listed species are not known to be present.

3.2. Description of the Action Area

The action area for this project includes the limits of ground disturbance (project site) and a 500-foot buffer (refer to Figure 4, *Action Area*). This boundary was chosen to include all areas that could be directly impacted by project construction as well as a buffer to better understand the habitat surrounding the project site. All project construction will be focused immediately around the existing Messick Road Bridge and is expected to be conducted when Mosher Creek is dry, which reduces the risk of any in-stream impacts to fish species and their habitat.

3.2.1. Physical Conditions

On-site surface elevation within the action area ranges from approximately 100 to 130 feet above mean sea level and generally slopes to the southeast. According to the *Custom Soil Resource Report for San Joaquin County, California* (USDA 2022), the project site is underlain by the following soil units: Cogna loam, 0 to 2 percent slopes, overwash (128); Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17 (130); San Joaquin sandy loam, 2 to 5 percent slopes (237); and San Joaquin complex, 0 to 1 percent slopes (241).



Legend

- Project Site
- Biological Study Area
- Reference Point

0 65 130
Feet

2/16/2023 JN H:\adata\178265\GIS\APRX\Messick Bridge Natural Resources\Messick Bridge Natural Resources.aprx

MESSICK BRIDGE REPLACEMENT PROJECT
BIOLOGICAL ASSESSMENT

Action Area

Source: Esri (04/2021)

Figure 4

Hydrological Resources

Non-Wetland Features

The project site is located at the intersection of Messick Road and Mosher Creek, where Messick Road crosses Mosher Creek. Mosher Creek is a perennial drainage feature that enters the southern boundary of the project site as an earthen channel conveying flows through two approximately 36-inch concrete pipes beneath an earthen road crossing, then continues beneath Messick Road and to the north through the project site. Flows originate from the Old Calaveras River in the upstream portions of the watershed and converge with Bear Creek to the north into Pixley Slough which turns into Disappointment Slough, then into the Sacramento-San Joaquin Delta (SEWD and FISHBIO 2019). Mosher Creek is characterized by disturbed banks, a constrained though well-developed overstory, and generally little riparian vegetation. Flowing surface water was observed within Mosher Creek and additional evidence of an OHWM was observed, including the presence of a defined bed and bank. Mosher Creek consists of a dense riparian overstory consisting primarily of valley oak (*Quercus lobata*), Northern California black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), Himalayan blackberry (*Rubus armeniacus*), and American bulrush (*Scirpus americanus*). Within the project site, Mosher Creek measures approximately 96 feet in length and ranges in width from approximately 30 to 50 feet for the USACE and RWQCB jurisdiction and 65 to 90 feet for CDFW jurisdiction.

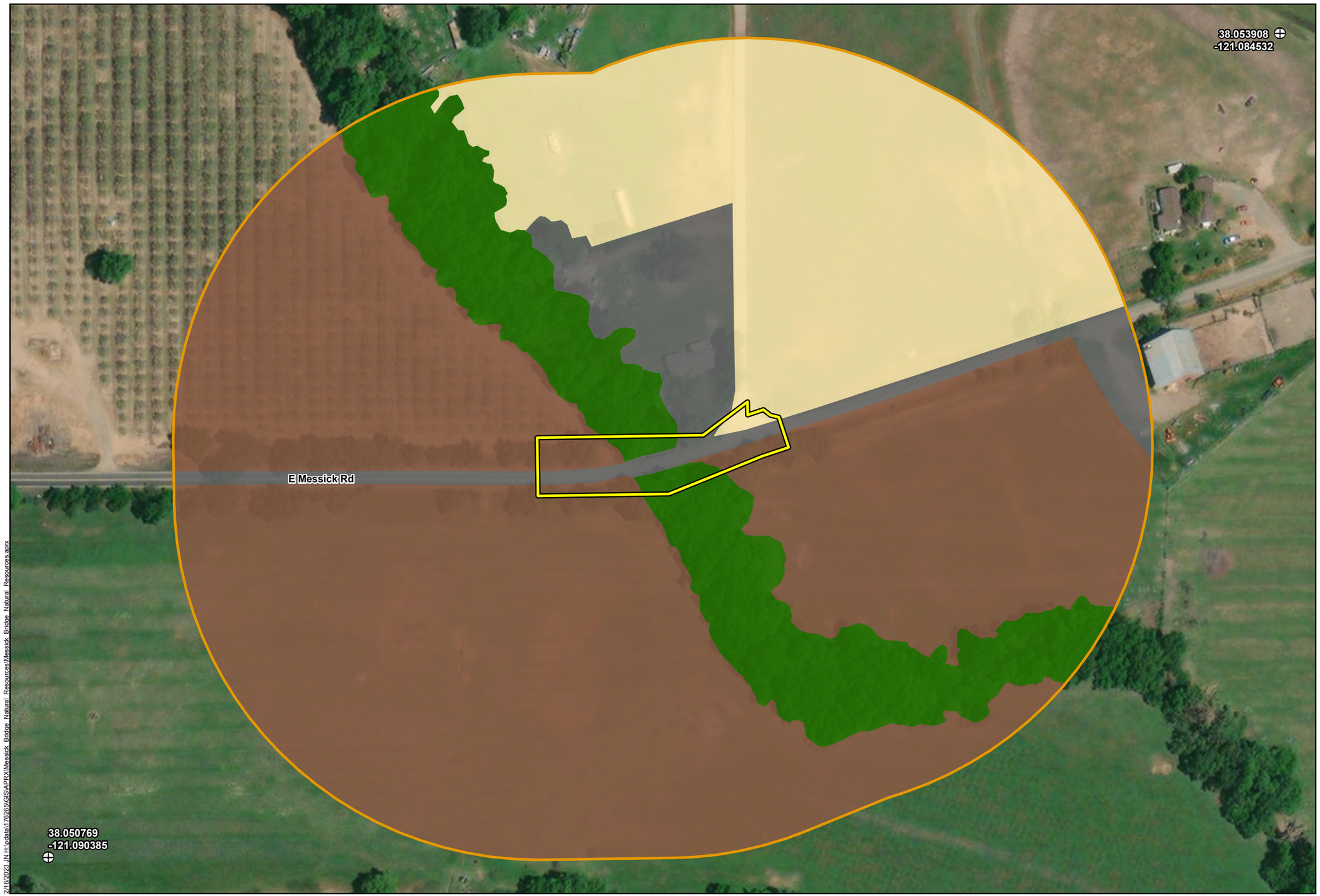
Wetland Features

USACE and RWQCB jurisdictional features consisting of .004 acre of wetlands were identified within the survey area. To assess for the presence of hydric soils and determine the presence/absence of wetlands within the project site, one soil pit (SP1) was performed where wetland hydrology or hydrophytic vegetation was observed. SP1 was performed on a sediment bar of Mosher Creek immediately north of the Mosher Creek Bridge. SP1 was dug to a depth of 16 inches and exhibited a texture of silty-clay and displayed a matrix color of 10YR 3/1 when moist with redoximorphic features observed of concentrations within the matrix with a color of 5YR 3/4. Wetland hydrology indicators in the vicinity of SP1 included a high water table (A2), saturation (A3), a hydrogen sulfide odor (C1), saturation at 2 inches in depth, and water table of 6 inches. Based on the results of the field delineation, it was determined that SP1 met the required three parameters and qualified as USACE wetland WoUS or RWQCB wetland waters of the State.

3.2.2. Biological Conditions

Vegetation Communities and Land Cover Types

One (1) natural vegetation community was mapped within the boundaries of the action area: valley oak riparian woodland forest. In addition, the action area contained three (3) land cover types classified as agriculture, disturbed, and developed. These vegetation communities and land cover types are depicted on Figure 5, *Vegetation Communities and Other Land Uses* and described in further detail below.



Legend

- Project Site
- Biological Study Area
- Valley Oak Riparian Woodland and Forest (3.68 acres)
- Agriculture (16.13 acres)
- Disturbed (6.26 acres)
- Developed (2.03 acres)
- Reference Point

0 65 130
Feet

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MESSICK BRIDGE REPLACEMENT PROJECT
BIOLOGICAL ASSESSMENT

Vegetation Communities and Other Land Uses

Source: Esri (04/2021)

Figure 5

Valley Oak Riparian Woodland and Forest

Approximately 3.70 acres of valley oak riparian woodland and forest are present within the action area, with approximately 0.14 acres within the project site. This community is solely associated with Mosher Creek. The dominant canopy species within the on-site community is valley oak, with Oregon ash serving as an associated canopy species. The understory is primarily a mixture of common fig (*Ficus carica*), Northern California black walnut, and Himalayan blackberry. In-stream vegetation is dominated by broadfruit bur-reed (*Sparganium eurycarpum*).

Agriculture

Approximately 16.16 acres of agriculture are located within the action area, with approximately 0.22 acres within the project site. Within the action area, areas mapped as agriculture include rows of planted trees as well as partially flooded/grazing fields.

Disturbed

Approximately 6.22 acres of disturbed land occur within the action area, with approximately 0.03 acres located within the project site. Within the action area, areas mapped as disturbed generally include open fields associated with rural residences in the area. These fields are mowed or disked and kept clear of any substantive vegetative cover, and based on historical aerial imagery (Google, Inc. 2022) are not used for agricultural purposes.

Developed

Approximately 2.02 acres of developed land are present within the action area, with approximately 0.18 acres within the project site. Within the action area, areas mapped as developed generally include paved road surfaces (i.e., Messick Road) and extensively manipulated areas associated with residential properties.

Wildlife

Natural vegetation communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a general discussion of those wildlife species that were observed during the August 2022 field survey and November 2022 field meeting or that are expected to occur based on existing site conditions. The discussion is to be used as a general reference and is limited by the season, time of day, and weather conditions during which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation.

Fish

The Messick Road Bridge spans Mosher Creek, a distributary of the Calaveras River. Fish were observed in the creek during the August 2022 field survey but could not be identified to species. Examples of fish that are known to occur presently and/or historically

in Mosher Creek include brown trout (*Salmo trutta*), common carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellus*), prickly sculpin (*Cottus asper*), smallmouth bass (*Micropterus dolomieu*), mosquitofish (*Gambusia affinis*), and California Central Valley Distinct Population Segment of steelhead (*Oncorhynchus mykiss irideus pop. 11*; Central Valley steelhead) (UC Davis 2022).

Amphibians

No amphibians were observed within the action area during either of the field visits. However, amphibians associated with creek habitat that occurs within the action area could potentially include California toad (*Anaxyrus boreas halophilus*), Sierran treefrog (*Pseudacris sierra*), and American bullfrog (*Lithobates catesbeianus*).

Reptiles

No reptile species were observed within the action area during either of the field visits. The undeveloped nature of the project site may help to sustain a reptile population on-site, but due to the surrounding disturbance and agricultural fields, it is expected that the action area would only be suitable for a limited number of reptilian species that are acclimated to such niche habitats. Reptilian species that may be present within the project site include northwestern fence lizard (*Sceloporus occidentalis occidentalis*), western side-blotched lizard (*Uta stansburiana elegans*), forest alligator lizard (*Elgaria multicarinata multicarinata*), Pacific gophersnake (*Pituophis catenifer catenifer*), and valley gartersnake (*Thamnophis sirtalis fitchi*).

Birds

Twenty-eight (28) bird species were detected within or adjacent to the action area during the two field visits, including but not limited to American crow (*Corvus brachyrhynchos*), California scrub-jay (*Aphelocoma californica*), Eurasian collared-dove (*Streptopelia decaocto*), northern mockingbird (*Mimus polyglottos*), and black phoebe (*Sayornis nigricans*).

Nesting birds are protected pursuant to the federal MBTA of 1918 and the CFGC.[1] No active or remnant bird nests were observed within the action area during the field survey.

Mammals

The project site and surrounding habitat provide suitable habitat for mammalian species adapted to living in grasslands, agricultural, and edge environments. Mammalian species detected during the two field visits included domestic cows (*Bos taurus*) in the surrounding

[1] Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by CFGC or any regulation made pursuant thereto; Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey); and Section 3513 makes it unlawful to take or possess any migratory non-game bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA, as amended (16 USC § 703 et seq.).

agricultural fields and unidentified bats roosting under the Messick Road Bridge in August 2022, and a domestic cat (*Felis catus*) in the dry creek in November 2022. Other common mammalian species that may occur within the project site include coyote (*Canis latrans*), California ground squirrel (*Otospermophilus beecheyi*), Audubon's cottontail rabbit (*Sylvilagus audubonii*), raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*). Bats occur throughout most of Northern California and may use the project site as roosting and/or foraging habitat. Surveyors were advised prior to the August 2022 field survey that bats had been detected roosting under the bridge earlier in the year, and surveyors observed bats during the August 2022 survey. The underside of the bridge was examined during the November 2022 field meeting and as bats were not observed, it was concluded that use of the bridge as a day roost by a colony of bats is likely seasonal, with only individual or small groups of bats using the habitat during the fall and winter months. The species of bats that were detected has not yet been determined.

Invasive Species

Noxious weed species include species designated as federal noxious weeds by the US Department of Agriculture (USDA), species listed as noxious weeds by the California Department of Food and Agriculture (CDFA), and other exotic pest plants designated by the California Invasive Plant Council (Cal-IPC). Invasive plant species occur throughout the action area but are particularly prominent along the shoulder of Messick Road. None of the non-native plants that were identified within the action area are listed as noxious by the USDA (USDA 2010) or the CDFA (CDFA 2021). However, several non-native plants occurring within the action area are identified as invasive by the Cal-IPC including wildoats, ripgut brome, foxtail chess (*Bromus madritensis*), common fig, mouse barley (*Hordeum murinum*), and Himalayan blackberry (Cal-IPC 2023). All construction equipment should be inspected and cleaned at an off-site location prior to use to minimize the importation and spread of non-native plant material within the action area.

Habitat Connectivity

Wildlife corridors and linkages are key features for wildlife movement between habitat patches. Wildlife corridors are generally defined as those areas that provide opportunities for individuals or local populations to conduct seasonal migrations, permanent dispersals, or daily commutes, while linkages generally refer to broader areas that provide movement opportunities for multiple keystone/focal species or allow for propagation of ecological processes (e.g., for movement of pollinators), often between areas of conserved land.

The action area is centered around the project site, which is a bridge spanning Mosher Creek. Mosher Creek serves as a wildlife corridor, particularly for fish and mammals. Mosher Creek diverges from the Old Calaveras River just upstream of the action area and flows west, ultimately flowing out to the San Francisco Bay and the Pacific Ocean. Although fish may be able to swim downstream in Mosher Creek with relative ease, any dams or barriers in the creek, including clogged culverts, could serve as impediments to travel. Other than rainfall, flow in Mosher Creek is completely dependent on water diverted from the Calaveras River, while the tidal nature of the downstream reaches limits the upstream migration of fish (Hopkins 2022). Due to the presence of agricultural fields

and rural residences, the movement of terrestrial wildlife into or out of the action area is likely reduced and largely restricted to the creek.

According to the *Calaveras River Fish Migration Barriers Assessment Report* (CDWR 2007), Mosher Creek does not provide any upstream access for fish to enter the Calaveras River; fish can only move downstream. Mosher Creek flows naturally only when it receives flow from surface runoff. In addition, a fish net is maintained at the divergence of the Calaveras River with Mormon Slough, which is intended to prevent downstream migration of salmonids into the Calaveras River and Mosher Creek; further, during the non-irrigation season, both the Calaveras River Headworks structure and Mosher Creek Headworks structure are closed, prohibiting any downstream passage of fish (Hopkins 2022).

3.3. Habitat Conditions in the Action Area

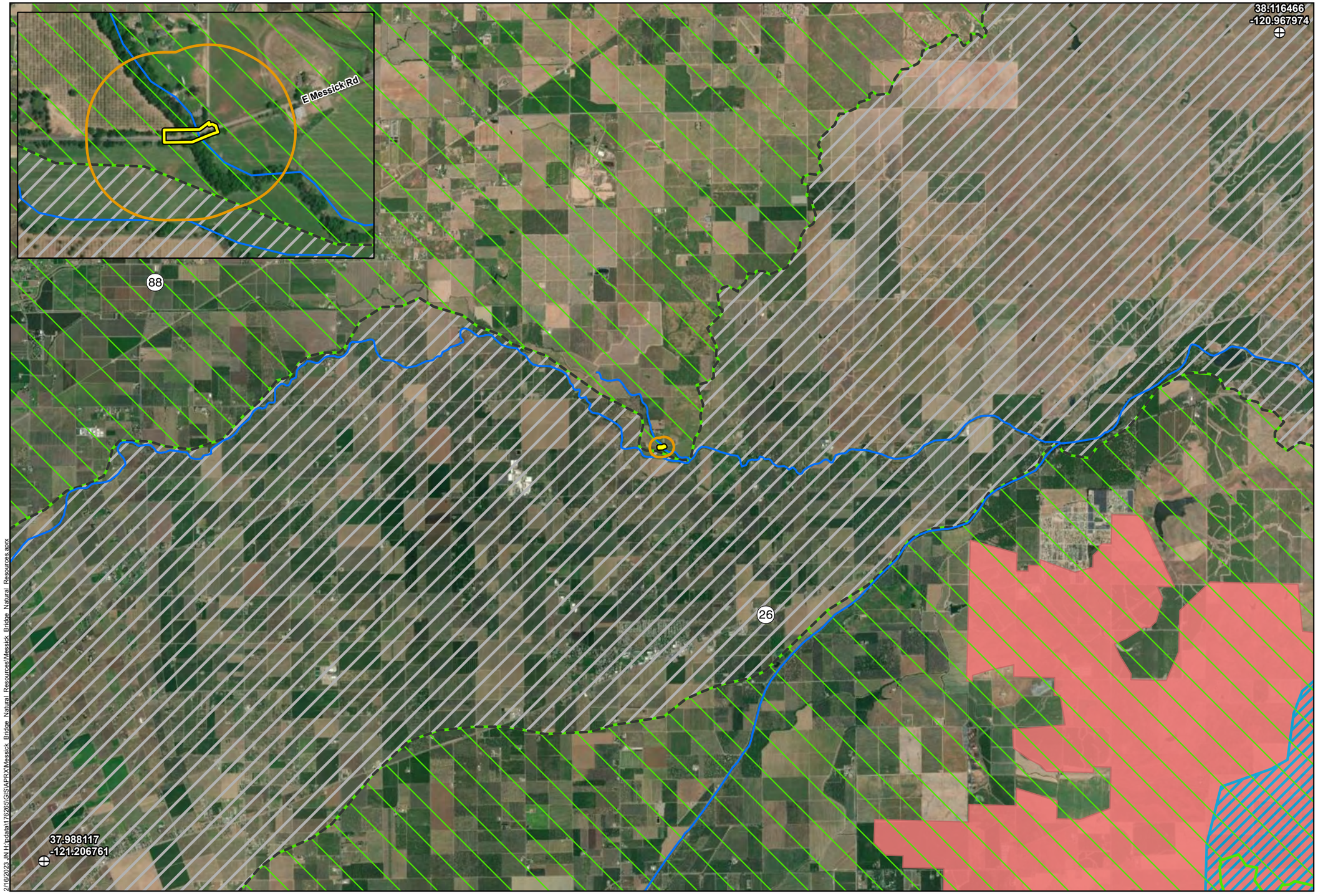
The action area is focused around the Messick Road Bridge at Mosher Creek. Based on information available and existing knowledge, steelhead do not occur within Mosher Creek with any regularity (SEWD and FISHBIO 2019; Cuthbert 2022; Hopkins 2022). The creek is considered dry for half the year between October and April, and between April and October when water is flowing, the habitat within Mosher Creek does not meet any of the Physical and Biological Features (PBFs; formerly referred to as Primary Constituent Elements) that are essential for survival of a species. Refer to Section 3.4.3 below for a more detailed analysis of each steelhead PBF in relation to the action area.

3.4. Status of Federally-Listed/Proposed Species

3.4.1. Discussion of California Central Valley Steelhead

The project site represents marginal habitat for steelhead within Mosher Creek, which is also designated as critical habitat for this species within the project site (refer to Figure 6, *Critical Habitat and Essential Fish Habitat*). Adult steelhead enter freshwater creeks between August and April and typically spawn between December and April, peaking between January and March (NMFS 2014). Eggs are laid in gravel and may take over a month to hatch. Young fish typically spend two years feeding and rearing in areas of permanent freshwater prior to migrating to the ocean. Downstream migration of young fish may occur at any time of year but typically peaks in March and April (NMFS 2014).

The Old Calaveras River, downstream of the divergence of the Calaveras River and Mormon Slough, is the main water body feeding Mosher Creek. It and its direct distributaries are entirely used as irrigation channels to provide water to local farmers. They are closed to all water flow between October and April, when the SEWD closes the Calaveras River Headworks structure and removes all temporary flashboard dams, instead directing all downstream water flow into Mormon Slough and eventually to the San Joaquin River. The only water flowing in this area during the fall and winter months is directly related to precipitation, and the presence of a fish net across the channel just upstream of the Calaveras River Headworks ensures that adult fish are unable to pass downstream at any time of year (SEWD and FISHBIO 2019; Cuthbert 2022; Hopkins



Legend

- Project Site
- Biological Study Area

Critical Habitat

- California Tiger Salamander (*Ambystoma californiense*)
- Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)
- Central Valley Steelhead (*Oncorhynchus mykiss*)

Essential Fish Habitat

- Chinook Salmon (*Oncorhynchus tshawytscha*) (San Joaquin Delta Watershed)
- Chinook Salmon (Upper Calaveras Watershed)
- Reference Point

0 2,640 5,280
Feet

MESSICK BRIDGE REPLACEMENT PROJECT
BIOLOGICAL ASSESSMENT

Critical Habitat and Essential Fish Habitat

Source: Esri (04/2021), USFWS (07/2022), NMFS (09/2022), NOAA (03/2021)

Figure 6

2022). In addition, due to the regime and limitations of tidal flows, salmonids are unable to swim upstream into Mosher Creek from the ocean. They are only able to enter Mosher Creek by swimming down into it from areas upstream of the Calaveras River/Mormon Slough divergence, passing through the fish net at the Calaveras River Headworks, and making their way through both the Calaveras River Headworks and Mosher Creek Headworks, which are only open from April to October, outside of the steelhead breeding season.

Because of this water flow regime, the action area and Mosher Creek in general do not provide either breeding habitat, as the creek is generally dry when adult steelhead would spawn and adult fish cannot enter the creek through the fish net at the Calaveras River Headworks, or rearing habitat, as the creek is only irrigated for six months of the year and is dry the rest of the year. Further, the presence of a muddy substrate lacking gravel throughout the project site is unsuitable for spawning by steelhead. The Old Calaveras River and Mosher Creek may provide temporary feeding and sheltering habitat for young fish that may slip past the upstream fish net, but without the intensive salvage operations conducted by SEWD contractor FISHBIO in early October of each year as part of the HCP implementation (SEWD and FISHBIO 2019), all fish within the Old Calaveras River and under its direct hydrologic influence would perish when the water flow is seasonally cut off. Thus, the Old Calaveras River and Mosher Creek represent population sinks that in their current usages serve only as irrigation canals and which provide no sustainable fish habitat without direct human intervention.

3.4.2. Survey Results

Project-related surveys for steelhead were not conducted for this effort or as part of the project's biological resources analysis. As discussed above in Section 3.4.1, adult steelhead cannot enter the Old Calaveras River downstream of the Calaveras River/Mormon Slough divergence due to the presence of the fish net across the channel, and although juvenile fish may slip past the fish net, such as those captured at the Tully Bridge Dam in October 2021 during annual salvage operations, the incidence of any fish entering downstream areas past the fish net is considered to be a rare and less than annual occurrence (Cuthbert 2022). As a result, and because of the seasonally dry nature of the project site that would prevent any sustainable fish populations from occurring or allow any predictability of future occurrences, the decision was made to forego any focused fish surveys.

3.4.3. Status of Designated Critical Habitat in the Action Area for California Central Valley Steelhead

The action area is located within the steelhead Calaveras River Critical Habitat Unit. There are several PBFs that describe steelhead critical habitat. The steelhead PBFs and their status within the action area are described below:

1. *Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.*

This PBF is not present within the action area. The substrate within the action area is muddy with little or no gravel present. Additionally, the action area is typically dry during the time period that steelhead spawn (December to April). As such, the action area does not provide any breeding habitat or freshwater spawning sites.

2. *Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.*

   This PBF is partially present. The action area does contain abundant shade due to the overhead canopy as well as submerged and overhanging large wood from surrounding trees and in-stream aquatic/emergent vegetation. However, there are no log jams or beaver dams, no side channels, and minimal undercut banks. In addition, the action area is dry for approximately six months of the year, which severely reduces its potential and value as any sort of rearing habitat.

3. *Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.*

   This PBF is not present within the action area or surrounding area. Although the action area is open, it does not provide a reasonable migration corridor due to the presence of flashboard dams throughout the Old Calaveras River and its distributaries. These flashboard dams prevent fish passage to downstream areas, and in October of each year the Calaveras River Headworks is closed to all downstream flow and the flashboard dams are individually removed from upstream to downstream, allowing the creek to gradually dry out along the way. This effectively removes any potential for the Old Calaveras River or its distributaries, including the action area in Mosher Creek, to serve as a migration corridor.

4. *Estuarine areas free of obstruction and excessive predation with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.*

   This PBF is not present within the action area. The action area is located far inland away from any estuarine areas.

The action area does not provide any of the four PBFs that are considered necessary to support a steelhead population. Of these four, only PBF #2 is partially satisfied, but because outside of rainfall the action area is artificially irrigated and typically only has flowing water for six months out of the year, its value as rearing habitat is substantially

reduced because any fish that do make it into the action area will perish if not removed during annual salvage operations. The remaining three PBFs are not met within the action area. With this analysis taken into consideration, the action area does not meet the criteria of critical habitat for steelhead despite being designated as such.

Chapter 4. Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including consequences of other activities that are caused by the proposed action. The analysis of effects of the action first identifies stressors from project actions, then exposure to stressors, and finally the response to exposure to stressors to determine consequences. The effects of the action are used to make determinations for each listed species and critical habitat.

4.1. Stressors from the Action

Stressors induce an adverse response in an organism by any physical, chemical, or biological alteration of the environment that can lead to a response from the individual. Because steelhead are highly unlikely to be present at the time of in-stream construction, which is expected to occur between October and April when the creek will have no water flow, no stressors are expected to occur at the time of construction. However, stressors that may occur at a later date include the following:

- Removal of vegetative cover; and
- Alteration of channel morphology.

4.2. Exposure to Stressors from the Action

Exposures are defined as the interaction of the species, their resources, and the stressors that result from the project action. Exposures anticipated to occur as a result of project implementation include:

- Increase and decrease in sunlight;
- Decrease in sheltering habitat; and
- Decrease in foraging habitat.

If present in the future, steelhead may be exposed to these stressors. Because steelhead are highly unlikely to occur within the action area at any time of year because of the presence of multiple headworks structures and flashboard dams that restrict fish passage into the action area, as well as at least one fish net that further blocks fish passage, the number of steelhead that may be exposed in the future, if any, is likely to be very low. Adult steelhead cannot pass through the fish net that spans the Calaveras River at the Calaveras River Headworks, so any fish in the action area would be juveniles/young of the year that have managed to pass through the fish net. The stressors and exposures are only present within the area immediately surrounding the bridge as they relate to operations that would be required to replace the existing bridge, i.e., an increase in shading under and adjacent to the bridge associated with a wider replacement bridge than what is currently present; a decrease in shading in the surrounding area due to vegetation removal associated with construction of the replacement abutments; and

changes in channel morphology associated with placement of riprap on the channel edges and embankments. Aquatic habitat within the action area is only provided between April and October when flow is present and generally absent between October and April when flow to Mosher Creek is cut off unless a substantive amount of rain falls. As a result, there are no fish that persist within the action area; additionally, because any fish that are present are by default the young of the year, they would not be impacted by any project-related changes to the in-stream habitat between October and April, because their current habitat would represent the only conditions that they have known. In other words, individual fish will not experience any decrease in available habitat because any fish that are able to pass through the multiple barriers to get to the action area will be occurring in it for the first time after construction is already complete.

The stressors will affect designated critical habitat. The project will result in the permanent loss of an estimated 0.03 acres of valley oak riparian forest and woodland as a result of the placement of riprap on the sides of the channel and on the embankments. Because none of the PBFs for steelhead are present within the action area, the stressors will have no bearing on PBFs and no exposure will occur in this regard.

4.3. Response to the Exposure

The stressors that are expected to occur as a result of the project include removal of vegetative cover and alteration of channel morphology. As previously discussed, a number of barriers to fish passage are present within the Calaveras River, the Old Calaveras River, and Mosher Creek. As a result, the only fish that could occur in the action area are juveniles/young of the year, as adult fish are too large to fit through the fish net upstream of the Calaveras River Headworks (Cuthbert 2022). Because of this, in the unlikely event that any steelhead did occur in the action area, they would be young fish and the post-project conditions would not act as stressors to them, but would instead serve as the baseline conditions for an area that they had never inhabited before. As a result, adverse responses from any fish that may occur are not expected, as their presence would be after construction has ended, which would not cause them to react the same way as if they occurred in the action area on a regular basis (e.g., the project would not cause aquatic wildlife to vacate the area because aquatic wildlife would not occur at the time of construction, nor would aquatic wildlife be returning to changed habitat). Therefore, any fish that occur in the action area in the future are unlikely to respond to the new baseline conditions. Even if they did, because water is only present for six months out of the year and only the smallest fish can fit through the fish net upstream of the Calaveras River Headworks structure, the minimal project-related impacts that will occur are not expected to cause any permanent responses or effects on fish or on any local populations.

Approximately 0.03 acres of critical habitat are expected to be permanently impacted as a result of project activities. This includes areas on the sides of the channel and on the embankments, and is related to the placement of riprap at each new abutment. There will be a small reduction in habitat with project implementation; however, should any fish make it to the action area between April and October when the creek is wet, the reduction in habitat and resource availability from construction operations that occurred between

October and April will represent the only conditions that these fish have known at this location. The stressors will not affect PBFs because none of the PBFs apply to the action area. Because the creek is dry from October to April each year when construction will occur, ecological conditions within aquatic habitat are expected to be minimally affected, if at all, and the changes are not expected to result in any changes to competition. There will be no changes to landscape connectivity or migration corridors.

4.4. Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur (50 CFR §402.17). Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR §402.02). The effect of the action is the consequence (behavioral, physical, or physiological) of a response to a stressor.

A conclusion that activities are reasonably certain to occur must be based on clear and substantial information, using the best scientific and commercial data available. Factors to consider whether an activity caused by the proposed action is reasonably certain to occur include, but are not limited to: past experiences with similar activities that have resulted from actions that are similar in scope, nature and magnitude to the proposed action; existing plans for the activities; any remaining economic, administrative and legal requirements necessary for the activity to go forward.

Considerations for determining a consequence to the species or critical habitat is not caused by the proposed action include, but are not limited to: the consequence is so remote in time from the proposed action that it is not reasonably certain to occur; or the consequence is so geographically remote from the immediate area involved in the proposed action that it is not reasonably certain to occur; or the consequence is only reached through a lengthy causal chain that involves so many steps as to make the consequence not reasonably certain to occur (50 CFR §402.17).

The project will be constructed between October and April, when there is no water flow in Mosher Creek. As a result, there will be no direct project-related stressors on steelhead. All stressors that may impact steelhead would occur at a later date once water is flowing again, and as described in Section 4.3 above, would not act as true stressors to fish. This is because, due to the various barriers upstream but specifically the fish net at the Calaveras River Headworks that prevents all but the smallest fish from passing, any steelhead that may occur within the action area would have to be juveniles who have never been in the action area before, and thus any condition the action area is in would by extension represent baseline conditions for entrained fish. The removal of a small amount of vegetation during construction will be inconsequential to fish occurring months later; it will merely represent the condition of the creek when they first enter the action area. In addition, the likelihood of steelhead occurring in the action area is so low that it

will not have any population-level effects. The project may affect but is not likely to adversely affect steelhead.

The project will result in the permanent loss of 0.013 acres of non-wetland WoUS, 0.003 acres of wetland WoUS, and 0.03 acres of valley oak riparian forest and woodland. These effects would occur due to the placement of the new abutments and the riprap that will surround them. This will result in alterations to channel morphology and the presence and composition of substrate, but only in the area immediately surrounding the replacement bridge. The project may affect but is not likely to adversely affect steelhead critical habitat.

4.5. Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area described in this BA. Future federal actions that are unrelated to the proposed action are not considered in this cumulative effects analysis because those actions will require separate consultation pursuant to FESA section 7.

No additional future actions are reasonably certain to occur in the action area within the foreseeable future other than those that already occur on an annual basis, such as the agricultural-related use of water in Mosher Creek. Therefore, no cumulative effects are anticipated, and because listed species and designated critical habitat within the action area are not likely to be adversely affected, no further discussion of cumulative effects is warranted.

4.6. Determination

4.6.1. Species and critical habitat determination

1) No Effect

A no effect determination was made for the following species and designated critical habitat. No consultation is required.

- California tiger salamander
- Conservancy fairy shrimp
- Vernal pool fairy shrimp
- Fleshy owl’s-clover
- Valley elderberry longhorn beetle
- Delta smelt
- Vernal pool tadpole shrimp

2) May Affect-Not Likely to Adversely Affect

A may affect-not likely to adversely affect determination was made for the following species and its designated critical habitat. Informal consultation is required.

- California Central Valley steelhead

Chapter 5. Essential Fish Habitat Assessment

The MSFCMA takes immediate action to conserve and manage fishery resources found off the coasts of the US, and the anadromous species and Continental Shelf fishery resources of the US, by exercising sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone of the US, and exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources and fishery resources in the special areas.

5.1. Essential Fish Habitat

5.1.1. Essential Fish Habitat Background

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the MSFCMA to establish new requirements for EFH descriptions in federal fishery management plans. In addition, the MSFCMA established procedures designed to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan. Pursuant to the MSFCMA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries must provide conservation recommendations for any federal or state action that would adversely affect EFH;

- Federal agencies must provide a detailed response in writing to the NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the effect of the activity on EFH. In the case of a response that is inconsistent with the NOAA Fisheries' EFH conservation recommendations, the federal agency must explain its reasons for not following the recommendations.

EFH has been defined for the purposes of the MSFCMA as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". NOAA Fisheries has further added the following interpretations to clarify this definition:

- "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate;

- "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities;

- “Necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and

- “Spawning, breeding, feeding, or growth to maturity” covers the full life cycle of a species.

Adverse effect means any effect that reduces quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), or site-specific or habitat-wide effects, including individual, cumulative, or synergistic consequences of actions.

EFH consultation with the NOAA Fisheries is required regarding any federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH. Under section 305(b)(4) of the MSFCMA, NOAA Fisheries is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that may adversely affect EFH. Wherever possible, NOAA Fisheries utilizes existing interagency coordination processes to fulfill EFH consultations with federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation into the FESA section 7 consultation, as represented by this Essential Fish Habitat Assessment.

5.2. Managed Fishery Habitats with Potential to Occur in the Action Area

The MSFCMA requires that EFH be identified for all federally managed species including all species managed by the Pacific Fisheries Management Council (PFMC). The PFMC is responsible for managing commercial fisheries resources along the coast of Washington, Oregon, and California. Managed species that have a potential to occur in the action area are described in a Fishery Management Plan (FMP).

The only species subject to any fish passage that may occur within the action area is fall-run Chinook salmon. This run of Chinook salmon is regulated by the PFMC’s Pacific Coast Salmon FMP. Locally, the population of fall-run Chinook salmon is opportunistic and may attempt runs in the Calaveras River but is only successful in high water years; most of the Chinook salmon that do attempt the fall run get routed into tributaries and do not make it far enough upstream in the Calaveras River to spawn (Cuthbert 2022). As a result, the Calaveras River is not a significant waterbody for this species, and it does not support a sustainable population. No other MSFCMA-managed fish species occur or are expected to occur in the action area.

Freshwater EFH for Chinook salmon consists of four major components: 1) spawning and incubation; 2) juvenile rearing; 3) juvenile migration corridors; and 4) adult migration corridors and holding habitat (PFMC 2014).

5.3. Potential Adverse Effects on Essential Fish Habitat

Potential effects to EFH evaluated here include those that relate to: (1) sedimentation and turbidity; (2) hazardous materials and chemical spills; (3) re-suspension of contaminants; (4) aquatic habitat modification and shading; (5) entrainment and stranding potential; (6) predation risk; and (7) food resources.

5.3.1. Potential Adverse Effects on Essential Fish Habitat for Pacific Salmonids

The project would be constructed between October and April, when the creek is generally expected to be dry other than ephemeral flow related to rainfall. No aquatic-dependent effects are expected to occur, and similar to critical habitat, the only expected effects on EFH are related to vegetation removal and placement of riprap along the stream edges and embankments surrounding the new abutments. This is expected to have minimal effect on the functionality of Mosher Creek, as it represents only a very small area under and immediately adjacent to the Messick Road Bridge. In addition, the Old Calaveras River and its distributaries represent poor-quality EFH for Chinook salmon, for similar reasons as described above for critical habitat in Section 3.4.3. In summary:

1. The action area does not represent spawning and incubation habitat because it is dry during the typical spawning and incubation period (December to April);
2. The action area does not represent juvenile rearing habitat because it is dry for six months out of the year, between October and April. Any fish that are present in the creek in October will die, if not salvaged by FISHBIO, when the headworks structures are closed and the creek dries out;
3. The action area does not represent a juvenile migration corridor because of the numerous barriers that exist between the Calaveras River Headworks structure and the action area; and
4. The action area does not represent adult migration corridors or holding habitat because adults migrating inland from the ocean are not able to reach the action area due to downstream tidal influence, and adults migrating toward the ocean from areas upstream cannot get past the fish net that spans the Calaveras River just upstream of the Calaveras River Headworks structure.

Because of this, in its current condition and under the current hydrologic regime that SEWD implements, the action area does not satisfy any of the characteristics that define freshwater EFH for Chinook salmon. As a result, project-related effects to EFH would be insignificant.

5.4. Essential Fish Habitat Conservation Measures

The following conservation measures will be implemented to minimize the potential adverse effects to designated EFH described above.

- The replacement bridge has been designed as a single span across Mosher Creek and will not have any piers.

Refer to Section 2.4.2 above for detailed language regarding avoidance and minimization measures that will benefit steelhead, if present, and by extension reduce impacts to EFH for Chinook salmon.

5.5. Essential Fish Habitat Conclusions

Effects to designated EFH in the action area will be minimal. No water is expected to be present, and the spatial extent of permanent impacts is low, with the permanent loss of 0.013 acres of non-wetland WoUS, 0.003 acres of wetland WoUS, and 0.03 acres of valley oak riparian forest and woodland. There may be additional short-term loss of in-stream vegetation during construction; however, the emergent vegetation present in the creek would be expected to reestablish on its own. As a result, Caltrans has determined that the proposed action will not adversely affect EFH for Chinook salmon and the Pacific Coast Salmon FMP.

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Appendix A IPaC Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2022-0086719
Project Name: Messick Bridge Replacement Project

June 01, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2022-0086719
Project Name: Messick Bridge Replacement Project
Project Type: Bridge - Replacement
Project Description: The County of San Joaquin proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate three-foot shoulders within County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. The profile of the proposed bridge would match the existing configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on Cast in Steel Shell (CISS) or Cast in Drilled Hole (CIDH) piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current American Association of State Highway and Transportation Officials (AASHTO) and Caltrans standards.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.05228855,-121.08745205683337,14z

Counties: San Joaquin County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

AMPHIBIANS

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
Fleshy Owl's-clover *Castilleja campestris ssp. succulenta* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8095	Threatened

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: County of San Joaquin
Name: Ryan Winkleman
Address: 5 Hutton Centre, #500
City: Santa Ana
State: CA
Zip: 92707
Email rswinkleman@gmail.com
Phone: 9495330918

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

Appendix B NOAA Fisheries Species List

From: Ditto, Jessica A
To: Winkleman, Ryan
Subject: Fwd: EXTERNAL: Caltrans District 10 - Messick Bridge Replacement Project- Species List Confirmation
Date: Thursday, June 1, 2023 10:53:49 AM

NOAA confirmed no changes. Thanks!

Get Outlook for iOS

From: Ryan McKenzie - NOAA Federal <ryan.mckenzie@noaa.gov>
Sent: Thursday, June 1, 2023 10:29:11 AM
To: Ditto, Jessica A <Jessica.Ditto@mbakerintl.com>
Cc: Ellen McBride - NOAA Federal <ellen.mcbride@noaa.gov>
Subject: Re: EXTERNAL: Caltrans District 10 - Messick Bridge Replacement Project- Species List Confirmation

Hi Jessica,

The results are still accurate to date.

Cheers,
Ryan

On Thu, Jun 1, 2023 at 10:17 AM Ditto, Jessica A <Jessica.Ditto@mbakerintl.com> wrote:

> Hi Ryan,
>
> Can you please confirm that the search results are still accurate? Our search is over 180 days and need confirmation for our report.
>
> Thank you!
>
> **Jessica Ditto** | Project Manager - Planning
> **Michael Baker International** | *We Make a Difference*
> 5 Hutton Centre Drive, Suite 500 | Santa Ana, CA 92707
> [O] 949-330-4183
> jessica.ditto@mbakerintl.com | www.mbakerintl.com
>
> ---
>
> **From:** Ryan McKenzie - NOAA Federal <ryan.mckenzie@noaa.gov>
> **Sent:** Friday, September 30, 2022 3:10 PM
> **To:** Ditto, Jessica A <Jessica.Ditto@mbakerintl.com>
> **Cc:** Ellen McBride - NOAA Federal <ellen.mcbride@noaa.gov>

Subject: EXTERNAL: Caltrans District 10 - Messick Bridge Replacement Project- Species List Confirmation

Good Afternoon,

NMFS has reviewed your search results and confirms the accuracy of the species list below for the Caltrans District 10 - Messick Bridge Replacement Project.

Sincerely,

--

Ryan McKenzie

(he/him)

Natural Resource Management Specialist

California Central Valley Office

NOAA Fisheries | U.S. Department of Commerce

(916) 201-0382 mobile

www.fisheres.noaa.gov

From: Ditto, Jessica A
Sent: Wednesday, September 28, 2022 9:23 AM
To: nmfswcrca.specieslist@noaa.gov
Subject: Caltrans District 10 - Messick Bridge Replacement Project

Hello,

On behalf of San Joaquin County and Caltrans District 10, we are requesting an official species list confirming the search results below.

Google Earth Database Search Results: The results are the same for the Linden quad (where the project is located) and those within a 5-mile radius (Valley Springs SW, #38120-A8;

Peters, #37121-H1; Stockton East, #37121-H2; and Waterloo, #38121-A2).

Quad Name **Linden**
Quad Number **38121-A1**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

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

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

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

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Federal Agency:

California Department of Transportation – District 10

1976 E. Dr. Martin Luther King Jr. Blvd., Stockton, CA 95205

Non-Federal Agency:

San Joaquin County

1810 East Hazelton Avenue, Stockton, CA 95205

Brian Newburg, EIT

Engineer III

San Joaquin County Public Works

Bridge Engineering Division

Phone: (209) 468-3040

Email: bnewburg@sjgov.org

Appendix C Site Photographs

Photograph 1: Northeast-facing view toward Messick Road Bridge.

Photograph 2: South/southeast (upstream)-facing view of Mosher Creek in August 2022. From April to October, Mosher Creek is artificially inundated by the Stockton East Water District (SEWD) to provide water to local farms.

Photograph 3: South (upstream)-facing view of Mosher Creek in November 2022. From October to April, the SEWD turns off all upstream water flow into Mosher Creek.

Photograph 4: Southwest-facing view of agricultural fields adjacent to Mosher Creek in August 2022.

Photograph 5: Southwest (upstream)-facing view of Mosher Creek in August 2022.

Photograph 6: East-facing view of Mosher Creek downstream (north) of the Messick Road Bridge in August 2022.

Photograph 7: West-facing view of the underside of the Messick Road Bridge in August 2022, showing inundation of the entire width of Mosher Creek.

Photograph 8: Northwest-facing view of Messick Road Bridge in November 2022, showing dry conditions across the width of Mosher Creek.

Photograph 9: South-facing view of flooded agricultural fields southwest of the Messick Road Bridge.

Photograph 10: Southwest-facing view of an agricultural ditch running toward Mosher Creek, northeast of the Messick Road Bridge.

Photograph 11: Southeast-facing view of an agricultural field southeast of Messick Road Bridge. Mosher Creek is in the background where the tree canopy is present.

Photograph 12: Southwest-facing view from northeast of the Messick Road Bridge, which is visible in the left background of the photo.

Messick Bridge Replacement Project NES

Natural Environment Study

Including a Delineation of State and Federal Jurisdictional Waters

San Joaquin County, California

San Joaquin County-District 10-Bridge #29C-274

Federal-Aid Project #: 5929(254)

June 2023

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

Including a Delineation of State and Federal Jurisdictional Waters

San Joaquin County, California

San Joaquin County-District 10-Bridge #29C-274

Federal-Aid Project #: 5929(254)

June 2023

STATE OF CALIFORNIA

Department of Transportation

in cooperation with San Joaquin County

Prepared By: _____ Date: _____

Ryan Winkleman, Senior Biologist
(949) 533-0918
Michael Baker International
5 Hutton Centre Drive, Suite 500, Santa Ana, CA 92707

Reviewed By: _____ Date: _____

Brian Newburg, Engineer III
209-468-3040
San Joaquin County Department of Public Works, Bridge Engineering Division
1810 East Hazelton Avenue, Stockton, CA 95205

Recommended For Approval By: _____ Date: _____

David J. Moore, Senior Environmental Scientist (Biologist)
(209) 986-9607
Caltrans Division of Planning, Local Assistance and Environmental
1976 E. Dr. Martin Luther King, Jr. Boulevard, Stockton, CA 95025

Approved By: _____ Date: _____

Elizabeth Hummel, Environmental Branch Chief
(209) 986-9808
Caltrans Division of Planning, Local Assistance and Environmental
1976 E. Dr. Martin Luther King, Jr. Boulevard, Stockton, CA 95025

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, ATTN: Elizabeth Hummel, Environmental Branch Chief, (209) 986-9808 or use the California Relay Service TTY number, 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

Table of Contents

Summary iii
Chapter 1 – Introduction 1
1.1 Project History 1
1.2 Project Description 1
Chapter 2 – Study Methods 7
2.1 Regulatory Requirements 7
2.2 Studies Required 14
2.3 Personnel and Survey Dates 17
2.4 Agency Coordination and Professional Contacts 17
2.5 Limitations That May Influence Results 19
Chapter 3 – Results: Environmental Setting 20
3.1 Description of the Existing Physical and Biological Conditions 20
Chapter 4 – Results: Biological Resources, Discussion of Impacts, and Mitigation 32
4.1 Habitats and Natural Communities of Special Concern 32
4.2 Special-Status Plant Species 38
4.3 Special-Status Animal Species 39
Chapter 5 – Conclusions and Regulatory Determinations 49
5.1 Federal Endangered Species Act Consultation Summary 49
5.2 Essential Fish Habitat Consultation Summary 51
5.3 California Endangered Species Act Consultation Summary 52
5.4 Wetlands and Other Waters Coordination Summary 52
5.5 Invasive Species 52
5.6 Other 53
Chapter 6 – References 54

List of Tables

Table 1. Jurisdictional Limits of Mosher Creek within the JSA 35
Table 2. Jurisdictional Impacts 36
Table 3. Effects Determinations for Federal Species 49

List of Figures

Figure 1. Regional Vicinity 3
Figure 2. Project Vicinity 4
Figure 3. Biological Study Area 5
Figure 4. Proposed Project 6
Figure 5. USDA Soils 21
Figure 6. USACE/RWQCB Jurisdictional Map 23
Figure 7. CDFW Jurisdictional Map 24
Figure 8. Vegetation Communities and Other Land Uses 25
Figure 9. Critical Habitat and Essential Fish Habitat 31

Acronyms List

AASHTO	American Association of State Highway and Transportation Officials
BMP	Best management practice
BSA	Biological Study Area
Cal-IPC	California Invasive Plant Council
CDFA	California Department of Food and Agriculture
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CIRP	California Inventory of Rare Plants
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
EFH	Essential Fish Habitat
EO	Executive Order
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act (referred to as ESA in USFWS/NOAA Fisheries literature)
HCP	Habitat Conservation Plan
IPaC	Information for Planning and Consultation
JSA	Jurisdictional Study Area
LSAA	Lake and Streambed Alteration Agreement
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NES (MI)	Natural Environment Study (Minimal Impacts)

NOAA Fisheries	NOAA's National Marine Fisheries Service (sometimes abbreviated as NMFS)
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
RWQCB	Regional Water Quality Control Board
Services	US Fish and Wildlife Service and NOAA's National Marine Fisheries Service
SEWD	Stockton East Water District
SP1	Soil Pit 1
SWPPP	Stormwater pollution prevention plan
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WPCP	Water pollution control program
WQC	Water Quality Certification

Summary

The County of San Joaquin, in cooperation with the California Department of Transportation (Caltrans), proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate 3-foot shoulders within the County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. This Natural Environment Study (NES) has been developed in support of the preparation of an environmental document in compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). The results presented in this NES are based on records searches and field surveys conducted in 2022.

In order to identify and determine potential direct, indirect, and cumulative impacts on sensitive biological resources within and adjacent to the project, a 500-foot survey buffer was established around the project's limits of disturbance to establish the Biological Survey Area (BSA). The BSA encompassed the survey buffer for the general reconnaissance survey and vegetation mapping. In addition, a 150-foot Jurisdictional Study Area buffer was established around the project site for jurisdictional resources.

The BSA contains one (1) natural vegetation community: valley oak riparian woodland forest. In addition, the BSA contains three (3) land cover types classified as agriculture, disturbed, and developed. Most of the BSA consists of agriculture. One natural community of special concern was observed within the BSA, valley oak riparian woodland forest, designated as a sensitive "S3" community on the California Sensitive Natural Communities List (CDFW 2022a). This community is mostly characterized by large, high-canopy trees that sit above the BSA. However, there may be minor temporary impacts from tree trimming, if necessary, during construction, as well as temporary removal of in-stream vegetation and vegetation on embankments during grading operations to replace the bridge. A total of 0.03 acres of permanent impacts to this community are expected due to the placement of riprap on the embankments surrounding the new abutments. In addition, the replacement bridge is expected to be approximately 7.5 feet wider and 950 total square feet larger than the existing bridge, resulting in an estimated increase of 0.02 acres of aerial footprint from the larger bridge. This increase in size may result in a permanent loss of in-stream vegetation, primarily of broadfruit bur-reed (*Sparganium eurycarpum*), due to an increase in shading, but existing in-stream vegetation encompasses a small portion of the immediate surrounding riverine habitat and the loss is expected to be only a small portion of the 0.02-acre increase in bridge surface area. It should be noted that the existing bridge has two (2) piers in the creek, whereas the new bridge will be a single span with no piers. In addition, riverine habitat within Mosher Creek is included in this analysis as a Natural Community of Conservation Concern; within the BSA, this area is also designated as Critical Habitat for Central Valley Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss irideus pop. 11;* Central Valley steelhead) and Essential Fish Habitat (EFH) for Chinook salmon (*Oncorhynchus tshawytscha*).

No federally listed endangered and/or threatened species or other special-status species were observed within the BSA. With implementation of avoidance and minimization measures, direct and indirect impacts are generally not expected on special-status species other than bats. Both direct and indirect impacts on bats are expected to occur if present, and recommended avoidance and minimization measures are provided for these potential impacts. The project may affect, but is not likely to adversely affect, Central Valley steelhead, and federal consultation with the National Marine Fisheries Service (NMFS) will be required for impacts to this species as well as impacts to steelhead Critical Habitat and Chinook salmon EFH. There will be "no effect" to all other federally listed species queried on the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) and NMFS Species Lists.

The project would result in temporary and permanent impacts to areas under US Army Corps of Engineers (USACE)/Regional Water Quality Control Board (RWQCB) jurisdiction (i.e., Waters of the U.S. or WoUS), and California Department of Fish and Wildlife (CDFW) jurisdiction. This includes temporary impacts to 0.084 acres of non-wetland WoUS and 0.001 acres of wetland WoUS as well as permanent impacts to 0.013 acres of non-wetland WoUS and 0.003 acres of wetland WoUS. In addition, the project would result in temporary impacts to CDFW jurisdictional areas of 0.074 acres of vegetated streambed, 0.022 acres of non-vegetated streambed, and 0.026 acres of associated riparian vegetation as well as permanent impacts to 0.011 acre of vegetated streambed, 0.006 acres of non-vegetated streambed, and 0.015 acres of associated riparian vegetation. Because the designated Critical Habitat and EFH both relate to aquatic habitat, they are deemed to refer to the area included as USACE/RWQCB jurisdiction, or 0.085 acres of temporary impact and 0.016 acres of permanent impact.

Based on the projected impacts, it will be necessary to acquire a Section 404 permit from the USACE and a Section 401 Water Quality Certification from the RWQCB for impacts occurring within USACE and RWQCB jurisdictional areas, respectively. Since the proposed project will result in the permanent loss of less than 0.5 acres of USACE jurisdiction, it is anticipated that the proposed project can be authorized via a Nationwide Permit (NWP), specifically NWP No. 3: Maintenance. In addition, a Lake and Streambed Alteration Agreement would be required from the CDFW for impacts to CDFW jurisdictional areas. A combination of additional avoidance and minimization efforts and compensatory mitigation, likely streambank restoration, would reduce the overall adverse effects on biological resources within the BSA. In addition, invasive plant species would be removed from the project work area and controlled during construction to ensure compliance with Executive Order 13112.

Chapter 1 – Introduction

1.1 Project History

1.1.1 Project Purpose and Need

The existing Messick Road Bridge is over 90 years old and does not meet current bridge design standards. Structural and functional deficiencies have been identified for the bridge, such as section loss in substructure, decay in substructure, intolerable deck geometry, and insufficient bridge and approach railings. The proposed project would construct a new bridge meeting current engineering standards to enhance the safety of motorists and bicyclists in the project area.

1.2 Project Description

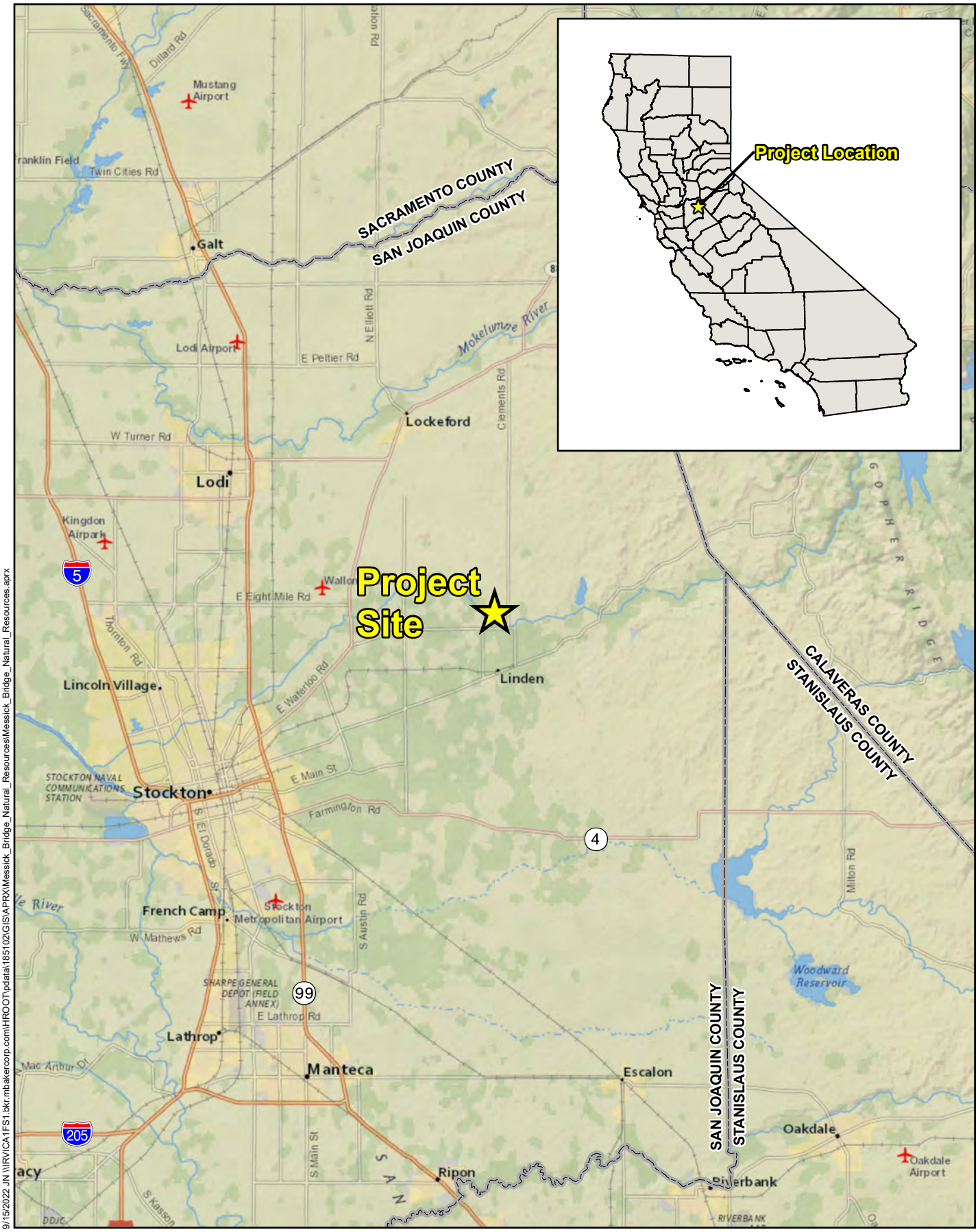
The proposed project is located within unincorporated San Joaquin County, California (refer to Figure 1, *Regional Vicinity*). The Biological Study Area (BSA) is depicted in Section 3 of Township 2 North, Range 8 East, on the United States Geological Survey's (USGS) *Linden, California* 7.5-minute quadrangle (refer to Figure 2, *Project Vicinity*). The BSA is located approximately 2.15 miles north of East Fremont Street (Highway 26) and 5.50 miles east of Waterloo Road (Highway 88) in San Joaquin County at latitude 38˚03'08.2"N and longitude 121˚05'14.9"W. Specifically, the BSA comprises the proposed project and a 500-foot survey buffer surrounding the anticipated grading limits (refer to Figure 3, *Biological Study Area*, and Figure 4, *Proposed Project*). The BSA was chosen to incorporate the project's limits of disturbance and a 500-foot survey buffer to accommodate any potential indirect impacts associated with the proposed project.

The County of San Joaquin proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east–west direction and would incorporate 3-foot shoulders within the County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. The profile of the proposed bridge would match the existing configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on cast in steel shell or cast in drilled hole piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall.

Falsework will need to be temporarily erected within the Mosher Creek area to facilitate construction of the cast-in-place superstructure. Excavation will be

necessary for forming and placing the abutments and wing walls. Piles will be installed utilizing an auger or by driving the steel pipe pile section and filling the void with reinforced concrete.

The structure approach areas will require minimal grading and roadway reconstruction to tie into the proposed bridge and accommodate the widened shoulders on the structures. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current American Association of State Highway and Transportation Officials (AASHTO) and California Department of Transportation (Caltrans) standards. Three roadside trees will likely need to be removed due to their vicinity to the existing edge of roadway. The other trees in the affected area will need to be protected during construction.



9/15/2022 JN \\RVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\185102\GIS\APRX\Messick_Bridge_Natural_Resources\Messick_Bridge_Natural_Resources.aprx

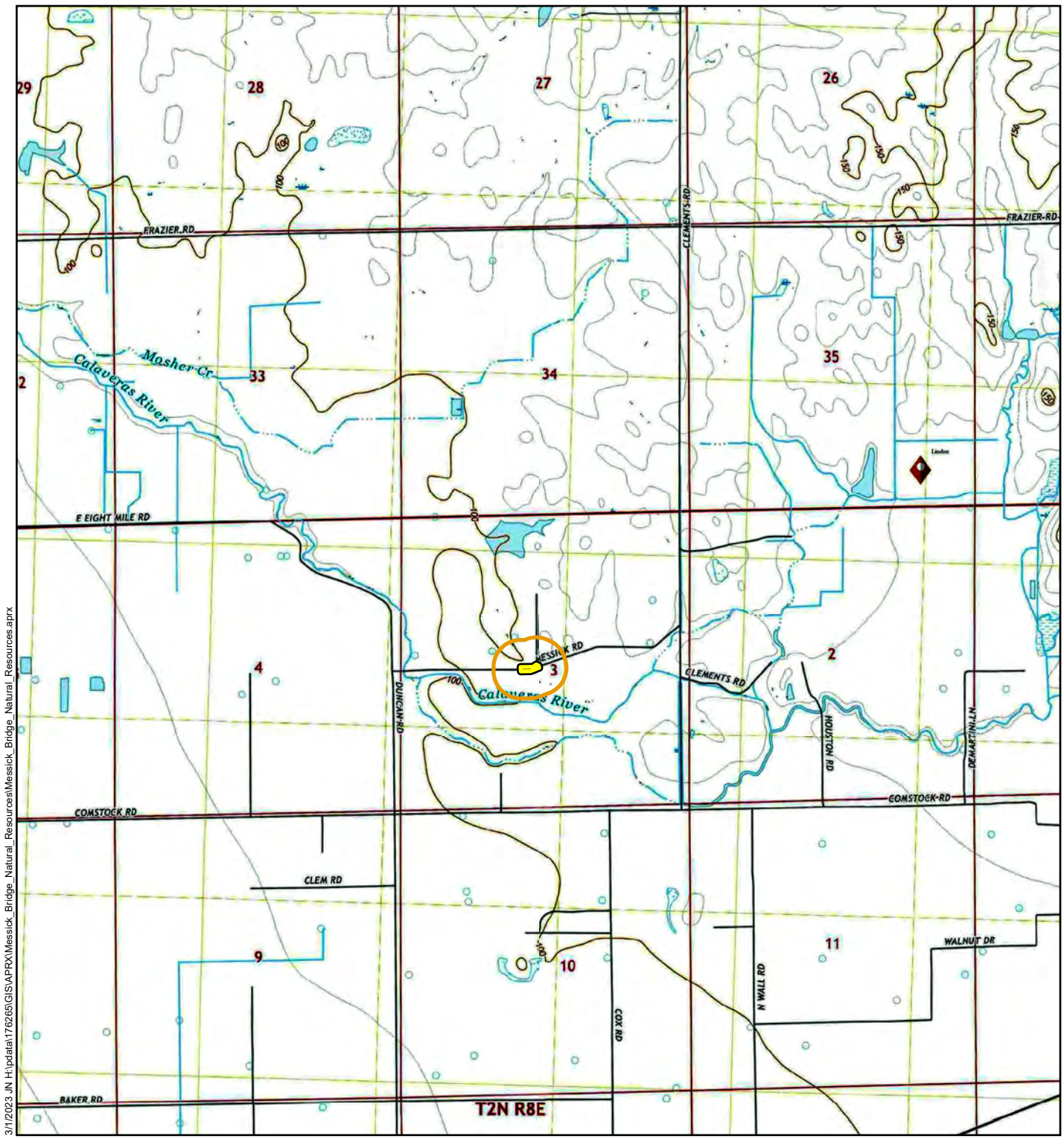
MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

Regional Vicinity

0 2.5 5 Miles

Source: ArcGIS Online, 2018

Figure 1



3/1/2023 JN H:\pdata\176265\GIS\APRX\Messick_Bridge_Natural_Resources\Messick_Bridge_Natural_Resources.aprx

Legend

- Project Site
- Biological Study Area

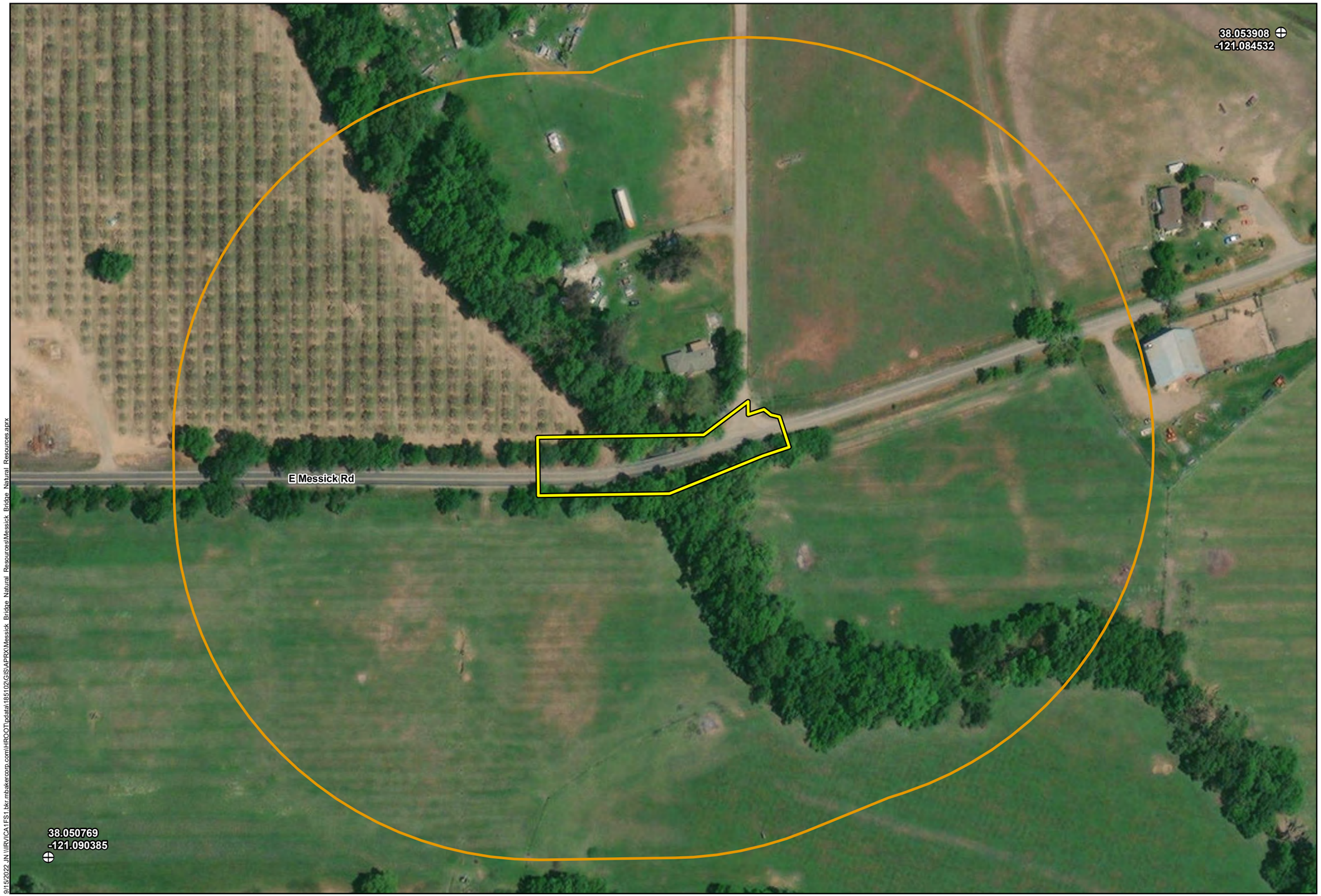
0 0.25 0.5 Miles

Source: USGS 7.5-Minute topographic quadrangle maps: *Linden and Waterloo, California (2022)*

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

Project Vicinity

Figure 2



Legend

- Project Site
- Biological Study Area
- Reference Point

0 65 130
Feet

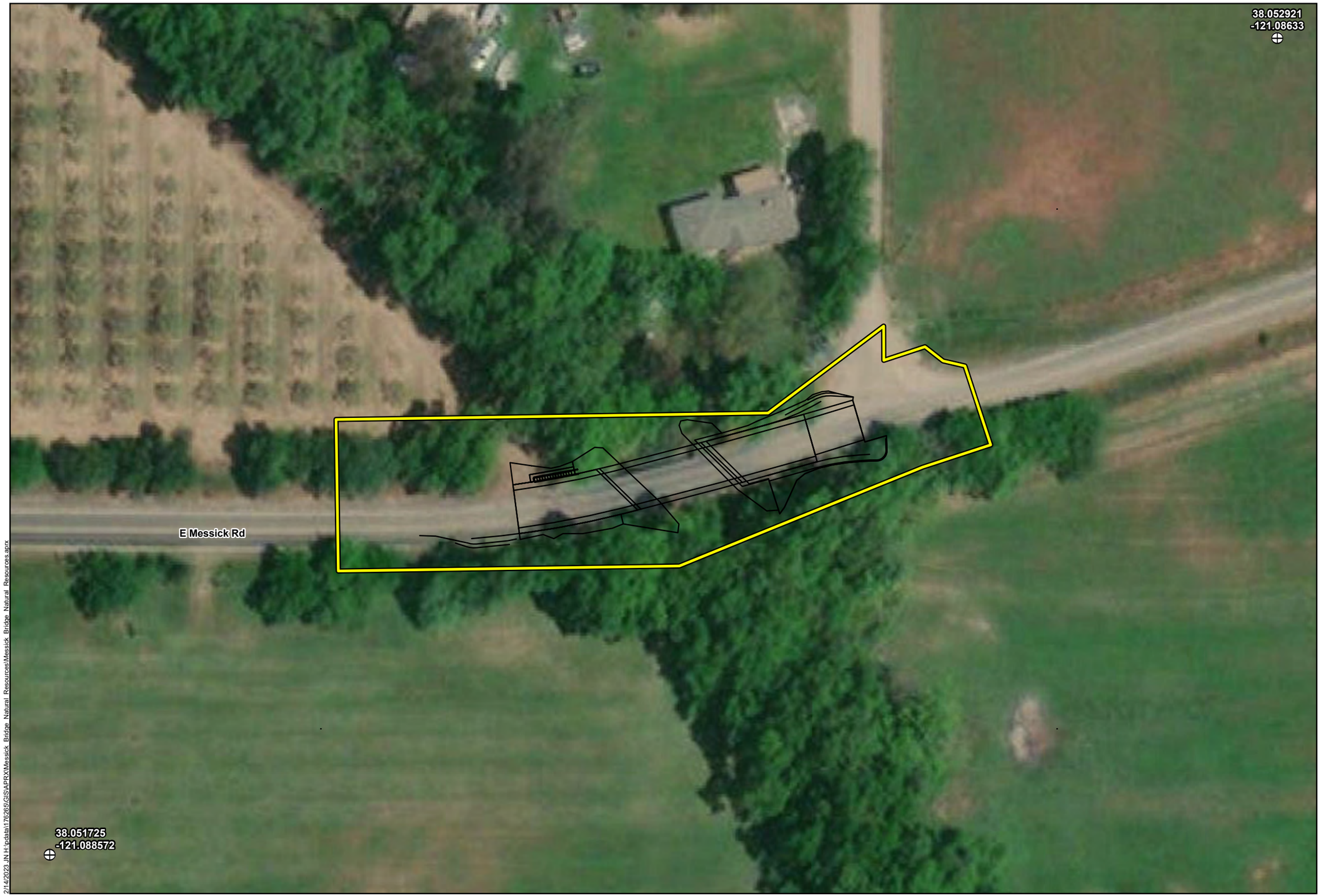
9/15/2022 JN \\IRVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\185102\GIS\APRX\Messick_Bridge_Natural_Resources\Messick_Bridge_Natural_Resources.aprx

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

Biological Study Area

Source: Esri (04/2021)

Figure 3



Legend

- Project Site
- Site Plans
- Reference Point

0 25 50 Feet

2/14/2023 J:\N H:\data\t176265\GIS\APRX\Messick Bridge Natural Resources\Messick Bridge Natural Resources.aprx

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

Proposed Project

Source: Esri (04/2021)

Figure 4

Chapter 2 – Study Methods

This section provides the regulatory framework by which biological resources were reviewed for the proposed project and the methods used in determining the suitability of the habitat for a given biological resource. There are several overlying federal, State, and local biological resources regulations and policies that pertain to this project. These policies are summarized below, along with a brief description of how they relate to the project's planning, permitting, and implementation.

2.1 Regulatory Requirements

The proposed project as implemented will satisfy the requirements of applicable federal and State regulations, as well as local policies, ordinances, or adopted plans protecting biological resources. Only those regulations and/or environmental protection documents that are directly applicable to the permitting and implementation of this project are outlined below. General environmental regulations that are not applicable to the conditions of this project are not described.

2.1.1 Federal

National Environmental Policy Act

NEPA directs a "systematic, interdisciplinary approach" to planning and decision making and requires environmental statements for "major federal actions significantly affecting the quality of the human environment." Implementing regulations by the Council of Environmental Quality (40 Code of Federal Regulations [CFR], Parts 1500–1508) require federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts.

Federal Endangered Species Act of 1973

As defined within the federal Endangered Species Act (FESA) of 1973, an endangered species is any animal or plant listed by regulation as being in danger of extinction throughout all or a significant portion of its geographical range. A threatened species is any animal or plant that is likely to become endangered within the foreseeable future throughout all or a significant portion of its geographical range. Without a special permit, federal law prohibits the "take" of any individuals or habitat of federally listed species. Under Section 9 of FESA, take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." The term "harm" has been clarified to include "any act which actually kills or injures fish or wildlife, and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife." Enforcement of FESA is administered by the USFWS.

Critical Habitat is designated for the survival and recovery of species listed as threatened or endangered under FESA. Designated Critical Habitat includes those areas occupied by the species, in which are found physical and biological features that are essential to the conservation of a FESA-listed species and which may require special management considerations or protection. Designated Critical Habitat may also include unoccupied habitat if it is determined that the unoccupied habitat is essential for the conservation of the species.

Whenever federal agencies authorize, fund, or carry out actions that may adversely modify or destroy designated Critical Habitat, they must consult with the USFWS under Section 7 of FESA. The designation of Critical Habitat does not affect private landowners, unless they are proposing uses federal funds, or requires federal authorization or permits (i.e., funding from the Federal Highway Administration or a permit from the US Army Corps of Engineers [USACE]).

If the USFWS determines that designated Critical Habitat will be lost or adversely modified from a proposed action, the USFWS will develop reasonable and prudent alternatives in cooperation with Caltrans to ensure the purpose of the proposed action can be achieved without loss of designated Critical Habitat. If the action is not likely to adversely modify or destroy designated Critical Habitat, the USFWS will include a statement in its biological opinion concerning any incidental take that may be authorized and specify terms and conditions to ensure the agency is in compliance with the opinion.

Migratory Bird Treaty Act

Pursuant to the Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) of 1918, as amended in 1972, federal law prohibits the taking of migratory birds or their nests or eggs (16 USC 703; 50 CFR 10, 21). The statute states:

> *"Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill...any migratory bird, any part, nest, or egg of any such bird...included in the terms of the [Migratory Bird] conventions."*

The MBTA covers the taking of any nests or eggs of migratory birds, except as allowed by permit pursuant to 50 CFR, Part 21. Disturbances causing nest abandonment and/or loss of reproductive effort (i.e., killing or abandonment of eggs or young) may also be considered a "take." This regulation seeks to protect migratory birds and active nests.

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: Accipitridae (kites, hawks, and eagles); Cathartidae (New World vultures); Falconidae (falcons and caracaras); Pandionidae (ospreys); Strigidae (typical owls); and Tytonidae (barn owls).

The provisions of the 1972 amendment to the MBTA protects all species and subspecies of the families listed above. The MBTA protects over 800 species including geese, ducks, shorebirds, raptors, songbirds and many relatively common species.

Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, issued in 2001, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). Executive Order 13186 requires federal agencies to work with the USFWS to develop a memorandum of understanding.

Executive Order 13112 – Invasive Species

On February 3, 1999, President William J. Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999, directs the use of the State's invasive species list, maintained by the California Invasive Species Council to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project. Under the Executive Order, federal agencies cannot authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless all reasonable measures to minimize risk of harm have been analyzed and considered.

Clean Water Act (CWA)

Since 1972, the USACE and US Environmental Protection Agency (EPA) have jointly regulated the filling of "waters of the U.S." (WoUS), including wetlands, pursuant to Section 404 of the CWA. The USACE has regulatory authority over the discharge of dredged or fill material into the WoUS under Section 404 of the CWA. The USACE and EPA define "fill material" to include any "material placed in waters of the United States where the material has the effect of: (i) replacing any portion of a water of the United States with dry land; or (ii) changing the bottom elevation of any portion of the waters of the United States." Examples include, but are not limited to, sand, rock, clay, construction debris, wood chips, and "materials used to create any structure or infrastructure in the waters of the United States." The term WoUS is defined under CWA regulations 33 CFR §328.3(a). Wetlands, a subset of jurisdictional waters, are jointly defined by the USACE and EPA under CWA regulations 33 CFR §328.3(b).

In the absence of adjacent wetlands, the limits of the USACE's jurisdiction in non-tidal waters extend to the ordinary high water mark (OHWM), which is defined in CWA regulations 33 CFR §328.3I. Indicators of an OHWM are defined in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid*

West Region of the Western United States (USACE 2008a). An OHWM can be determined by, but not limited to, the observation of benches, break in bank slope, particle size distribution, sediment deposits, drift, litter, and/or change in plant community. The RWQCB shares the USACE's jurisdictional methodology, unless State waters are present.

Executive Order 11990 Protection of Wetlands

This Executive Order established a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. On federally funded projects, impacts on wetlands must be identified and alternatives that avoid wetlands must be considered. If impacts on wetlands cannot be avoided, all practicable minimization measures must be included.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983; and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.1.2 State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California by establishing State policy to prevent significant, avoidable damage to the environment through the use of alternatives or mitigation measures for projects. It applies to actions directly undertaken, financed, or permitted by State lead agencies. If a project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. Section 15380 of the CEQA Guidelines independently defines "endangered" and "rare" species, with "endangered" species defined as those whose survival and reproduction in the wild are in immediate jeopardy, while "rare" species are defined as those who are in such low numbers that they could become endangered if their environment worsens.

California Endangered Species Act

In addition to federal laws, the State of California has its own California Endangered Species Act (CESA), enforced by the CDFW. The CESA program maintains a separate listing of species beyond FESA, although the provisions of each act are similar.

State-listed threatened and endangered species are protected under provisions of CESA. Activities that may result in "take" of individuals (defined in CESA as; "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by the CDFW. Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, the CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection. At the federal level, the USFWS also uses the label species of concern, as an informal term that refers to species which might be in need of concentrated conservation actions.

As the Species of Concern designated by the USFWS do not receive formal legal protection, the use of the term does not necessarily ensure that the species will be proposed for listing as a threatened or endangered species.

California Fish and Game Code

Sections 3503, 3503.5, 3511, and 3513

The CDFW administers the CFGC. There are particular sections of the CFGC that are applicable to natural resource management. For example, Section 3503 makes it unlawful to destroy any birds' nest or any birds' eggs that are protected under the MBTA. Further, any birds in the orders Falconiformes or Strigiformes (Birds of Prey), such as hawks, eagles, and owls, are protected under Section 3503.5, which makes it unlawful to take, possess, or destroy their nest or eggs. A consultation with the CDFW may be required prior to the removal of any bird of prey nest that may occur on a project site. Section 3511 lists fully protected bird

species, where the CDFW is unable to authorize the issuance of permits or licenses to take these species. Pertinent species that are State fully protected include golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*). In addition, Section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Sections 1600 et seq.

Sections 1600 et seq. of the CFGC establishes a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely affect fish and wildlife resources, or when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Section 1602 of the CFGC requires any person, State, or local governmental agency or public utility to notify CDFW before beginning any activity that will do one or more of the following:

(1) substantially obstruct or divert the natural flow of a river, stream, or lake;

(2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake;

(3) or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

This applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State, including existing drain culverts, outfalls, and other structures. To avoid impacts to such features and the need for a Lake or Streambed Alteration Agreement (LSAA) from the CDFW, all proposed impacts should remain outside of the top of active banks and the canopy/dripline of any associated riparian vegetation, whichever is greater.

California Native Plant Society Rare and Endangered Plant Species

Vascular plants listed as rare or endangered by the California Native Plant Society (CNPS) in the California Inventory of Rare Plants (CIRP) have no designated status under State and federal endangered species legislation, but are assigned a California Rare Plant Rank (CRPR) and generally serve as potential candidates for future listing under CESA. CRPRs are defined as follows:

California Rare Plant Rank

1A- Plants Presumed Extirpated in California and either Rare or Extinct Elsewhere

1B- Plants Rare, Threatened, or Endangered in California and Elsewhere

2A- Plants Presumed Extirpated in California, But More Common Elsewhere

2B- Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

3- Plants about Which More Information is Needed – A Review List

4- Plants of Limited Distribution – A Watch List

Threat Ranks

.1- Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2- Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3- Not very threatened in California (< 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

2.1.3 Local

San Joaquin County General Plan

The San Joaquin County General Plan contains several goals and policies protecting natural resources that may apply to this project (San Joaquin County 2016). These include the following:

- Goal NCR-2: To preserve and protect wildlife habitat areas for the maintenance and enhancement of biological diversity and ecological integrity.
    - NCR-2.1 Protect Significant Biological and Ecological Resources: The County shall protect significant biological and ecological resources including: wetlands; riparian areas; vernal pools; significant oak woodlands and heritage trees; and rare, threatened, and endangered species and their habitats.
    - NCR-2.2 Collaboration for Species Protection: The County shall collaborate with the California Department of Fish and Wildlife during the review of new development proposals to identify methods to protect listed species.
    - NCR-2.5 No Net Loss of Wetlands: The County shall not allow development to result in a net loss of riparian or wetland habitat.
    - NCR-2.9 Protect Fisheries: The County shall encourage and support efforts to protect fisheries, including:

- reducing the level of pesticides and fertilizers and other harmful substances in agricultural and urban runoff;
- designing and timing waterway projects to protect fish populations; and
- operating water projects to provide adequate flows for spawning of anadromous fish.

- Goal NCR-3: To ensure the quality of water for municipal and industrial uses, agriculture, recreation, and fish and wildlife.
  - NCR-3.9 Require Water Projects to Mitigate Impacts: The County shall require water projects to incorporate safeguards for fish and wildlife and mitigate erosion and seepage to adjacent lands.
  - NCR-3.10 Coordination for Waterway Protection: The County shall coordinate with city, State, and Federal agencies to implement policies regarding protection and enhancement of waterways and levees.

2.2 Studies Required

A literature review and records search were conducted to determine which special-status biological resources have the potential to occur on or within the general vicinity of the BSA. Following the literature review, general habitat assessments or field surveys were conducted within the BSA to document baseline conditions and determine the potential for the BSA to support special-status biological resources. A jurisdictional delineation was also conducted and prepared under a separate cover.

2.2.1 Literature Search

Prior to conducting the field surveys, a literature review and records search was conducted for special-status biological resources potentially occurring on or within the vicinity of the BSA. Previous special-status plant and animal species occurrence records within the USGS *Linden*, *Valley Springs SW*, *Peters*, *Stockton East*, and *Waterloo, California* 7.5-minute quadrangles were determined through a query of the CDFW California Natural Diversity Database RareFind 5 (CNDDB), the CNPS CIRP, the Calflora Database, species listings provided by the CDFW and the USFWS, and the National Oceanic and Atmospheric Administration (NOAA) Fisheries species list. A review of the US Department of Agriculture, Natural Resource Conservation Service's (USDA NRCS) *Hydric Soils List for California* was conducted to preliminarily verify whether any of the soils mapped within the survey area are considered to be hydric. Michael Baker International also reviewed the USFWS NWI Mapper and FEMA National Flood Hazard Layer. In addition, an Official Species List was obtained from the USFWS Sacramento Field Office via the IpaC database on October 6, 2021, and was updated on September 19, 2022 and again on June 1,

2023 (refer to Appendix A). Finally, an Official Species List was obtained from NOAA Fisheries and confirmed on September 30, 2022 and reconfirmed on June 1, 2023 (refer to Appendix B). A total of twenty-six (26) special-status species were identified by the database queries as potentially occurring within the BSA, which includes ten (10) federally listed species and one (1) federal candidate species.

In addition to the databases referenced above, Michael Baker reviewed all available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the BSA to understand existing site conditions, confirm previous species observations, and note the extent of any disturbances, if present, that have occurred in the BSA that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources.

On-site and adjoining soils were identified prior to conducting the field survey using the USDA NRCS's *Custom Soil Resource Report for San Joaquin County, California* (USDA 2022). In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes and disturbances that may have occurred within the project site. Aerial photography was reviewed prior to the field survey using Google Earth Pro to locate potential natural corridors and linkages that may support the movement of wildlife through the area (Google, Inc. 2022). The literature review provided a baseline from which to inventory the existing biological resources and evaluate the ability of the project site to support special-status biological resources. Additional occurrence records of those species that have been documented on or within the vicinity of the project site were derived from database queries including the Calflora database (Calflora 2022). Additionally, standard field guides, texts and sources were used, such as species accounts provided by Birds of the World (Billerman et al. 2020) and the USFWS Critical Habitat Mapper and Environmental Conservation Online System (USFWS 2022b). The CNDDB was used, in conjunction with Geographic Information Systems (GIS) ArcView software, to identify special-status species occurrence records within the USGS *Linden*, *Valley Springs SW*, *Peters*, *Stockton East*, and *Waterloo, California* 7.5-minute quadrangles.

2.2.2 Field Review

Field Survey

The field review for the proposed project was conducted on August 10, 2022, to document the extent and conditions of the vegetation communities occurring within the boundaries of the BSA. The survey was conducted from approximately 1300 to 1500 hours; weather ranged from 79 to 86 degrees Fahrenheit, with wind speeds ranging from 0 to 8 miles per hour and cloudless skies. Vegetation communities preliminarily identified on aerial photographs during the literature review were verified in the field by walking meandering transects through the vegetation communities and along boundaries between vegetation communities. Naturally vegetated areas typically have a higher potential to support special-status plant and wildlife species than areas that are highly disturbed or developed,

which usually have lower quality and/or reduced amounts of suitable wildlife habitat. All plant and wildlife species observed during the field survey, as well as dominant plant species within each vegetation community, were recorded in a field notebook, and are described below. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, the overall condition of on-site vegetation, and the presence of potentially regulated jurisdictional features (e.g., streams, flood control channels) were noted within the project site. GIS ArcView software was used to digitize the mapped vegetation communities, which were transferred onto an aerial photograph to further document existing conditions and quantify the acreage of each vegetation community. The BSA comprises the proposed project and a 500-foot survey buffer around the project's limits of disturbance. Representative photographs are included in Appendix C.

A second field visit was conducted on November 14, 2022, to meet with various agencies on-site. Wildlife species were incidentally recorded during the field meeting to provide a more comprehensive list of wildlife species that use the project site. An inventory of plant and wildlife species occurring within the BSA was not conducted during this field meeting.

Vegetation Communities

Vegetation communities occurring within the BSA were delineated on an aerial photograph during the field survey and later digitized using the GIS ArcView software to quantify the area of each vegetation community in acres. Vegetation communities occurring within the BSA were classified in accordance with vegetation descriptions provided in the Manual of California Vegetation (Sawyer et al. 2009) and cross referenced with vegetation community descriptions included in the CNDDB (CDFW 2022b).

Plants

Plant species observed during the field survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unfamiliar plants were photographed in the field and later identified in the laboratory using taxonomic guides. Plant nomenclature used in this report follows the *Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

Wildlife

Wildlife species detected during the field survey by sight, calls, tracks, scat, or other types of sign were recorded in a field notebook. Field guides used to assist with identification of species during the field survey included The Sibley Guide to Birds (Sibley 2014) for birds, A Field Guide to Western Reptiles and Amphibians (Stebbins 2003) for herpetofauna, and A Field Guide to Mammals of North America (Reid 2006). Although common names of wildlife species are well standardized,

scientific names are provided immediately following common names of wildlife species in this report (first reference only). To the extent possible, nomenclature of birds follows the most recent annual supplement of the American Ornithological Union's Checklist of North American Birds (Chesser et al. 2022); nomenclature of amphibians and reptiles follows Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding (Crother 2017); and nomenclature of mammals follows the Bats of the United States and Canada (Harvey et al. 2011) and Revised Checklist of North American Mammals North of Mexico (Bradley et al. 2014).

Delineation of State and Federal Jurisdictional Waters

Certified wetland delineators conducted a jurisdictional delineation on August 10, 2022, to identify and map the jurisdictional limits of WoUS, including potential wetlands, and waters of the State within the boundaries of the BSA. During the field delineation, Michael Baker utilized the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (USACE 2008b) to document the presence and extent of jurisdictional features that would fall under the regulatory authority of the USACE, the RWQCB, and the CDFW. The results of the jurisdictional delineation are incorporated into Section 4.1.2 of this report.

2.3 Personnel and Survey Dates

Qualified and experienced senior biologists Tom Millington and John Parent inventoried and evaluated the biological conditions within the BSA on August 10, 2022. In addition, a jurisdictional delineation was conducted by certified wetland delineators and regulatory specialists Tim Tidwell and John Parent on the same day. The November 2022 field meeting was attended by senior biologist Ryan Winkleman.

2.4 Agency Coordination and Professional Contacts

An Official Species List from the USFWS Sacramento Field Office was received via the IpaC database on October 6, 2021, updated on September 19, 2022, and again on June 1, 2023 (refer to Appendix A). The NOAA Fisheries species list was confirmed on September 30, 2022 and again on June 1, 2023 (refer to Appendix B). In addition, the following agency coordination and professional contacts have occurred on behalf of this project and are described in chronological order:

- September 27, 2022: Ryan Winkleman (Michael Baker) sent an email to Justin Hopkins (Stockton East Water District or SEWD) inquiring about any monitoring data or known presence of steelhead in or around the project site based on data compiled for SEWD's Calaveras River Habitat Conservation Plan (HCP). Mr. Hopkins responded to Mr. Winkleman via email on October 3, 2022, stating that although there are no monitoring data specifically for the areas in and around the project site, a fish net at the Calaveras River Headworks generally prevents fish from migrating downstream into the Old Calaveras River between April and October when

the creek is irrigated for agricultural purposes; between October and April, the headworks facilities are closed, shutting off downstream water flow into the project site and again restricting possibilities for fish to occur.

- November 4–7, 2022: In a series of email exchanges, Ryan Winkleman (Michael Baker) and Patrick Cuthbert (FISHBIO) discussed the general presence of steelhead and salmonids in the Old Calaveras River and the possibility of future upgrades to the Calaveras River Headworks.

- November 10, 2022: Ryan Winkleman (Michael Baker) and Patrick Cuthbert (FISHBIO) held a phone call together. Topics discussed included the hydrologic background of the Calaveras River watershed, the status and distribution of salmonids in the Calaveras River and distributaries, the irrigation regime administered by the SEWD, and the appropriateness of Mosher Creek as Critical Habitat and Essential Fish Habitat (EFH) for salmonids.

- November 14, 2022: Project personnel attended a meeting at the project site. The meeting was attended by Brian Newburg (San Joaquin County), Ryan McKenzie (NOAA), Elizabeth Hummel (Caltrans), David Moore (Caltrans), Ryan Winkleman (Michael Baker), and Joe Drago (Michael Baker). The purpose of the meeting was to familiarize all attendees on the site characteristics and discuss potential project impacts. Those in attendance determined that the project would likely be permitted as “may affect, not likely to adversely affect” steelhead if constructed during NOAA’s approved in-water work period of August to October, when Mosher Creek would still be wet but when fish would not be expected to be present due to barriers upstream of the project. If constructed between October and April, those in attendance agreed the project would likely have “no effect” on steelhead due to the lack of in-stream water at this time of year, when the SEWD closes upstream headworks structures and cuts off all water flow to areas downstream, including the project site.

- November 15, 2022: Ryan McKenzie (NOAA) sent an email to project personnel following up on anticipated impacts and consultation. The email was addressed to David Moore (Caltrans), Elizabeth Hummel (Caltrans), Ronen Johnson (Caltrans), Ellen McBride (NOAA), Ryan Winkleman (Michael Baker), and Joe Drago (Michael Baker). The email stated that because steelhead were captured at the Tully Bridge Dam downstream of the project site in the Old Calaveras River in October 2021 as cited in the FISHBIO 2021 annual report for the Calaveras River HCP (SEWD and FISHBIO 2022), consultation for impacts to steelhead should be conducted.

- November 15–18, 2022: A series of emails were sent regarding the direction of project consultation with NOAA. The emails were sent between David Moore (Caltrans), Elizabeth Hummel (Caltrans), Sofia Landis (Michael Baker), and Ryan Winkleman (Michael Baker). In these emails, Caltrans stated that because the project would be required to consult on impacts to

both Critical Habitat and EFH and because NOAA no longer appeared to support a "no effect" determination, the project should also consult on impacts to steelhead.

- November 29, 2022: A phone call was held between San Joaquin County staff and Michael Baker staff. Attendees included Michael Chung and Brian Newburg (San Joaquin County), and Sofia Landis, Alan Ashimine, Jessica Ditto, and Ryan Winkleman (Michael Baker). In this meeting, Michael Baker staff updated County staff on consultation negotiations to determine the County's preferred path forward. County staff ultimately determined that if there would be no strong restrictions or objections from the CDFW against constructing during the rainy season between October and April when upstream water flow to Mosher Creek is turned off, the County would prefer to construct during this time period to reduce the anticipated effects determination to "may affect, not likely to adversely affect."

- November 30, 2022: John Parent (Michael Baker) sent an email to Zachary Kearns (CDFW) describing the project site and its typical flow regime and inquiring if CDFW would restrict or prevent in-stream work during the rainy season. Mr. Kearns responded to this email on December 5, 2022, stating that subject to approval of upper management during the CFGC Section 1602 permitting process, the CDFW would likely not restrict in-stream work during this period but would require standard Best Management Practices and erosion control measures, as well as additional restrictions on timing of work, if any concrete were to be poured into place, and standard wildlife escape measures for sources of entrapment (e.g., pipes, trenches).

2.5 Limitations That May Influence Results

The field study was conducted in accordance with applicable protocols and in a way to maximize the detectability of special-status species and vegetation communities that may be present within the BSA during the time of the survey. The survey was conducted during the appropriate season, in good weather conditions, and by qualified personnel. In order for the surveying biologists to access the open parcels of land within the BSA, permission for right-of-entry was required from the landowners. However, no right-of-entry was granted for areas outside the public right-of-way and outside of the creek, and no right-of-entry was granted for parcels north of Messick Road within Mosher Creek. Therefore, surveyors walked all accessible areas of the BSA and otherwise examined all inaccessible areas with binoculars in order to observe and identify vegetation communities and species of plants and wildlife. No other limitations that may influence the results of field studies associated with the proposed project are known to have occurred.

Chapter 3 – Results: Environmental Setting

The BSA is centered around East Messick Road, generally located north of Comstock Road, east of Duncan Road, south of Eight Mile Road, and west of Clements Road in unincorporated San Joaquin County, California. The BSA is depicted in Section 3 of Township 2 North, Range 8 East, on the USGS *Linden*, *California* 7.5-minute topographic quadrangle map.

3.1 Description of the Existing Physical and Biological Conditions

3.1.1 Study Area

The BSA identified for the proposed project includes a 500-foot survey buffer based on the proposed bridge replacement (refer to Figure 3, *Biological Study Area*). Specifically, the BSA is in unincorporated San Joaquin County and is centered around the Messick Road Bridge crossing at Mosher Creek. The BSA is primarily composed of rural residential land uses, agricultural lands, ranching land, natural vegetation communities associated with Mosher Creek, and ornamental vegetation associated with residences. All parcels in the BSA are private property.

3.1.2 Physical Conditions

On-site surface elevation within the BSA ranges from approximately 100 to 130 feet above mean sea level and generally slopes to the southeast. According to the *Custom Soil Resource Report for San Joaquin County, California* (USDA 2022), the project site is underlain by the following soil units: Cogna loam, 0 to 2 percent slopes, overwash (128); Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17 (130); San Joaquin sandy loam, 2 to 5 percent slopes (237); and San Joaquin complex, 0 to 1 percent slopes (241). Refer to Figure 5, *USDA Soils*, for a depiction of soil units within the project site.

Hydrological Resources

Non-Wetland Features

The project site is located at the intersection of Messick Road and Mosher Creek, where Messick Road crosses Mosher Creek. Mosher Creek is a perennial drainage feature that enters the southern boundary of the project site as an earthen channel conveying flows through two approximately 36-inch concrete pipes beneath an earthen road crossing, then continues beneath Messick Road and to the north through the project site. Flows originate from the Old Calaveras River in the upstream portions of the watershed and converge with Bear Creek to the north into Pixley Slough which turns into Disappointment Slough, then into the Sacramento-San Joaquin Delta (SEWD and FISHBIO 2019). Mosher Creek is characterized by disturbed banks, a constrained though well-developed overstory, and generally little riparian vegetation. Flowing surface water was observed within Mosher Creek and additional evidence of an OHWM was observed, including the presence of a defined bed and bank. Mosher Creek consists of a dense riparian overstory consisting primarily of valley oak (*Quercus lobata*), Northern California

9/15/2022 JN:\\IRVICA1FS1.tbr.mtakercorp.com\HROOT\pf\afa\185102\GIS\APRX\Messick_Bridge_Natural_Resources\Messick_Bridge_Natural_Resources.aprx

Legend

- Project Site
- Biological Study Area
- 128 — Cogna loam, 0 to 2 percent slopes, overwash
- 130 — Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17
- 237 — San Joaquin complex, 0 to 1 percent slopes
- 241 — San Joaquin sandy loam, 2 to 5 percent slopes
- Reference Point

0 65 130 Feet

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

USDA Soils

Source: Esri (04/2021), USDA (2019)

Figure 5

black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), Himalayan blackberry (*Rubus armeniacus*), and American bulrush (*Scirpus americanus*). Within the project site, Mosher Creek measures approximately 96 feet in length and ranges in width from approximately 30 to 50 feet for the USACE and RWQCB jurisdiction and 65 to 90 feet for CDFW jurisdiction. The limits of jurisdiction are displayed in Figure 6, *USACE/RWQCB Jurisdictional Map*, and Figure 7, *CDFW Jurisdictional Map*.

Wetland Features

USACE and RWQCB jurisdictional features consisting of .004 acres of wetlands were identified within the survey area. To assess for the presence of hydric soils and determine the presence/absence of wetlands within the project site, one (1) soil pit (SP1) was performed where wetland hydrology or hydrophytic vegetation was observed. SP1 was performed on a sediment bar of Mosher Creek immediately north of the Mosher Creek Bridge. SP1 was dug to a depth of 16 inches and exhibited a texture of silty clay and displayed a matrix color of 10YR 3/1 when moist with redoximorphic features observed of concentrations within the matrix with a color of 5YR 3/4. Wetland hydrology indicators in the vicinity of SP1 included a high water table (A2), saturation (A3), a hydrogen sulfide odor (C1), saturation at 2 inches in depth, and water table of 6 inches. Based on the results of the field delineation, it was determined that SP1 met the required three parameters and qualified as USACE wetland WoUS or RWQCB wetland waters of the State.

3.1.3 Biological Conditions

Vegetation Communities and Land Cover Types

One (1) natural vegetation community was mapped within the boundaries of the BSA: valley oak riparian woodland forest. In addition, the BSA contained three (3) land cover types classified as agriculture, disturbed, and developed. These vegetation communities and land cover types are depicted on Figure 8, *Vegetation Communities and Other Land Uses* and described in further detail below. In addition, refer to Appendix D for a complete list of plant species that were observed within the project site during the field survey.

Valley Oak Riparian Woodland and Forest

Approximately 3.70 acres of valley oak riparian woodland and forest are present within the BSA, with approximately 0.14 acres within the project site. This community is solely associated with Mosher Creek. The dominant canopy species within the on-site community is valley oak, with Oregon ash serving as an associated canopy species. The understory is primarily a mixture of common fig (*Ficus carica*), northern California black walnut, and Himalayan blackberry. In-stream vegetation is dominated by broadfruit bur-reed.

5/31/2023 JN \\RVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\133218\Admin\Reports\Biological\Baker Road Pipeline\4_GIS Figures\GIS\MXD\Fig 02 USDA Soils.mxd

Legend

- Project Site
- Reference Point
- Flow Direction
- USACE/RWQCB Non-wetland WoUS (0.10 acre)
- USACE/RWQCB Wetland WoUS (0.004 acre)
- Non Jurisdictional Ditch
- Delineation Points

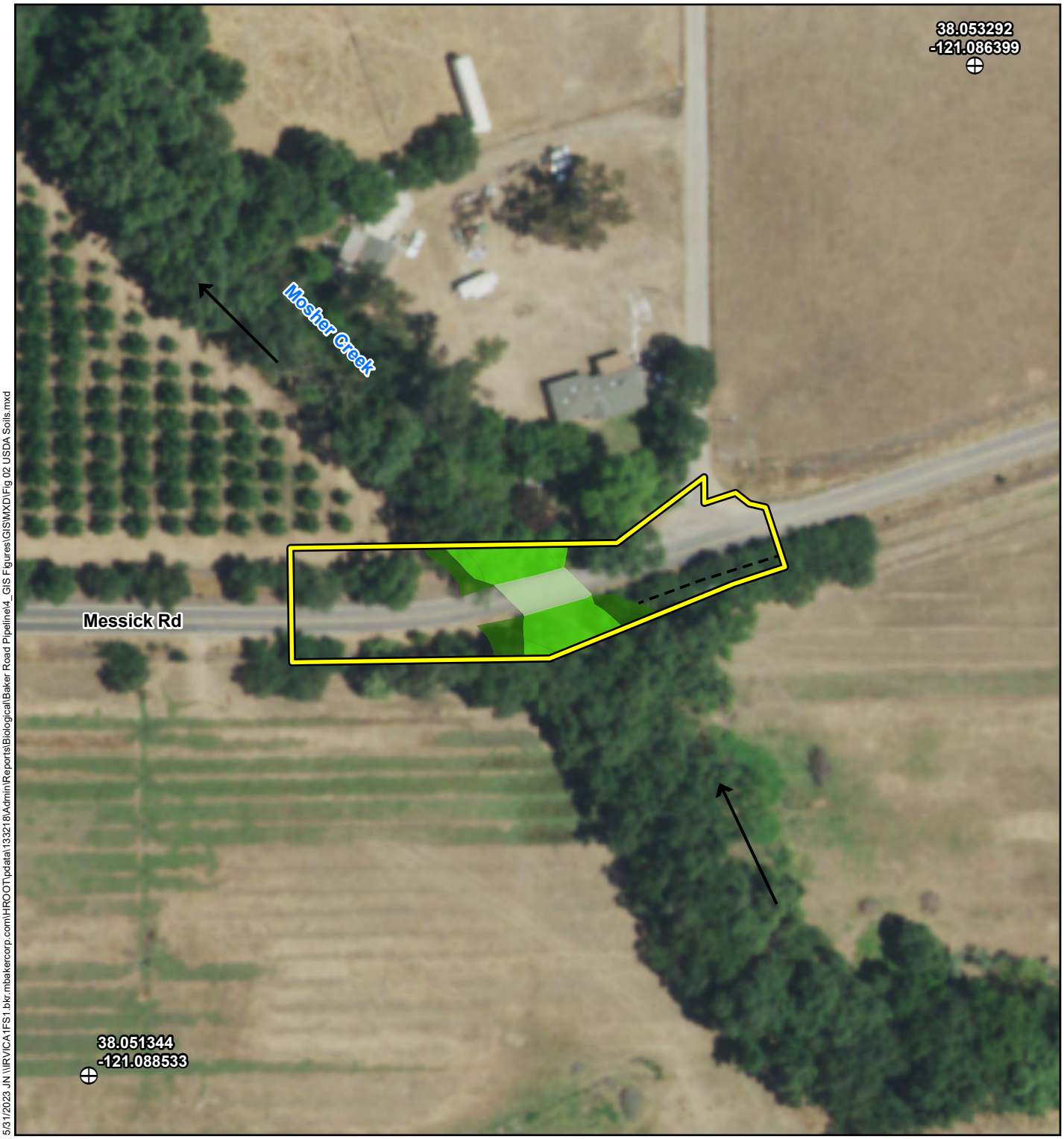
0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

USACE/RWQCB Jurisdictional Map

Figure 6



5/31/2023 JN \\RVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\133218\Admin\Reports\Biological\Baker Road Pipeline\4_GIS Figures\GIS\MXD\Fig 02 USDA Soils.mxd

Legend

- Project Site
- Reference Point
- Flow Line
- CDFW Vegetated Streambed (0.08 acre)
- Associated Riparian Vegetation (0.04 acre)
- CDFW Non-Vegetated Streambed (0.03 acre)
- Non Jurisdictional Ditch

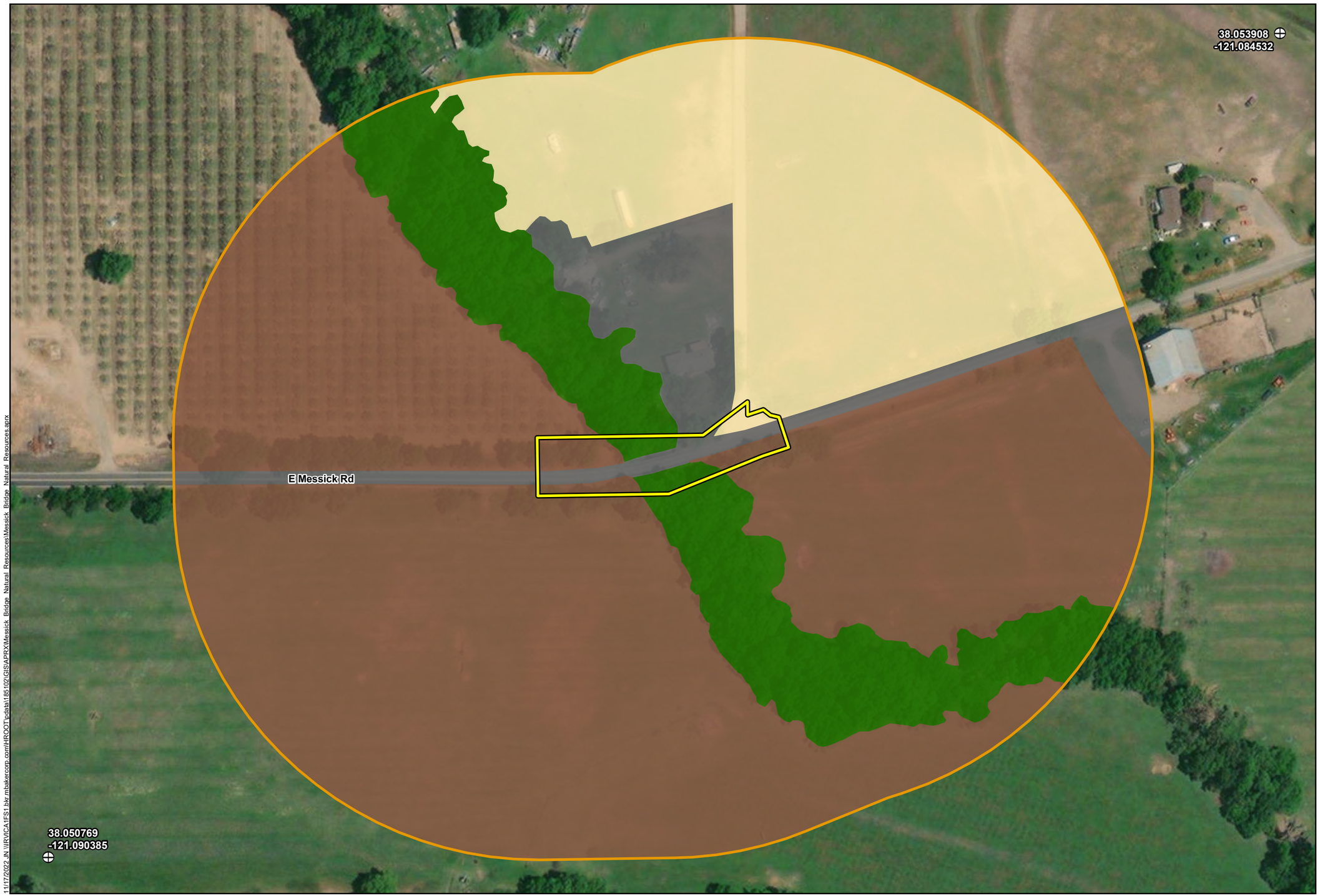
0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

CDFW Jurisdictional Map

Figure 7



MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

Vegetation Communities and Other Land Uses

Source: Esri (04/2021)

Figure 8

Agriculture

Approximately 16.16 acres of agriculture are located within the BSA, with approximately 0.22 acres within the project site. Within the BSA, areas mapped as agriculture include rows of planted trees as well as partially flooded/grazing fields.

Disturbed

Approximately 6.22 acres of disturbed land occur within the BSA, with approximately 0.03 acres located within the project site. Within the BSA, areas mapped as disturbed generally include open fields associated with rural residences in the area. These fields are mowed or disked and kept clear of any substantive vegetative cover, and based on historical aerial imagery (Google, Inc. 2022) are not used for agricultural purposes at this time or in the recent past.

Developed

Approximately 2.02 acres of developed land are present within the BSA, with approximately 0.18 acres within the project site. Within the BSA, areas mapped as developed generally include paved road surfaces (i.e., Messick Road) and extensively manipulated areas associated with residential properties.

Wildlife

Natural vegetation communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a general discussion of those wildlife species that were observed during the August 2022 field survey and November 2022 field meeting or that are expected to occur based on existing site conditions. The discussion is to be used as a general reference and is limited by the season, time of day, and weather conditions during which the field survey was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation. Refer to Appendix D for a complete list of wildlife species observed during the field survey.

Fish

The Messick Road Bridge spans Mosher Creek, a distributary of the Calaveras River. Fish were observed in the creek during the August 2022 field survey but could not be identified to species. Examples of fish that are known to occur presently and/or historically in Mosher Creek include brown trout (*Salmo trutta*), common carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellus*), prickly sculpin (*Cottus asper*), smallmouth bass (*Micropterus dolomieu*), mosquitofish (*Gambusia affinis*), and California Central Valley Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss irideus pop. 11*; Central Valley steelhead) (UC Davis 2022).

Amphibians

The Messick Road Bridge spans Mosher Creek, a distributary of the Calaveras River. No amphibians were observed within the BSA during either of the field visits.

However, amphibians associated with creek habitat that occurs within the BSA could potentially include California toad (*Anaxyrus boreas halophilus*), Sierran treefrog (*Pseudacris sierra*), and American bullfrog (*Lithobates catesbeianus*).

Reptiles

No reptile species were observed within the BSA during either of the field visits. The undeveloped nature of the project site may help to sustain a reptile population on-site, but due to the surrounding disturbance and agricultural fields, it is expected that the BSA would only be suitable for a limited number of reptilian species that are acclimated to such niche habitats. Reptilian species that may be present within the project site include northwestern fence lizard (*Sceloporus occidentalis occidentalis*), western side-blotched lizard (*Uta stansburiana elegans*), forest alligator lizard (*Elgaria multicarinata multicarinata*), Pacific gophersnake (*Pituophis catenifer catenifer*), and valley gartersnake (*Thamnophis sirtalis fitchi*).

Birds

Twenty-eight (28) bird species were detected within or adjacent to the BSA during the two field visits, including but not limited to American crow (*Corvus brachyrhynchos*), California scrub-jay (*Aphelocoma californica*), Eurasian collared-dove (*Streptopelia decaocto*), northern mockingbird (*Mimus polyglottos*), and black phoebe (*Sayornis nigricans*). Refer to Appendix D for a complete list of bird species that were detected on-site during the field visits.

Nesting birds are protected pursuant to the federal MBTA of 1918 and the CFGC.[1] No active or remnant bird nests were observed within the BSA during the field survey.

Mammals

The project site and surrounding habitat provide suitable habitat for mammalian species adapted to living in grasslands, agricultural, and edge environments. Mammalian species detected during the two field visits included domestic cows (*Bos taurus*) in the surrounding agricultural fields and unidentified bats roosting under the Messick Road Bridge in August 2022, and a domestic cat (*Felis catus*) in the dry creek in November 2022. Other common mammalian species that may occur within the project site include coyote (*Canis latrans*), California ground squirrel (*Otospermophilus beecheyi*), Audubon's cottontail rabbit (*Sylvilagus audubonii*), raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*). Bats occur throughout most of northern California and may use the project site as roosting and/or foraging habitat. Surveyors were advised prior to the August 2022 field survey that bats had been detected roosting under the bridge earlier in the year, and surveyors observed bats during the August 2022 survey. The underside of the bridge was examined during the November 2022 field meeting and as bats

[1] Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by CFGC or any regulation made pursuant thereto; Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey); and Section 3513 makes it unlawful to take or possess any migratory non-game bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA, as amended (16 USC § 703 *et seq.*).

were not observed, it was concluded that use of the bridge as a day roost by a colony of bats is likely seasonal, with only individual or small groups of bats using the habitat during the fall and winter months. The species of bats that were detected has not yet been determined.

Invasive Species

Noxious weed species include species designated as federal noxious weeds by the USDA, species listed as noxious weeds by the California Department of Food and Agriculture (CDFA), and other exotic pest plants designated by the California Invasive Plant Council (Cal-IPC). Invasive plant species occur throughout the BSA but are particularly prominent along the shoulder of Messick Road. None of the non-native plants that were identified within the BSA are listed as noxious by the USDA (USDA 2010) or the CDFA (CDFA 2021). However, several non-native plants occurring within the BSA are identified as invasive by the Cal-IPC including wildoats, ripgut brome, foxtail chess (*Bromus madritensis*), common fig, mouse barley (*Hordeum murinum*), and Himalayan blackberry (Cal-IPC 2023). All construction equipment should be inspected and cleaned at an off-site location prior to use to minimize the importation and spread of non-native plant material within the BSA.

3.1.4 Habitat Connectivity

Wildlife corridors and linkages are key features for wildlife movement between habitat patches. Wildlife corridors are generally defined as those areas that provide opportunities for individuals or local populations to conduct seasonal migrations, permanent dispersals, or daily commutes, while linkages generally refer to broader areas that provide movement opportunities for multiple keystone/focal species or allow for propagation of ecological processes (e.g., for movement of pollinators), often between areas of conserved land.

The BSA is centered around the project site, which is a bridge spanning Mosher Creek. Mosher Creek serves as a wildlife corridor, particularly for fish and mammals. Mosher Creek diverges from the Calaveras River just upstream of the BSA and flows west, ultimately flowing out to the San Francisco Bay and the Pacific Ocean. Although fish may be able to swim downstream in Mosher Creek with relative ease, any dams or barriers in the creek, including clogged culverts, could serve as impediments to travel. Other than rainfall, flow in Mosher Creek is completely dependent on water diverted from the Calaveras River, while the tidal nature of the downstream reaches limits the upstream migration of fish (Hopkins 2022). Due to the presence of agricultural fields and rural residences, the movement of terrestrial wildlife into or out of the BSA is likely reduced and largely restricted to the creek.

According to the *Calaveras River Fish Migration Barriers Assessment Report* (CDWR 2007), Mosher Creek does not provide any upstream access for fish to enter the Calaveras River; fish can only move downstream. Mosher Creek flows naturally only when it receives flow from surface runoff. In addition, a fish net is maintained at the divergence of the Calaveras River with Mormon Slough, which

is intended to prevent downstream migration of salmonids into the Calaveras River and Mosher Creek; further, during the non-irrigation season, both the Calaveras River Headworks structure and Mosher Creek headworks structure are closed, prohibiting any downstream passage of fish (Hopkins 2022).

3.1.5 Regional Species and Habitats and Natural Communities of Concern

The CNDDB and CIRP were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities in the USGS *Linden*, *Valley Springs SW*, *Peters*, *Stockton East*, and *Waterloo, California* 7.5-minute quadrangles (CDFW 2022b, CNPS 2022). The field survey was conducted to assess and evaluate the existing condition of the habitat(s) within the boundaries of the BSA to determine if site conditions, at the time of the field survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species. Additionally, the reported CNDDB and CIRP locations of special-status species records in relation to the BSA were considered. The following categories were utilized to assign the potential for each species to occur within the project site:

- **Present**: The species was observed or detected within the BSA during the field survey.

- **High**: Occurrence records (within 20 years) indicate that the species has been known to occur on or within 1 mile of the BSA and the site is within the normal expected range of this species. Intact, suitable habitat preferred by this species occurs within the project site and/or there is viable landscape connectivity to a local known extant population(s) or sighting(s).

- **Moderate**: Occurrence records (within 20 years) indicate that the species has been known to occur within 1 mile of the BSA and the site is within the normal expected range of this species. There is suitable habitat within the project site, but the site is ecologically isolated from any local known extant populations or sightings.

- **Low**: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the BSA, but the site is outside of the normal expected range of the species and/or there is poor quality or marginal habitat within the project site.

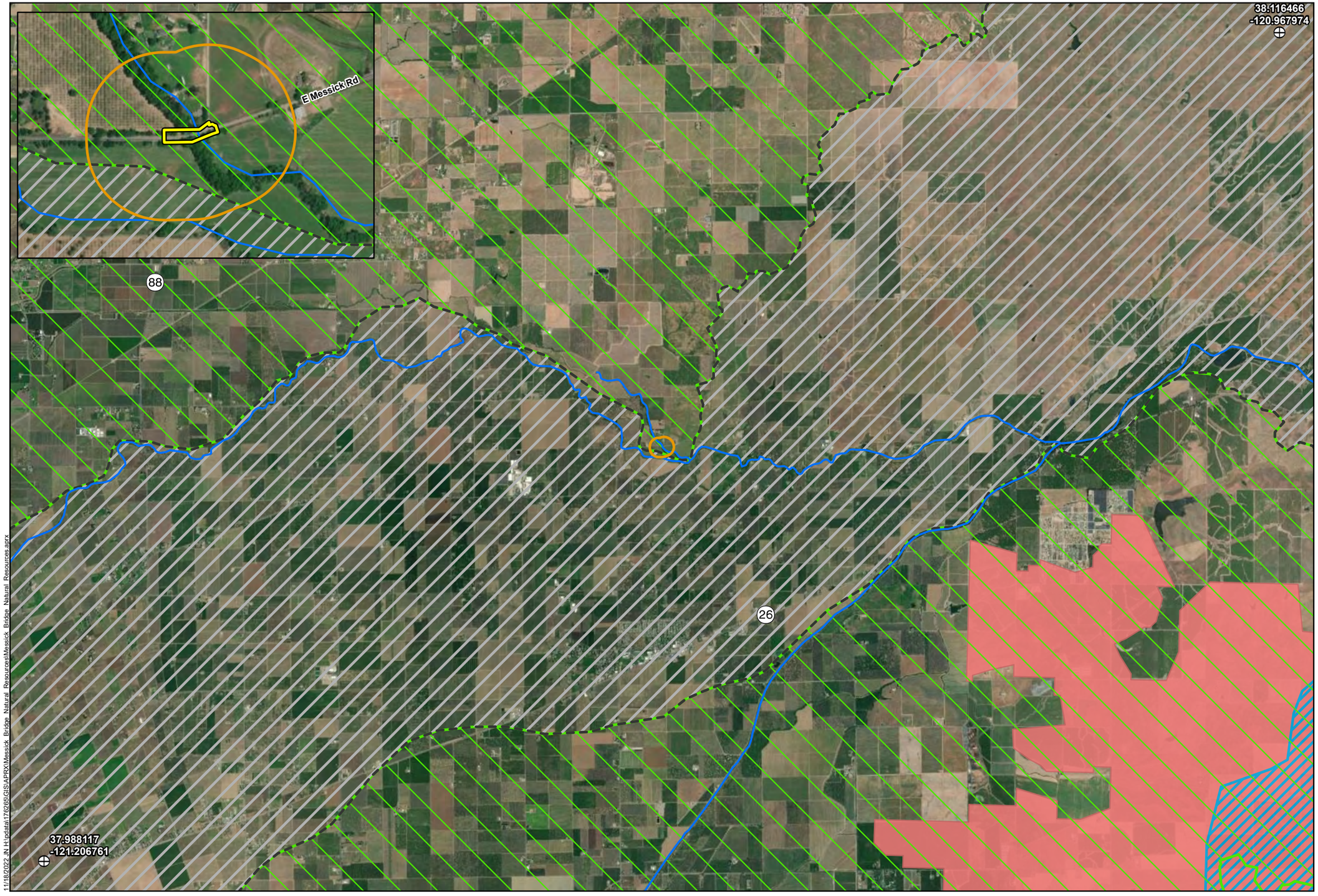
- **Not Expected**: There are no occurrence records of the species occurring within 5 miles of the BSA, there is no suitable habitat within the project site, and/or the project site is outside of the normal expected range for the species.

The literature search identified eleven (11) special-status plant species and fifteen (15) special-status wildlife species in the CNDDB, CIRP, and IPaC as having occurred in the USGS *Linden*, *Valley Springs SW*, *Peters*, *Stockton East*, and *Waterloo, California* 7.5-minute quadrangles. No special-status vegetation

communities were identified by the literature search. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on habitat requirements, availability and quality of suitable habitat, and known distributions. Special-status biological resources identified during the literature review as having the potential to occur within the vicinity of the BSA are presented in *Table E – 1: Potentially Occurring Special-Status Biological Resources*, in Appendix E.

Critical Habitat

Under the definition used by FESA, designated Critical Habitat refers to specific areas within the geographical range of a species that were occupied at the time it was listed and that contain the physical or biological features that are essential to the survival and eventual recovery of that species and that may require special management considerations or protection, regardless of whether the species is still extant in the area. Areas that were not known to be occupied at the time a species was listed can also be designated as Critical Habitat if they contain one or more of the physical or biological features that are essential to that species' conservation and if the occupied areas are inadequate to ensure the species' recovery. If a project may result in take or adverse modification to a species' designated Critical Habitat and the project has a federal nexus, the project proponent may be required to provide suitable mitigation. Projects with a federal nexus include those that occur on federal lands, require federal permits (e.g., federal CWA Section 404 permit), or receive any federal oversight or funding. If there is a federal nexus, then the federal agency that is responsible for providing funds or permits would be required to consult with the USFWS under FESA. As shown in Figure 9, *Critical Habitat and Essential Fish Habitat*, the BSA is not located within designated Critical Habitat for any federally listed species.



Legend

Biological Study Area

Critical Habitat

California Tiger Salamander (*Ambystoma californiense*)

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

Central Valley Steelhead (*Oncorhynchus mykiss*)

Essential Fish Habitat

Chinook Salmon (*Oncorhynchus tshawytscha*) (San Joaquin Delta Watershed)

Chinook Salmon (Upper Calaveras Watershed)

Reference Point

0 2,640 5,280

Feet

11/16/2022 J:\N H\data\17626\GIS\APRX\Messick_Bridge_Natural_Resources\Messick_Bridge_Natural_Resources.aprx

Source: Esri (04/2021), USFWS (07/2022), NMFS (09/2022), NOAA (03/2021)

MESSICK BRIDGE REPLACEMENT PROJECT
NATURAL ENVIRONMENT STUDY

Critical Habitat and Essential Fish Habitat

Figure 9

Chapter 4 – Results: Biological Resources, Discussion of Impacts, and Mitigation

4.1 Habitats and Natural Communities of Special Concern

Habitats of special concern are those (1) protected under federal, State, or local laws; (2) with limited distributions; and/or (3) that provide the habitat requirements for special-status plants or animals. No special-status natural vegetation communities were identified by the CNDDB as occurring in the USGS *Linden*, *Valley Springs SW*, *Peters*, *Stockton East*, and *Waterloo, California* 7.5-minute quadrangles. However, one natural vegetation community listed as sensitive by CDFW (2022a), valley oak riparian forest and woodland, as well as jurisdictional waters and riverine habitat associated with Mosher Creek occur within the BSA. The riverine habitat also serves as EFH for Chinook salmon (*Oncorhynchus tshawytscha*). These natural communities of concern are discussed in more detail below, with project impacts discussed as appropriate based on preliminary engineering design. Impacts to jurisdictional waters are discussed both in this section as well as summarized in Section 5.4, *Wetlands and Other Waters Coordination Summary*.

4.1.1 Discussion of Valley Oak Riparian Forest and Woodland

Although it was not identified during the CNDDB records search, valley oak riparian forest and woodland occurs within the BSA in association with Mosher Creek. Valley oak riparian forest and woodland is known to occur at elevations ranging from 0 to approximately 4,100 feet above mean sea level and occurs in valley bottoms, floodplains, creeks, and stream terraces with seasonally saturated and sometimes intermittently flooded soils (Sawyer et al. 2009). Valley oak riparian forest and woodland has a State rank of S3 according to the California Sensitive Natural Communities List (CDFW 2022a), indicating that it is "vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation."

Survey Results

The valley oak riparian woodland and forest associated with Mosher Creek appears to be a naturally occurring, long-established community in this area. Based on a review of aerial imagery (Google, Inc. 2022), Mosher Creek has an intact tree canopy from its origins at the Old Calaveras River southeast of the BSA, for approximately 1 mile downstream and including the BSA, before the canopy is drastically reduced and mostly eliminated. Presumably most or all of this stretch of overhead canopy is valley oak riparian forest and woodland. Within the BSA, there are approximately 3.68 acres of valley oak riparian forest and woodland, with 0.13 acres located within the project site.

Project Impacts

Temporary impacts related to tree trimming that may be required to maneuver equipment and/or materials within the project site and to clear vegetation on the embankments during the abutment replacement are anticipated. In addition, approximately 0.03 acres of permanent direct impacts on valley oak riparian woodland and forest are expected to

occur as a result of the placement of permanent riprap in the creek and on the embankments. Proposed work is primarily located on Messick Road Bridge and in Mosher Creek and permanent direct impacts to canopy habitat to the north and south of the bridge are not expected.

Indirect impacts are largely not expected to occur to this community. Construction equipment may carry seeds or biomatter of non-native or invasive plant species into the project site from other locations, which could lead to additional non-native or invasive plants establishing within the project site; however, spread of non-native plant species is not expected to have any significant impact to this particular vegetation community, as it is primarily composed of large trees that occur outside of the streambed, where most work will take place. Because most of the work will occur within the limits of the streambed, the generation of significant fugitive dust is not expected. However, any fugitive dust generated by equipment operating outside of the streambed in the upland areas may settle on the leaves of vegetation comprising this natural community. Dust that has settled on leaves may lead to indirect impacts that are realized at a later date, most notably reduced vigor as a result of reduced capability to conduct photosynthesis. Construction equipment is not expected to drive beneath the canopy of the oak community, other than areas immediately surrounding the bridge, thus avoiding soil compaction within the driplines of these trees.

The proposed replacement bridge is approximately 7.6 feet wider than the existing bridge, expanding the width from approximately 22 feet to approximately 29.6 feet. The streambed beneath the existing bridge is currently unvegetated, with in-stream vegetation (dominated by broadfruit bur-reed) growing primarily to the north (downstream) of the bridge. The area south (upstream) of the bridge is almost entirely devoid of in-stream vegetation except for a small patch of broadfruit bur-reed. This species can tolerate some shade but mostly requires sunny conditions to grow (USDA 2023), which may explain its lack of any presence under the existing bridge.

It can be reasonably expected that the wider footprint of the new bridge would result in a larger shaded area underneath, which may in turn result in an indirect, long-term permanent reduction in the quantity of in-stream vegetation under the new bridge. The current footprint of the bridge over Mosher Creek is approximately 0.04 acres; the new footprint would be approximately 0.06 acres. This is an estimated increase of 0.02 acres (approximately 950 square feet) of streambed that may become bare due to direct shading from the new bridge. However, it should be noted that existing in-stream vegetation directly north and south of the bridge that may be shaded by a wider bridge does not span across the entire creek and any shade-related loss of existing vegetation would be much less than the additional area that is shaded by the wider bridge, as most of the creek below and around the proposed expanded area is still bare. The in-stream vegetation is noted in this section, but it is a negligible part of the overall valley oak riparian woodland and forest community, which is characterized by the trees that occur outside the streambed.

Avoidance and Minimization Efforts

The following avoidance and minimization measures (AMMs) will be implemented to reduce or avoid impacts on valley oak riparian woodland and forest:

BIO-1: Prior to the commencement of construction, a qualified biologist shall prepare and present a Workers Environmental Awareness Program (WEAP) to all contractors, subcontractors, and workers expected to be on-site throughout the entire construction period. The WEAP shall include a brief review of any special-status vegetation communities and special-status species, including habitat requirements and where they might be found, and other sensitive biological resources that could occur in and adjacent to the project. The WEAP shall address the biological mitigation measures listed in the project's approved Mitigation Monitoring and Reporting Program, as well as applicable conditions and provisions of any associated environmental permits (e.g., Section 404 permit, Section 401 Certification, Section 1602 LSAA), including, but not limited to, preconstruction biological surveys, preconstruction installation of perimeter sediment and erosion control, best management practices per the RWQCB-approved Storm Water Pollution Prevention Plan, and any recurrent nesting bird surveys (as needed).

BIO-2: Project materials shall not be cast from the limits of disturbance into nearby habitats and project-related debris, spoils, and trash shall be contained and removed to a proper disposal facility.

BIO-3: All construction equipment shall be inspected and cleaned prior to use in the project site to minimize the importation of non-native plant material. A post-construction weed abatement program shall be implemented should invasive plant species colonize the area within the limits of disturbance.

BIO-4: A dust control plan shall be developed to identify measures and equipment necessary to minimize dust from windblown storage piles, off-site tracking of dust, debris loading, truck hauling of debris, vehicle speed limits, and to identify other dust suppression measures.

Compensatory Mitigation

Approximately 0.03 acres of permanent direct impacts are expected to occur due the placement of riprap on the embankments and in the creek surrounding the abutments. All other impacts are expected to be temporary and minor. Because of the low amount of permanent impacts that are expected to occur, it is expected that compensatory mitigation would occur on-site or in the immediate area through the restoration and enhancement of remaining vegetation on the embankments. Final details and mitigation ratio requirements would be negotiated with the CDFW during the CEQA approval process.

Cumulative Impacts

Because of the low amount of permanent impacts that are expected to occur to the valley oak riparian forest and woodland community and because all vegetation to be removed within this community would be in the understory where there is a mixture of native and non-native plants, the project is not expected to contribute to cumulative impacts on this vegetation community.

4.1.2 Discussion of Jurisdictional Waters, Riverine Habitat, Critical Habitat, and Essential Fish Habitat

The following discussion of impacts to jurisdictional waters, riverine habitat, Critical Habitat, and EFH is based on field data obtained in August 2022 and which is presented in the project's Jurisdictional Delineation report (Appendix F). A 150-foot buffer (Jurisdictional Study Area or JSA) was placed around the project's limits of disturbance. Riverine habitat, as evaluated in this report, corresponds to the USACE's jurisdictional limits, marked by the OHWM. Because EFH in this area is not mapped at a fine scale and is instead mapped across the entire region, including terrestrial areas, EFH is also considered to correspond with USACE jurisdiction.

Survey Results

The total acreage and linear feet of Mosher Creek within the JSA under USACE, RWQCB, and CDFW jurisdiction are shown in the table below:

Table 1. Jurisdictional Limits of Mosher Creek within the JSA

Feature	Linear Feet	Jurisdictional Limits (acres)		
		USACE / RWQCB		CDFW
		Non-Wetland WoUS	Wetland WoUS	Jurisdictional Streambed / Riparian
Mosher Creek	96	0.097	0.004	0.112 / 0.041
TOTAL	**96**	**0.097**	**0.004**	**0.112 / 0.041**

Project Impacts

The project will result in both temporary and permanent impacts to jurisdictional waters and riverine habitat, which includes designated Critical Habitat for steelhead and EFH for Chinook salmon. Permanent impacts will result from the placement of riprap on both the eastern and western sides of the bridge abutments. The new bridge will not use any piers, and the two (2) existing piers will be removed. The new bridge will be a single span across the creek with no piers, and the new abutments will be in approximately the same locations as the existing abutments. However, pile driving is expected to be necessary to

install the new bridge. Temporary impacts will generally entail disturbance related to driving and operating heavy equipment in the creek during construction, as well as the temporary loss of vegetation crushed during equipment use in the channel.

Construction is anticipated to occur during the fall and winter between October and April, after the SEWD closes the downstream water supply from the Calaveras River Headworks that feeds the Old Calaveras River and Mosher Creek. During this time of year, there is no downstream water flow except from rainfall, and by extension no expectations of any fish occurring in the BSA. Because construction is expected to occur during the dry period of the creek's annual hydrologic cycle, impacts to water quality and fish migration are not expected to occur. Impacts to fish due to hydroacoustic noise and vibration during construction would not occur as water will not be present in the creek.

Table 2. Jurisdictional Impacts

Feature	Impact Type	Jurisdictional Impacts (acres)			
		USACE / RWQCB		CDFW	
		Non-Wetland WoUS	Wetland WoUS	Vegetated / Non-Vegetated Jurisdictional Streambed	Associated Riparian
Mosher Creek	Temporary	0.084	0.001	0.074 / 0.022	0.026
	Permanent	0.013	0.003	0.011 / 0.006	0.015
TOTAL		**0.097**	**0.004**	**0.085 / 0.026**	**0.041**

Avoidance and Minimization Efforts

In addition to **BIO-1** and **BIO-2**, the following AMMs will be implemented to reduce or avoid impacts on jurisdictional waters, riverine habitat, Critical Habitat, and EFH:

BIO-5: The following regulatory approvals will be obtained prior to commencement of any construction activities within the identified jurisdictional areas: 1) a Section 404 permit from the USACE, likely Nationwide Permit (NWP) No. 3: *Maintenance*; 2) RWQCB CWA Section 401 Water Quality Certification (WQC); and 3) CDFW Section 1602 LSAA.

BIO-6: The limits of construction shall be clearly delineated by a survey crew prior to the commencement of project activities. The limits of construction shall be defined with silt fencing or orange construction fencing and checked by a qualified biologist before initiation of construction.

Compensatory Mitigation

Compensatory mitigation for impacts on jurisdictional waters and riverine habitat is not known at this time. Mitigation for impacts to jurisdictional waters and riverine habitat would be determined in coordination with the regulatory agencies and prescribed in the CWA Section 404 (USACE) and 401 (RWQCB) permits and the CFDW Section 1602 LSAA issued for the project. Mitigation for impacts to Critical Habitat is not expected because the project is not likely to adversely affect Critical Habitat. Compensatory mitigation for impacts to EFH would be determined by NOAA Fisheries during the ESA consultation process but is expected to be satisfied by restoration of the streambanks surrounding the project site.

Cumulative Impacts

Minor temporary and permanent impacts to jurisdictional waters, riverine habitat, Critical Habitat, and EFH are expected as a result of the project. Direct and permanent impacts will generally consist of placing riprap in-stream on the east and west sides of the creek at the bridge abutments, as well as the placement of the new bridge, which will remove the wooden piers that are currently supporting the existing bridge. Permanent impacts are expected to be approximately 0.013 acres of non-wetland WoUS and 0.003 acres of wetland WoUS, as well as 0.017 acres of CDFW streambed. Temporary impacts will generally result from construction equipment driving in the creek, with associated incidental vegetation removal. For this analysis of cumulative impacts to jurisdictional waters, riverine habitat, Critical Habitat, and EFH, the resource study area (RSA) is determined to be 2,000 feet upstream and downstream, which is the approximate distance from the project site to the beginning of Mosher Creek at the juncture with the Old Calaveras River. This was determined to be a suitable RSA because this point upstream marks the pivotal location where Mosher Creek begins and becomes independent of anything else occurring downstream along the Old Calaveras River.

The SEWD splits water from the Calaveras River into two channels, the Old Calaveras River, which eventually flows into Mosher Creek, and Mormon Slough. The water continuing down Mormon Slough is intended to carry the bulk of all downstream water and flood flows from the New Hogan Dam and provides the best aquatic habitat for biological resources, whereas the Old Calaveras River is primarily used as an irrigation channel. As described in the Calaveras River HCP (SEWD and FISHBIO 2019):

> *"The Old Calaveras River channel was historically the mainstem of the river but has been a secondary channel since 1934, when the Linden Irrigation District built the Old Calaveras Headworks Facility and flows were primarily directed into Mormon Slough (Crow 2006). It is characterized by a narrow channel with ample vegetative cover and large instream woody debris. However, much of the vegetative cover consists of agricultural and non-native or invasive plant species, such as Himalayan Blackberry which can grow across the channel and act as a barrier to fish passage. The Old Calaveras River becomes more channelized with less cover as it reaches the valley floor. The substrate in the upper third of this reach consists of sand and silt with limited gravel and cobble, and the lower two thirds of the reach consist of mostly sand, silt, and clay. Recent monitoring suggests that some sections of the channel are adequate for over-summer rearing under at least some conditions (SEWD unpublished data); however, current migration conditions are*

suboptimal due to several instream structures. This reach has nine flashboard dam foundations where flashboards are installed during the irrigation season and 62 small, privately owned diversions, which may be operated during the irrigation season. In addition, there are two head gate- and multiple bridge structures."

The water going into the Old Calaveras River and its distributaries is primarily used for agricultural purposes and is only actively flowing between April and October. Between October and April, the upstream headworks structures are closed and no water flows into the Old Calaveras River other than rainfall. Due to this annual hydrologic regime, the Old Calaveras River is defunct as a fish passage corridor. It does not provide capabilities for fish to move either upstream or downstream due to annual drying and presence of flashboard dams that restrict movement while inundated, and any fish that enter the Old Calaveras River and aren't ultimately salvaged will end up getting pulled into irrigation diversions for local agricultural fields or desiccating in the creek when the water flow stops each fall. Because Mosher Creek and the Old Calaveras River have become so compromised, are no longer used for fish passage, serve only as irrigation channels for local farms, and provide marginal fish habitat, the project's minor in-stream permanent impacts are determined to be a negligible contributor to past and future cumulative impacts within Mosher Creek. No other projects are known to be proposed or occurring in Mosher Creek within the RSA.

4.2 Special-Status Plant Species

Plants are designated as special-status based on (1) federal, State, or local laws regulating their development; (2) limited distributions; and/or (3) the presence of habitat required by the special-status plants occurring on site. No special-status plants were found to be present within the BSA, and based on habitat requirements, availability and quality of suitable habitat, and known distributions, none of the eleven (11) special-status plants that were identified in the literature review are expected to occur within the BSA. Special-status plants are not discussed further in this section.

Project Impacts

Because no special-status plant species are expected to occur within the BSA, no impacts on special-status plants are expected.

Avoidance and Minimization Efforts

Because there are expected to be no impacts to special-status plants, no avoidance and minimization efforts related to special-status plants are necessary.

Compensatory Mitigation

Because there are expected to be no impacts to special-status plants or their habitat, no compensatory mitigation is necessary.

Cumulative Impacts

Because there are expected to be no impacts to special-status plants, the project would not contribute to cumulative impacts on any special-status plant species.

4.3 Special-Status Animal Species

Animals are designated as special-status based on (1) federal, State, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status animals occurring on site. No special-status animals were found to be present within the BSA. However, a total of fifteen (15) special-status animal species were identified during the CNDDB and iPaC literature searches as potentially occurring within the project region. Based on the results of the field surveys and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, it was determined that tricolored blackbirds (*Agelaius tricolor*) and Swainson's hawks (*Buteo swainsoni*) have a high potential to occur in the BSA; pallid bats (*Antrozous pallidus*), burrowing owls (*Athene cunicularia*), and Central Valley steelhead have a moderate potential to occur; and hardhead (*Mylopharodon conocephalus*) have a low potential to occur. Those special-status species with a high and moderate potential to occur within the BSA are described in more detail below.

4.3.1 Discussion of Tricolored Blackbird

Tricolored blackbird is listed as threatened under CESA (State-threatened [ST]) and as a California Species of Special Concern (SSC) by the CDFW. Its range is restricted to California, Oregon, and Washington, where it historically nested more commonly in wetlands dominated by cattails (*Typha* spp.) and bulrushes (*Schoenoplectus* spp.), but now is increasingly found nesting in either Himalayan blackberry and milk thistle (*Silybum marianum*) thickets, or in silage fields dominated by triticale (Beedy et al. 2020). This species typically forages in areas where seeds and insects are available, such as grasslands, agricultural fields, irrigated pastures, dairies, and seasonal pools.

Survey Results

Tricolored blackbirds were not detected during the August 2022 field survey, and additional surveys were not conducted. However, this species is known to have a resident population approximately 0.5 miles east of the BSA in dense blackberry thickets along an unnamed tributary to the Calaveras River (CDFW 2022b). This is an established population since at least 1989 and one that was documented as recently as spring 2022 (eBird 2022). Based on notes in the CNDDB record, this population nests in blackberry thickets along the creek and forages in the adjacent pastures. There is no suitable foraging habitat within the project site, but the surrounding pastures to the west and southeast could provide foraging opportunities. In addition, there are limited blackberry thickets present within the BSA, primarily along Messick Road immediately east of the project site and in small patches within Mosher Creek. Although it is unlikely that blackbirds would nest within the BSA because of the limited amount of suitable habitat, existing disturbance along the road, and colonial nature of the species, the possibility still exists that birds may nest and forage within the BSA, particularly with a known population in such close proximity.

Project Impacts

Agricultural fields in the BSA provide suitable foraging habitat, while blackberry bushes provide limited opportunities for nesting within the project. If present within the BSA,

foraging tricolored blackbirds are unlikely to be affected by the project, which does not include suitable foraging habitat and is screened by trees that reduce construction noise and other impacts outside the project site. However, if nesting birds are present, direct permanent impacts could occur in the form of adults, young, nestlings, and/or eggs being crushed or injured during construction, particularly in the area immediately adjacent to the bridge, where Himalayan blackberry thickets are present. This includes injury, mortality, harassment, and potential loss of nesting opportunities. Based on project design plans, the project could cause direct temporary or permanent loss of nesting habitat (blackberry thickets) during construction depending on if any plants are on the embankments; however, this plant is non-native, prolific, and would be expected to grow back on its own. Any impacts that may occur to blackberry thickets would occur at the level of a small number of individual plants and would be generally incalculable. Indirect effects are not expected to occur other than the possibility of dust settling on the blackberry thickets.

Avoidance and Minimization Efforts

In addition to AMMs **BIO-1**, **BIO-2**, and **BIO-6**, the following AMMs will be implemented to reduce or avoid impacts on tricolored blackbirds.

BIO-7: A qualified biological monitor shall be on-site during all vegetation removal, ground disturbance activities, and at other times as determined necessary during the environmental approval process. The biological monitor shall have authority to halt construction should any special-status species be detected within the construction area or its immediate vicinity.

BIO-8: If project-related activities are to be initiated during the nesting season (January 1 to August 31), a preconstruction nesting bird clearance survey shall be conducted by a qualified biologist no more than three (3) days prior to the start of any vegetation removal or ground-disturbing activities. The qualified biologist shall survey all suitable nesting habitat within the project impact area, and areas within a biologically defensible buffer zone surrounding the project impact area. If no active bird nests are detected during the clearance survey, project activities may begin, and no additional avoidance and minimization measures shall be required. If an active bird nest is found, the species shall be identified, and a “no-disturbance” buffer shall be established around the active nest. The size of the “no-disturbance” buffer shall be increased or decreased based on the judgment of the qualified biologist and level of activity and sensitivity of the species. The qualified biologist shall periodically monitor any active bird nests to determine if project-related activities occurring outside the “no-disturbance” buffer disturb the birds and if the buffer should be increased. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, project activities within the “no-disturbance” buffer may occur following an additional survey by the qualified biologist to search for any new bird nests in the restricted area.

Compensatory Mitigation

Although the project may cause minor temporary loss of nesting habitat in the area immediately surrounding the Messick Road Bridge, the suitable nesting habitat consists of Himalayan blackberry thickets, which are non-native and readily reestablish on their own. No native nesting habitat or naturally occurring nesting habitat would be affected and no compensatory mitigation is proposed.

Cumulative Impacts

If nesting within the BSA, there may be temporary or permanent direct impacts to tricolored blackbirds as a result of project construction. Although this species has declined greatly as a result of habitat loss and long practices of inadvertent nest loss during harvests of silage fields, over the last several years the National Audubon Society has worked with ranchers to delay harvests and allow more tricolored blackbird nests to successfully go to completion and result in fledged young. Although still generally in decline, the recent advancements in conservation efforts are somewhat encouraging for the future status of this species. The BSA is also only 0.5 miles away from a breeding population that has been present since at least 1989 and which inhabits a much larger area of nesting habitat than is present within the project site. The potential temporary loss of breeding habitat in the project site may have a minor effect on this species and the local population but because there is so little nesting habitat and the impacts would be minor and temporary, the project is not expected to contribute to any cumulative impacts on tricolored blackbirds.

4.3.2 Discussion of Swainson's Hawk

Swainson's hawk is designated as a ST species. Although this species historically nested around grasslands, shrublands, and open woodlands, particularly in California and in other agriculture-heavy regions where native habitat has been converted to farmland, this species has adapted to nesting in the vicinity of agricultural fields, particularly irrigated pastures and in row, grain, and hayfields (Bechard et al. 2020). Nests are constructed in trees in close proximity to foraging habitat and may be constructed in lone trees or within a row of trees.

Survey Results

Swainson's hawks were not detected during the August 2022 field survey, and additional surveys were not conducted. However, there are many records of this species in the region and in the county, including a 2009 nesting record located approximately 0.8 miles northwest of the BSA (CDFW 2022b). There is suitable foraging habitat within the BSA, particularly in the agricultural fields south of Messick Road. Trees within the BSA, because of their proximity to the foraging habitat, may also provide nesting opportunities for this species. The project site itself does not have any nesting or foraging habitat.

Project Impacts

The BSA contains both foraging and nesting habitat. If present within the BSA, foraging birds are unlikely to be affected by the project, which is located outside of suitable foraging

habitat and is screened by trees that reduce indirect impacts from noise and visual disturbances during construction. However, if nesting birds are present in the BSA, noise and visual disturbance associated with project construction could potentially result in adverse effects to the nest, although this species is relatively acclimated to human activity as a result of its tendency to frequent agricultural fields and areas that are human-influenced. If a nest is present in the BSA, it is possible that project-related construction activity could result in direct permanent loss of a nest attempt if the adults are scared away from the site and abandon the nest, or a direct temporary impact in the form of flushing the bird(s) away from the nest. Project construction is not expected to result in direct loss of any nesting or foraging habitat, and the operation of the replacement bridge would have no new effects on the species because the replacement design will not result in a capacity increase. Indirect effects are not expected to occur.

Avoidance and Minimization Efforts

AMMs **BIO-1**, **BIO-2**, and **BIO-6** through **BIO-8** will be implemented to reduce or avoid impacts on Swainson's hawks.

Compensatory Mitigation

Because the project will not result in the loss of any nesting or foraging habitat, no compensatory mitigation is recommended.

Cumulative Impacts

Because there are expected to be no impacts on nesting or foraging habitat for Swainson's hawks, the project is not expected to contribute to cumulative impacts on this species.

4.3.3 Discussion of Burrowing Owl

Burrowing owl is designated by the CDFW as a California SSC. It is a grassland specialist distributed throughout western North America where it occupies open areas with short vegetation and bare ground within shrub, desert, and grassland environments. Burrowing owls use a wide variety of arid and semi-arid environments with well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground (Haug and Didiuk 1993; Dechant et al. 1999). Burrowing owls are dependent upon the presence of burrowing mammals (e.g., California ground squirrels, coyotes, American badger [*Taxidea taxus*]) whose burrows are used for roosting and nesting. The presence or absence of mammal burrows is often a major factor that limits the presence or absence of burrowing owls. Where mammal burrows are scarce, burrowing owls have been found occupying man-made cavities, such as buried and non-functioning drainpipes, stand-pipes, and dry culverts. Burrowing owls may also burrow beneath rocks and debris or large, heavy objects such as abandoned cars, concrete blocks, or concrete pads. They also require open vegetation allowing clear line-of-sight of the surrounding habitat to forage as well as watch for predators.

Survey Results

Burrowing owls were not detected during the August 2022 field survey, and additional surveys were not conducted. No suitable burrows (> 4 inches in diameter) capable of providing roosting and/or nesting opportunities were observed within the project site, and burrowing owl sign (e.g., pellets, feathers, castings, or white wash) was not observed during the field survey. There is suitable habitat for this species within the BSA, particularly in the open agricultural fields to the south of Messick Road, but these fields are used by grazing cattle (including bulls) and domestic dogs and are surrounded by tall trees that provide perching opportunities for predatory raptors. There is a 2017 record of this species occurring within a 5-mile radius of the BSA (eBird 2022). There is no nesting or foraging habitat within the project site.

Project Impacts

The BSA contains both foraging and nesting habitat in the fields south of Messick Road but the presence of large grazing cattle in the fields, domestic dogs, and surrounding perching opportunities for predators likely preclude the presence of this species in the BSA. No direct impacts to agricultural fields in the BSA would occur. If present within the BSA, indirect impacts to burrowing owl from construction noise and visual disturbances would be reduced by trees screening the project site. No suitable nesting or foraging habitat occurs within the project site, and as a result any birds that may be present in the BSA are unlikely to be affected by the project. The project is otherwise not expected to have an effect on this species.

Avoidance and Minimization Efforts

AMMs **BIO-1**, **BIO-2**, and **BIO-6** through **BIO-8** will be implemented to reduce or avoid impacts on burrowing owls.

Compensatory Mitigation

Because the project will not result in the loss of any nesting or foraging habitat and will not directly affect any occupied burrows that may be present within the BSA, no compensatory mitigation is recommended.

Cumulative Impacts

Because there will be no impacts on nesting or foraging habitat for burrowing owls, the project is not expected to contribute to cumulative impacts on this species.

4.3.4 Discussion of Pallid Bat/Roosting Bats

Pallid bat has been designated by CDFW as a California SSC. It occurs throughout most of California, inhabiting grasslands, shrublands, woodlands, forests, and other habitats and most commonly using rocky outcrops for roosting (Zeiner et al. 1990). However, it may also roost in caves, crevices, mines, bridges, hollow trees, and buildings. Roosts are typically near water. This species feeds on a variety of insects and arachnids, catching prey both on the wing and on the ground.

Survey Results

Bats were detected roosting within the Messick Road Bridge during the August 2022 field survey. Biologists were notified prior to the survey that bats had been previously detected roosting in the bridge during an April 28, 2022, site visit by San Joaquin County representatives. Additional surveys were not conducted at the time of the August 2022 field survey and no further surveys have been performed. However, it should be noted that during the November 2022 field meeting the underside of the bridge was thoroughly examined and bats were not observed. This indicates that use of the bridge as a day roost by a colony of bats is likely seasonal, with bats only using the habitat singly or in small numbers during the fall and winter months. The bats roosting in the bridge have not been identified to species. In addition to providing suitable day and night roosting habitat, the bridge occurs in close proximity to suitable open foraging habitat occurring in the BSA, particularly above the open water of Mosher Creek and the open agricultural fields south of Messick Road.

Project Impacts

Project impacts on pallid bat or other bat species that may be present within the BSA or that may move into the area prior to construction may include direct impacts such as injury or death from construction-related activity associated with the bridge removal, as well as temporary indirect disturbance such as noise, vibration, dust, and human encroachment from construction. All bats currently roosting in the bridge will be evicted from the bridge prior to its removal.

Avoidance and Minimization Efforts

In addition to AMMs **BIO-1**, **BIO-6**, and **BIO-7**, the following AMMs will be implemented to reduce or avoid impacts on bats:

BIO-9 A bat habitat assessment, as well as nighttime bat surveys, should be performed by a qualified bat biologist during the peak period (June or July) of the bat maternity season (April 1–August 31) to confirm whether maternity colonies are present in the bridge and surrounding area where construction activities will occur. These surveys should be performed by a qualified bat biologist at least one year in advance of construction so that appropriate site-specific and species-specific minimization measures can be developed in coordination with the CDFW and a qualified bat biologist. Should it be determined that a day or maternity roost is present, then a Bat Mitigation Plan will be prepared that addresses any permanent impacts to bats as well as specific avoidance and minimization measures devised for bats within the project area.

BIO-10 As permanent and direct impacts to bat-roosting habitat are anticipated, humane eviction/exclusion will likely be required, and alternate roosting habitat shall be provided to ensure no net loss of bat-roosting habitat. The design, numbers, and locations of these roost structures should be determined in consultation with a qualified bat biologist. This action shall be

coordinated with the CDFW to ensure that the installed habitat will provide adequate mitigation for impacts.

BIO-11 Direct impacts to bats and bat-roosting habitat are anticipated from the proposed project. Humane evictions and exclusions of roosting bats should be performed under the supervision of a qualified bat biologist in the fall (September or October) prior to any work activities that would result in direct impacts or direct mortality to roosting bats. This action will be performed in coordination with the CDFW. To avoid potential mortality of non-volant young, evictions and exclusions of bats cannot be performed during the maternity season (April 1–August 31). Winter months are also inappropriate for bat eviction because not all individuals in a roost will emerge on any given night. In addition, long-distance movements to other roost sites are more difficult during the winter when prey availability is scarce, resulting in high mortality rates of evicted bats.

BIO-12 The project proponent will ensure that all construction work on bridges will take place during the day.

BIO-13 The project proponent will ensure that the final design specifically minimizes vegetation removal within the project footprint where feasible. Prior to vegetation removal, including any tree trimming, the area will be surveyed by a qualified bat biologist to minimize impacts to foliar roosting bats. The pre-construction survey shall be performed at potential roost structures forty-five (45) minutes before sunset and continue to the survey until two (2) hours after sunset. A minimum of three (3) emergence surveys within a seven- (7) day time period shall be conducted by the qualified bat biologist. If bats are detected, subsequent surveys will not be necessary and the Permittee shall develop and submit to CDFW for review and approval, either: a) a bat avoidance plan b) a bat exclusion plan, the results of the survey shall be submitted to CDFW within two (2) business days of survey completion. The survey shall identify: 1) the exact location of all roosting sites (location shall be adequately described and drawn on a map), 2) the number of bats present at the time of visit (count or estimate), 3) species of bat detected, if known (include how the species was identified), and 4) the type of roost: maternity, hibernation, night roost (rest at night while out feeding) versus a day roost (resting during the day) must also be clearly stated.

BIO-14 Prior to and during construction, the project proponent will require the contractor to properly implement the designs and specifications for bat exclusion and habitat replacement structures included in the project specifications. The installation and maintenance of those structures will be monitored by the designated qualified biologist.

Compensatory Mitigation

Compensatory mitigation for impacts to maternity roosting bats is expected to be determined by the CDFW during the LSAA permitting process or during the CDFW's CEQA review. Compensatory mitigation is anticipated to include at least a 1:1 replacement of current roosting habitat on the new bridge, with habitat features that support the same species-specific physical parameters as the currently occupied roosting habitat, providing similar space and thermal characteristics, as well as having the same search image as the current habitat.

Cumulative Impacts

As day and night roosting by bats is known to occur within the BSA, there will be both temporary indirect impacts as well as permanent direct impacts to bats. Temporary indirect impacts to bats in the form of noise are anticipated, though as the work is expected to occur over a short period of time (approximately six months), these impacts are expected to be minimal. Permanent direct impacts to bats are expected to occur in the form of loss of both day and night roosting habitat with removal of the bridge. The permanent loss of roosting habitat is considered to be one of the primary conservation issues for bat populations. As described in the Caltrans Bat Mitigation manual, night roosts are important because they typically provide bats with a resting site close to their foraging habitat, serve as areas for socialization, and in the early fall, may offer a place for bats to swarm and mate (H.T. Harvey & Associates 2021). Day roosts are usually occupied during the spring, summer, and fall in California, and also in the Central Valley, where non-hibernating winter colonies can be found. Because many bat species may use several roosts within a season, it is difficult to understand or estimate the population-level impacts of the loss of a single roost. Likewise, because some populations may or may not have adequate alternative roosts, it is also difficult to fully understand the impacts of roost loss on a specific colony (H.T. Harvey & Associates 2021). As mentioned previously, permanent impacts to bat roosting habitat are expected to be mitigated with a 1:1 replacement of bat habitat within or on the new bridge structure.

4.3.5 Discussion of Central Valley Steelhead

The Central Valley steelhead has been listed under FESA as a federally threatened (FT) species. This species may exhibit anadromy, in which they migrate to the ocean and return to spawn and are called steelhead, or freshwater residency in which they are called rainbow trout. Steelhead will typically spend their first year or two in freshwater before migrating to the ocean, typically returning in another two to three years to spawn (NMFS 2014). Adults typically return to freshwater between August and April, spawning from December through April and peaking from January to March. Typical spawning habitat includes small streams and tributaries with cool, well-oxygenated year-round water and good intergravel flow (NMFS 2014). Coarse gravel at the downstream end of pools and riffles is preferred.

Survey Results

Focused surveys were not conducted for this species as part of this project. This species is not known to occur within the project site or BSA. Mosher Creek is fed by the Old Calaveras River, which is in turn fed by the Calaveras River. Upstream of the Calaveras River Headworks, the Calaveras River splits between the Old Calaveras River and Mormon Slough. The headworks allows water to pass through into the Old Calaveras River, and subsequently Mosher Creek, between April and October for irrigation and agricultural purposes. A fish net is strung across the creek just upstream of the headworks to prevent fish from becoming entrained, and effectively blocks downstream movement of all fish except those that are very young and still very small. A separate headworks structure separates the Old Calaveras River from Mosher Creek, and several flashboard dams are in place along the Old Calaveras River to further prevent fish from traveling downstream. Because of the cyclical water regime for agricultural purposes, between October and April the Calaveras River Headworks is closed by the SEWD to downstream water flow, eliminating flow within the Old Calaveras River and Mosher Creek. With multiple physical barriers to migrating into the BSA during periods of flow and lack of any flow between October and April, steelhead are not expected to occur within the BSA except under what would be extremely rare circumstances.

Critical Habitat for this species has been designated within the reach of Mosher Creek that includes the BSA.

Project Impacts

Because this project is anticipated to be constructed between October and April, when upstream water flow through Mosher Creek is cut off, no direct impacts to steelhead are anticipated. Salmonids are not able to travel upstream from the ocean to the BSA due to tidal influences (Hopkins 2022), and the BSA does not hold water during the spawning period, indicating that the project as scheduled will not cause any direct or indirect impacts to steelhead spawning. Likewise, because Mosher Creek is cut off from all upstream water flow between October and April, when the project would be constructed, the project is not expected to have any direct impacts on juvenile fish, which may on rare occasions slip through the fish net upstream at the Calaveras River Headworks (Cuthbert 2022) but which would otherwise perish when the creek dries out each October, unless salvaged under the Calaveras River HCP. Indirect impacts to steelhead and its Critical Habitat may occur via impacts to steelhead habitat in the project site as discussed in Section 4.1.2 above. Therefore, this project may affect, but is unlikely to adversely affect, steelhead and its Critical Habitat.

Avoidance and Minimization Efforts

AMMs **BIO-1** through **BIO-3** and **BIO-5** through **BIO-7** will be implemented to reduce or avoid impacts on Central Valley steelhead and their Critical Habitat.

Compensatory Mitigation

Because the project is not likely to adversely affect steelhead and its Critical Habitat and direct impacts are not expected, compensatory mitigation is not proposed.

Cumulative Impacts

Because impacts on steelhead are not expected due to project timing, the project is not expected to contribute to cumulative impacts on this species.

Chapter 5 – Conclusions and Regulatory Determinations

5.1 Federal Endangered Species Act Consultation Summary

To date, there has been no communication with the USFWS regarding FESA. A USFWS Species List was generated from the iPaC database on October 6, 2021, and updated on September 19, 2022 and again on June 1, 2023 (refer to Appendix A). This BSA is located within NOAA Fisheries jurisdiction and therefore a NOAA Fisheries Species List is required and was obtained (refer to Appendix B). According to the iPaC Species List, the NOAA Fisheries species list, and the CNDDB and CNPS database queries, a total of ten (10) federally listed threatened or endangered plant or animal species and one (1) candidate for federal listing have the potential to occur within the BSA. Effects determinations for each of the species identified in the USFWS Species List are shown below in Table 3.

No federally listed plant or animal species were observed within the BSA during the field survey. Based on the results of the field survey and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, no federally listed plant or animal species other than Central Valley steelhead (under extremely rare circumstances) are expected to occur within the BSA. Those federally listed species that would not occur within the BSA would therefore not be directly or indirectly impacted by the implementation of the proposed project and no additional mitigation or consultation with the USFWS and/or NOAA Fisheries pursuant to FESA would be required. Informal consultation with NOAA Fisheries will be required for potential impacts on Central Valley steelhead.

Table 3. Effects Determinations for Federal Species

Scientific Name Common Name	**Federal Listing Status**	**Habitat Preferences and Distribution Affinities**	**Effects Determination**	**Reason for Determination**
Ambystoma californiense pop. 1 California tiger salamander–- central California DPS	FT	Nocturnal, and fossorial, spending most time underground in animal burrows. Frequents grassland, oak savanna, and edges of mixed woodland and lower elevation coniferous forest.	No Effect	There is no suitable habitat for this species within the BSA. Agricultural fields may be occasionally flooded but this is expected to be temporary in relation to the breeding needs of this species.
Branchinecta conservatio Conservancy fairy shrimp	FE	Inhabit rather large, cool-water vernal pools with moderately turbid water. The pools generally last until June. However, the shrimp usually appear in these vernal pools from early November to early April.	No Effect	There is no suitable vernal pool habitat within the BSA and there are no known occurrences within a 5-mile radius of the BSA (CDFW 2022b).

Scientific Name Common Name	**Federal Listing Status**	**Habitat Preferences and Distribution Affinities**	**Effects Determination**	**Reason for Determination**
Branchinecta lynchi vernal pool fairy shrimp	FT	Endemic to California and only found in vernal pools. Vernal pool habitats form in depressions above an impervious substrate layer, or claypan/duripan. This species does not occur in riverine, marine, or other permanent bodies of water. When the temporary pools dry, offspring persist in suspended development as desiccation-resistant embryos (commonly called cysts) in the pool substrate until the return of winter rains and appropriate temperatures allow some of the cysts to hatch.	No Effect	There is no suitable vernal pool habitat within the BSA and there are no known occurrences within a 5-mile radius of the BSA (CDFW 2022b).
Castilleja campestris ssp. succulenta fleshy owl's-clover	FT	Annual herb (hemiparasitic) that blooms from April through May and occasionally as early as March. Occurs usually in acidic vernal pools. Known elevations range from 165 to 2460 feet.	No Effect	There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022b) and there is no suitable habitat on-site.
Danaus plexippus monarch butterfly	FC	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts are located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	No Effect	There are no known records of this species within a 5-mile radius (CDFW 2022b). San Joaquin County as a whole is not included in the annual monarch butterfly Thanksgiving Counts sponsored by the Xerces Society (Xerces 2022).
Desmocerus californicus dimorphus valley elderberry longhorn beetle	FT	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	No Effect	Although there is a known historic record older than 20 years approximately 0.5 mile southeast of the BSA (CDFW 2022b), there is no suitable habitat for this species within the BSA.
Hypomesus transpacificus Delta smelt	FT	Endemic to the Sacramento–San Joaquin River Delta in California, where it is distributed from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, and Solano Counties. Most often found at salinities lower than 2 parts per thousand (ppt), rarely at salinities greater than 10 ppt.	No Effect	There are no known occurrences within a 5-mile radius (CDFW 2022b) and this species is not listed as currently or historically being present within Mosher Creek by UC Davis (UC Davis 2022).
Lepidurus packardi vernal pool tadpole shrimp	FE	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water, particularly pools in grass-bottom swales in unplowed grasslands. Some pools may be mud-bottomed and/or highly turbid.	No Effect	Although there are records within a 5-mile radius of the BSA, there is no suitable vernal pool habitat within the BSA (CDFW 2022b).

Scientific Name Common Name	Federal Listing Status	Habitat Preferences and Distribution Affinities	Effects Determination	Reason for Determination
Oncorhynchus mykiss irideus pop. 11 steelhead – Central Valley DPS	FT	Steelhead can survive in a wide range of temperature conditions. Species is found where dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. Spawning habitat consists of gravel substrates free of excessive silt.	May Affect, Not Likely to Adversely Affect	There is a recorded occurrence of this species within 5 miles of the BSA (CDFW 2022b), there is suitable habitat within the BSA, and this species is listed as currently or historically being present within Mosher Creek (UC Davis 2022). Personal communication with the Stockton East Water District indicated that salmonids cannot travel upstream to the BSA due to tidal influence and that there are barriers in place to reduce the potential for salmonids to travel downstream into the BSA from the Calaveras River (Hopkins 2022). This species is not expected to be present within the BSA, particularly because the project is expected to be constructed between October and April when Mosher Creek will be dry.
steelhead – Central Valley DPS Critical Habitat	NA	NA	May Affect, Not Likely to Adversely Affect	The project is expected to be constructed between October and April when Mosher Creek will be dry. Permanent impacts would be minimal and hydroacoustic impacts and water quality impacts would not be expected.

[1] FE Endangered – any species which is in danger of extinction throughout all or a significant portion of its range.

FT Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

FC Candidate – any species whose status is being currently reviewed by the USFWS to determine whether it warrants listing under the Endangered Species Act.

5.2 Essential Fish Habitat Consultation Summary

According to the EFH Mapper, the portion of Mosher Creek that is located in the project site is within designated EFH for Chinook salmon (refer to Figure 9, *Critical Habitat and Essential Fish Habitat*). EFH consultation with NOAA Fisheries will be completed as part of the Section 7 consultation for Central Valley steelhead but formal consultation has not yet commenced and neither determinations nor final conclusions are available at this time. A brief summary of consultation and communications to date is below.

On November 14, 2022, project personnel attended an in-person meeting at the project site. The meeting was attended by representatives from San Joaquin County, NOAA Fisheries, Caltrans, and Michael Baker. The purpose of the meeting was to familiarize all

attendees on the site characteristics and discuss potential project impacts prior to the start of any consultation. Those in attendance all agreed that because the site is dry between October and April when the SEWD closes the upstream Calaveras River Headworks and there are multiple barriers to both downstream and upstream fish passage, the site did not seem to qualify as EFH. However, NOAA Fisheries pointed out that EFH is designated forever because at any time conditions may change and become suitable for the target species. As a result, on November 15, 2022, NOAA Fisheries sent an email to project personnel following up on anticipated impacts and consultation and reemphasizing that the project site is designated as EFH for Chinook salmon. However, this project will not adversely affect Chinook salmon EFH.

5.3 California Endangered Species Act Consultation Summary

To date, there has been no communication with the CDFW regarding State-listed species that may occur on the project. Based on the analysis above, the only State-listed species that may occur are tricolored blackbird and Swainson's hawk. With implementation of AMMs **BIO-1**, **BIO-2**, and **BIO-6** through **BIO-8**, no impacts are expected on State-listed species including tricolored blackbird and Swainson's hawk. Therefore, consultation with the CDFW is not expected to be required.

5.4 Wetlands and Other Waters Coordination Summary

To date, there has been no communication with the USACE, CDFW, or RWQCB regarding project impacts within Mosher Creek. As described in Section 4.1.2, within the project site there is a total of 0.097 acres of non-wetland WoUS and 0.004 acres of wetland WoUS subject to the jurisdiction of the USACE and RWQCB. In addition, there is 0.112 acres of jurisdictional streambed and 0.041 acres of associated riparian habitat subject to the jurisdiction of the CDFW. Based on the projected impacts, it will be necessary to acquire a Section 404 permit from the USACE and a Section 401 WQC from the RWQCB for impacts occurring within USACE and RWQCB jurisdictional areas, respectively. Since the proposed project will result in the permanent loss of less than 0.5 acres of USACE jurisdiction, it is anticipated that the proposed project can be authorized via a NWP, specifically NWP No. 3: *Maintenance*. In addition, an LSAA would be required from the CDFW for impacts to CDFW jurisdictional areas.

5.5 Invasive Species

Noxious weed species include species designated as federal noxious weeds by USDA, species listed by the CDFA, and other exotic pest plants designated by the Cal-IPC. Invasive plant species occur throughout the BSA but are particularly prominent along the shoulder of Messick Road. None of the non-native plants that were identified within the BSA are listed as noxious by the USDA (USDA 2010) or the CDFA (CDFA 2021). However, several non-native plants occurring within the BSA are identified as invasive by the Cal-IPC including wildoats, ripgut brome, foxtail chess, common fig, mouse barley, and Himalayan blackberry (Cal-IPC 2023). Prior to implementation of the proposed project, consistent with AMM **BIO-3,** all construction equipment should be inspected and cleaned prior to use to minimize the importation and spread of non-native plant material.

5.6 Other

Native bird species and their nests are protected under the MBTA and CFGC. The MBTA states that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected. The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter, any migratory bird, its eggs, parts, and nests, except as authorized under a valid permit. Under CFGC Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any native bird except as otherwise provided by subsequent regulations or authorizations. AMM **BIO-8** will be incorporated to avoid and minimize impacts on nesting birds.

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Appendix A – IPaC Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2022-0086719
Project Name: Messick Bridge Replacement Project

June 01, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2022-0086719
Project Name: Messick Bridge Replacement Project
Project Type: Bridge - Replacement
Project Description: The County of San Joaquin proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate three-foot shoulders within County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. The profile of the proposed bridge would match the existing configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on Cast in Steel Shell (CISS) or Cast in Drilled Hole (CIDH) piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current American Association of State Highway and Transportation Officials (AASHTO) and Caltrans standards.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.05228855,-121.08745205683337,14z

Counties: San Joaquin County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

AMPHIBIANS

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

FLOWERING PLANTS

NAME	STATUS
Fleshy Owl's-clover *Castilleja campestris ssp. succulenta* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8095	Threatened

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: County of San Joaquin
Name: Ryan Winkleman
Address: 5 Hutton Centre, #500
City: Santa Ana
State: CA
Zip: 92707
Email rswinkleman@gmail.com
Phone: 9495330918

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

Appendix B – NOAA Fisheries Species List

From: Ditto, Jessica A
To: Winkleman, Ryan
Subject: Fwd: EXTERNAL: Caltrans District 10 - Messick Bridge Replacement Project- Species List Confirmation
Date: Thursday, June 1, 2023 10:53:49 AM

NOAA confirmed no changes. Thanks!

Get Outlook for iOS

From: Ryan McKenzie - NOAA Federal <ryan.mckenzie@noaa.gov>
Sent: Thursday, June 1, 2023 10:29:11 AM
To: Ditto, Jessica A <Jessica.Ditto@mbakerintl.com>
Cc: Ellen McBride - NOAA Federal <ellen.mcbride@noaa.gov>
Subject: Re: EXTERNAL: Caltrans District 10 - Messick Bridge Replacement Project- Species List Confirmation

Hi Jessica,

The results are still accurate to date.

Cheers,
Ryan

On Thu, Jun 1, 2023 at 10:17 AM Ditto, Jessica A <Jessica.Ditto@mbakerintl.com> wrote:

> Hi Ryan,
>
> Can you please confirm that the search results are still accurate? Our search is over 180 days and need confirmation for our report.
>
> Thank you!
>
> **Jessica Ditto** | Project Manager - Planning
> **Michael Baker International** | *We Make a Difference*
> 5 Hutton Centre Drive, Suite 500 | Santa Ana, CA 92707
> [O] 949-330-4183
> jessica.ditto@mbakerintl.com | www.mbakerintl.com
>
> ---
>
> **From:** Ryan McKenzie - NOAA Federal <ryan.mckenzie@noaa.gov>
> **Sent:** Friday, September 30, 2022 3:10 PM
> **To:** Ditto, Jessica A <Jessica.Ditto@mbakerintl.com>
> **Cc:** Ellen McBride - NOAA Federal <ellen.mcbride@noaa.gov>

Subject: EXTERNAL: Caltrans District 10 - Messick Bridge Replacement Project- Species List Confirmation

Good Afternoon,

NMFS has reviewed your search results and confirms the accuracy of the species list below for the Caltrans District 10 - Messick Bridge Replacement Project.

Sincerely,

--

Ryan McKenzie

(he/him)

Natural Resource Management Specialist

California Central Valley Office

NOAA Fisheries | U.S. Department of Commerce

(916) 201-0382 mobile

www.fisheres.noaa.gov

From: Ditto, Jessica A
Sent: Wednesday, September 28, 2022 9:23 AM
To: nmfswcrca.specieslist@noaa.gov
Subject: Caltrans District 10 - Messick Bridge Replacement Project

Hello,

On behalf of San Joaquin County and Caltrans District 10, we are requesting an official species list confirming the search results below.

Google Earth Database Search Results: The results are the same for the Linden quad (where the project is located) and those within a 5-mile radius (Valley Springs SW, #38120-A8;

Peters, #37121-H1; Stockton East, #37121-H2; and Waterloo, #38121-A2).

Quad Name **Linden**
Quad Number **38121-A1**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

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

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

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

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Federal Agency:

California Department of Transportation – District 10

1976 E. Dr. Martin Luther King Jr. Blvd., Stockton, CA 95205

Non-Federal Agency:

San Joaquin County

1810 East Hazelton Avenue, Stockton, CA 95205

Brian Newburg, EIT

Engineer III

San Joaquin County Public Works

Bridge Engineering Division

Phone: (209) 468-3040

Email: bnewburg@sjgov.org

Appendix C – Site Photographs

Photograph 1: Northeast-facing view toward Messick Road Bridge.

Photograph 2: South/southeast-facing view upstream at Mosher Creek in August 2022. From April to October, Mosher Creek is artificially inundated by the Stockton East Water District (SEWD) to provide water to local farms.

Photograph 3: South-facing view upstream at Mosher Creek in November 2022. From October to April, the SEWD turns off all upstream water flow into Mosher Creek.

Photograph 4: Southwest-facing view at agricultural fields adjacent to Mosher Creek in August 2022.

Photograph 5: Southwest-facing view upstream into Mosher Creek in August 2022.

Photograph 6: East-facing view at Mosher Creek downstream (north) of the Messick Road Bridge in August 2022.

Photograph 7: West-facing view of the underside of the Messick Road Bridge in August 2022, showing water flow across the width of Mosher Creek.

Photograph 8: Northwest-facing view of Messick Road Bridge in November 2022, showing dry conditions across the width of Mosher Creek.

Photograph 9: South-facing view of flooded agricultural fields southwest of the Messick Road Bridge.

Photograph 10: Southwest-facing view of an agricultural ditch running toward Mosher Creek, northeast of the Messick Road Bridge.

Photograph 11: Southeast-facing view of an agricultural field southeast of Messick Road Bridge. Mosher Creek is in the background where the tree canopy is present.

Photograph 12: Southwest-facing view from northeast of the Messick Road Bridge, which is visible in the left background of the photo.

Appendix D – Plant and Wildlife Species Observed List

Table D-1: Plant and Wildlife Species Observed List

*Scientific Name**	Common Name	Noxious Weed Rating**	Special-Status Rank
Plants			
Ambrosia psilostachya	western ragweed		
Anemopsis californica	yerba mansa		
Artemisia douglasiana	California mugwort		
*Avena fatua**	wildoats	Moderate	
*Bromus diandrus**	ripgut brome	Moderate	
*Bromus madritensis**	foxtail chess	High	
Croton setiger	turkey-mullein		
*Ficus carica**	common fig	Moderate	
Fraxinus latifolia	Oregon ash		
*Hordeum murinum**	mouse barley	Moderate	
*Melilotus albus**	white sweetclover		
*Melilotus indicus**	annual yellow sweetclover		
Oenothera sp.	evening primrose		
Platanus racemosa	California sycamore		
Populus fremontii	Fremont's cottonwood		
Quercus lobata	valley oak		
*Rubus armeniacus**	Himalayan blackberry	High	
Rumex sp.	dock		
Salix sp.	willow		
Sparganium eurycarpum	broadfruit bur-reed		
Birds			
Aphelocoma californica	California scrub jay		
Ardea herodias	great blue heron		
Bombycilla cedrorum	cedar waxwing		
Buteo lineatus	red-shouldered hawk		
Calypte anna	Anna's hummingbird		
Cathartes aura	turkey vulture		
Charadrius vociferus	killdeer		
Colaptes auratus	northern flicker		
Corvus brachyrhynchos	American crow		
Dryobates nuttallii	Nuttall's woodpecker		
Haemorhous mexicanus	house finch		
Megaceryle alcyon	belted kingfisher		
Mimus polyglottos	northern mockingbird		
*Pavo cristatus**	Indian peafowl		
Pheucticus melanocephalus	black-headed grosbeak		
Picoides pubescens	downy woodpecker		
Psaltriparus minimus	bushtit		

Scientific Name*	**Common Name**	**Noxious Weed Rating****	**Special-Status Rank**
Sayornis nigricans	black phoebe		
Setophaga coronata auduboni	Audubon's yellow-rumped warbler		
Sialia mexicana	western bluebird		
Sitta carolinensis	white-breasted nuthatch		
Spinus tristis	American goldfinch		
*Streptopelia decaocto**	Eurasian collared dove		
Turdus migratorius	American robin		
Tyto alba	barn owl		
Vermivora celata	orange-crowned warbler		
Zonotrichia atricapilla	golden-crowned sparrow		
Zonotrichia leucophrys gambelii	Gambel's white-crowned sparrow		
Fish			
Actinopterygii sp.	ray-finned fish (unidentified)		
Mammals			
*Bos taurus**	domestic cow		
*Felis catus**	domestic cat		

* **Non-native species**

** **Noxious Weed Rating**

California Invasive Plant Council (Cal-IPC) Ratings

High — These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate — These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Appendix E – Potentially Occurring Special-Status Biological Resources

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Observed On-site	Potential to Occur
SPECIAL-STATUS WILDLIFE SPECIES				
Agelaius tricolor tricolored blackbird	ST SSC G2G3 S1S2	Range is limited to the coastal areas of the Pacific Coast of North America, from Northern California to upper Baja California. Can be found in a wide variety of habitats including annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields, cattle feedlots, and dairies. Occasionally forage in riparian scrub habitats along marsh borders. Basic habitat requirements for breeding include open accessible water, protected nesting substrate freshwater marsh dominated by cattails (*Typha* spp.), willows (*Salix* spp.), and bulrushes (*Schoenoplectus* spp.), and either flooded or thorny/spiny vegetation and suitable foraging space providing adequate insect prey.	No	**High (Foraging), Moderate (Nesting):** A long-time breeding population is known to reside approximately 0.5 mile east of the project site along an unnamed tributary to the Calaveras River. This population has been present since at least 1989 (CDFW 2022a) and was recently documented in spring 2022 (eBird 2022). Although this population is known to occur in relatively close proximity to the BSA and birds may forage in the agricultural fields surrounding the project, the project site itself does not support foraging and has limited, small blackberry thickets along Messick Road.
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	FT ST G2G3 S3	Nocturnal, and fossorial, spending most time underground in animal burrows. Frequents grassland, oak savanna, and edges of mixed woodland and lower elevation coniferous forest.	No	**Not Expected:** There is no suitable habitat for this species within the BSA. Agricultural fields may be occasionally flooded but this is expected to be temporary in relation to the breeding needs of this species.
Antrozous pallidus pallid bat	SSC G4 S3	Locally common species in the Great Basin, Mojave, and Sonoran deserts (specifically Sonoran life zone) and grasslands throughout the western U.S. Also occurs in shrublands, woodlands, and forests from sea level to 8,000 ft amsl. Prefers rocky outcrops, cliffs, and crevices for roosting with access to open habitats for foraging. May also roost in caves, mines, bridges, barns, porches, and bat boxes, and even on the ground under burlap sacks, stone piles, rags, baseboards, and rocks.	No	**Moderate:** Although the closest known record is approximately 10 miles away and is from over 70 years ago (CDFW 2022a), there is suitable roosting habitat (bridge) within the project site and suitable open foraging habitat within the BSA. Bats were detected roosting within the bridge during the August 2022 field survey but were not identified to species.

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Athene cunicularia burrowing owl	SSC G4 S3	Yearlong resident of California. Primarily a grassland species, but it persists and even thrives in some landscapes highly altered by human activity. Occurs in open, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. The overriding characteristics of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation with only sparse shrubs and taller vegetation.	No	**Low (Nesting, Foraging):** There is a 2017 record of burrowing owl occurring within a 5-mile radius of the project site (eBird 2022). There may be suitable nesting and foraging habitat within the surrounding open fields in the BSA. However, no burrowing owls or suitable burrows (>4 inches in diameter) capable of providing roosting and nesting opportunities were observed within the project site and the project site has no potential to support this species. The surrounding BSA is used by grazing cattle and domestic dogs and there are ample tall perching trees that could be used by predatory raptors.
Branchinecta conservatio Conservancy fairy shrimp	FE G2 S2	Inhabit rather large, cool-water vernal pools with moderately turbid water. The pools generally last until June. However, the shrimp usually appear in these vernal pools from early November to early April.	No	**Not Expected:** There is no suitable vernal pool habitat within the BSA and there are no known occurrences within a 5-mile radius of the BSA (CDFW 2022a).
Branchinecta lynchi vernal pool fairy shrimp	FT G3 S3	Endemic to California and only found in vernal pools. Vernal pool habitats form in depressions above an impervious substrate layer, or claypan/duripan. This species does not occur in riverine, marine, or other permanent bodies of water. When the temporary pools dry, offspring persist in suspended development as desiccation-resistant embryos (commonly called cysts) in the pool substrate until the return of winter rains and appropriate temperatures allow some of the cysts to hatch.	No	**Not Expected:** There is no suitable vernal pool habitat within the BSA and there are no known occurrences within a 5-mile radius of the BSA (CDFW 2022a).
Buteo swainsoni Swainson's hawk	ST G5 S3	Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grassland or suitable grain or alfalfa fields or livestock pastures.	No	**High (Nesting, Foraging):** There is suitable nesting and foraging habitat for this species in the BSA, and a known nest record from 2009 approximately 0.8 mile northwest of the BSA (CDFW 2022a). However, there is no suitable habitat for this species within the project site.

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Danaus plexippus monarch butterfly	FC G4T2T3 S2S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts are located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (CDFW 2022a). San Joaquin County as a whole is not included in the annual monarch butterfly Thanksgiving Counts sponsored by the Xerces Society (Xerces 2022).
Desmocerus californicus dimorphus valley elderberry longhorn beetle	FT G3T2 S3	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	No	**Not Expected:** Although there is a known historic record older than 20 years approximately 0.5 mile southeast of the BSA (CDFW 2022a), there is no suitable habitat for this species within the BSA.
Hypomesus transpacificus Delta smelt	FT SE G1 S1	Endemic to the Sacramento–San Joaquin River Delta in California, where it is distributed from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, and Solano Counties. Most often found at salinities lower than 2 parts per thousand (ppt), rarely at salinities greater than 10 ppt.	No	**Not Expected:** There are no known occurrences within a 5-mile radius (CDFW 2022a) and this species is not listed as currently or historically being present within Mosher Creek by UC Davis (UC Davis 2022).
Lepidurus packardi vernal pool tadpole shrimp	FE G4 S3S4	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water, particularly pools in grass-bottom swales in unplowed grasslands. Some pools may be mud-bottomed and/or highly turbid.	No	**Not Expected:** Although there are records within a 5-mile radius of the BSA, there is no suitable vernal pool habitat within the BSA (CDFW 2022a).
Mylopharodon conocephalus hardhead	SSC	Occurs in low- to mid-elevation streams in the Sacramento-San Joaquin drainage, as well as in the Russian River. Requires clear, deep pools with sand-gravel-boulder bottoms and slow water velocity. Outcompeted by sunfishes where present.	No	**Low:** The only recorded observation of this species in the CNDDB is from approximately 8.5 miles to the east (CDFW 2022a). This species is listed as currently or historically being present within Mosher Creek by UC Davis (UC Davis 2022). Fish were observed within the project site during the August 2022 survey but were not identified to species. Based on the lack of data of this species being present in the general area, this species is not expected to be present.

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	FT G5T1Q S1	Steelhead can survive in a wide range of temperature conditions. Species is found where dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. Spawning habitat consists of gravel substrates free of excessive silt.	No	**Moderate:** There is a recorded occurrence of this species within 5 miles of the BSA (CDFW 2022a), there is suitable habitat within the BSA, and this species is listed as currently or historically being present within Mosher Creek by UC Davis (UC Davis 2022). Fish were observed within the project site during the August 2022 survey but were not identified to species.
Spea hammondii western spadefoot	SSC G2G3 S3	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rain pools which do not contain American bullfrogs (*Lithobates catesbeianus*), predatory fish, or crayfish are necessary for breeding. Estivates in upland habitats adjacent to potential breeding sites in burrows approximating 3 feet in depth.	No	**Not Expected:** Although there are records within a 5-mile radius of the BSA, there is no suitable habitat for this species within the BSA. This species requires vernal pools or other temporary breeding pools that can last long enough for eggs to hatch (one week) and young to metamorphose (30 to 80 days). There is no expected breeding habitat in the area surrounding the project site.
Thamnophis gigas giant gartersnake	FT ST G2 S2	Prefers freshwater marsh and low gradient streams. However, it has adapted to drainage canals and irrigation ditches.	No	**Not Expected:** Although there is suitable habitat for this species within the BSA, the closest known record is approximately 8 miles away and from 1987 (CDFW 2022a).
SPECIAL-STATUS PLANT SPECIES				
Brodiaea rosea* ssp. *vallicola valley brodiaea	4.2 G5T3 S3	Perennial bulbiferous herb that blooms from April to May and occasionally to June. Typically found in valley and foothill grassland and vernal pools. Known elevations range from 35 to 1100 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Castilleja campestris ssp. succulenta fleshy owl's-clover	FT SE 1B.2 G4?T2T3 S2S3	Annual herb (hemiparasitic) that blooms from April through May and occasionally as early as March. Occurs usually in acidic vernal pools. Known elevations range from 165 to 2460 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Centromadia parryi ssp. rudis Parry's rough tarplant	4.2 G3T3 S3	Annual herb that blooms May through October. Prefers valley and foothill grassland and vernal pool habitats. Found at elevations ranging from 0 to 330 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
Delphinium recurvatum recurved larkspur	1B.2 G2? S2?	Perennial herb that blooms March through June. Typically occurs in chenopod scrub, cismontane woodland, and valley and foothill grassland, preferring alkaline communities. Known elevations range from 10 to 2590 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Eryngium racemosum Delta button-celery	SE 1B.1 G1 S1	Annual/perennial herb. Blooms June through October, occasionally as early as May. Occurs in riparian scrub, particularly in vernally mesic clay depressions. Known elevations range from 10 to 100 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Hesperevax caulescens hogwallow starfish	4.2 G3 S3	Annual herb that blooms March through June. Prefers valley and foothill grassland in mesic clay and shallow vernal pool habitats. Known elevations range from 0 to 1655 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Juncus leiospermus* var. *ahartii Ahart's dwarf rush	1B.2 G2T1 S1	Annual herb that blooms from March to May. Typically found in mesic valley and foothills grasslands. Known elevations range from 100 to 750 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Lasthenia ferrisiae Ferris' goldfields	4.2 G3 S3	Annual herb that blooms February through May. Prefers alkaline and clay vernal pool habitats. Known elevation ranging from 65 to 2295 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Navarretia myersii* ssp. *myersii pincushion navarretia	1B.1 G2T2 S2	Annual herb that blooms from April to May. Found in vernal pools. Known elevations range from 65 to 1085 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Sagittaria sanfordii Sanford's arrowhead	1B.2 G3 S3	Perennial emergent rhizomatous herb that blooms May through October and occasionally as late as November. Found in standing or slow-moving freshwater ponds, marshes, and ditches. Known elevations range from 0 to 2135 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
Tuctoria greenei Greene's tuctoria	FE SR 1B.1 G1 S1	Annual herb that blooms May through July and occasionally as late as September. Occurs in vernal pools in open grasslands. Known elevations range from 100 to 3510 feet.	No	**Not Expected:** There are no known records of this species within a 5-mile radius (Calflora 2022; CDFW 2022a) and there is no suitable habitat on-site.
SPECIAL-STATUS VEGETATION COMMUNITIES				
Chinook salmon Essential Fish Habitat	N/A	The four major components of Chinook salmon Essential Fish Habitat include habitat that supports: - spawning and incubation - juvenile rearing - juvenile migration corridors - adult migration corridors and holding habitat	Yes	**Present:** The BSA is located within designated Chinook salmon Essential Fish Habitat, but the components that are required to support this species are absent.

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Observed On-site**	**Potential to Occur**
steelhead – Central Valley DPS Critical Habitat	N/A	Physical and Biological Features (PBFs) include: *- Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.* *- Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.* *- Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.* *- Estuarine areas free of obstruction and excessive predation with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.*	Yes	**Present:** The BSA is located within designated steelhead Critical Habitat, but the PBFs required to support this species are absent.

* **U.S. Fish and Wildlife Service (USFWS)**

FE Endangered – any species which is in danger of extinction throughout all or a significant portion of its range.

FT Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

California Department of Fish and Wildlife (CDFW)

SE Endangered – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

ST Threatened – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required under the California Endangered Species Act.

SSC Species of Special Concern – any species, subspecies, or distinct population of fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following criteria:

- is extirpated from California or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of

threatened or endangered but has not formally been listed.

- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

California Native Plant Society (CNPS) California Rare Plant Rank

1B Plants rare, threatened, or endangered in California and elsewhere.

4 Plants of limited distribution – Watch List.

Threat Ranks

.1 Seriously threatened in California (over 80% of occurrences threatened/high degree any immediacy of threat).

.2 Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat).

NatureServe Conservation Status Rank

The Global Rank (G#) reflects the overall condition and imperilment of a species throughout its global range. The Infraspecific Taxon Rank (T#) reflects the global situation of just the subspecies or variety. The State Rank (S#) reflects the condition and imperilment of an element throughout its range within California. (G#Q) reflects that the element is very rare but there are taxonomic questions associated with it; the calculated G rank is qualified by adding a Q after the G#). Adding a ? to a rank expresses uncertainty about the rank.

G1/T1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2/T2 Imperiled— At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3/T3 Vulnerable— At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4/T4 Apparently Secure— Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 Secure – Common; widespread and abundant.

S1 Critically Imperiled – Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or State.

S3 Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

Appendix F – Jurisdictional Delineation

Michael Baker
INTERNATIONAL

We Make a Difference

January 4, 2023 JN 185102

SAN JOAQUIN COUNTY PUBLIC WORKS
Attn: *Mr. Brian Newburg*

SUBJECT: Delineation of State and Federal Jurisdictional Waters for the Proposed Messick Bridge Replacement Project located in unincorporated San Joaquin County, California

Dear Mr. Newburg,

On behalf of San Joaquin County (County), Michael Baker International (Michael Baker) has prepared this technical letter report to document the jurisdictional authority of the U.S. Army Corps of Engineers Sacramento District (Corps), Central Valley Regional Water Quality Control Board (Regional Board), and California Department of Fish and Wildlife North Central Region (CDFW) within the proposed Messick Bridge Replacement Project (project or project site). Specifically, this report has been prepared to describe, map, and quantify aquatic and other hydrologic features located within the project site. The fieldwork for this jurisdictional delineation was conducted on August 10, 2022.

This report explains the methodology utilized throughout the course of the delineation, defines the jurisdictional authority of the regulatory agencies, and documents the findings made by Michael Baker. This report presents Michael Baker's determination of jurisdictional boundaries using the most up-to-date regulations, written policy, and guidance provided by the regulatory agencies. However, it should be noted that the regulatory agencies must confirm this determination.

Project Location

The proposed project is generally located east of State Route 99 and north of the City of Linden, in San Joaquin County, California (refer to Figure 1, *Regional Vicinity*). The project is depicted in Section 3 of Township 2 north, Range 8 east on the United States Geological Survey's (USGS) *Linden, California* 7.5-minute quadrangle (refer to Figure 2, *Project Vicinity*). Specifically, the project site is located along Messick Road as it crosses over Mosher Creek at San Joaquin County Bridge No. 29C-274 (refer to Figure 3, *Project Site*).

Project Description

The County of San Joaquin proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate three-foot shoulders within County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. The profile of the proposed bridge would match the existing

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configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on Cast in Steel Shell (CISS) or Cast in Drilled Hole (CIDH) piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current American Association of State Highway and Transportation Officials (AASHTO) and Caltrans standards.

Summary of Regulations

There are three (3) key agencies that regulate activities within streams, wetlands, and riparian areas applicable to this project. The Corps Regulatory Division regulates activities pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFW regulates activities under Sections 1600 *et seq*. of the California Fish and Game Code (CFGC) and the Regional Board regulates activities pursuant to Section 401 of the CWA and Section 13263 of the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Literature Review

A thorough review of relevant literature and materials was conducted to obtain a general understanding of the environmental setting and preliminarily identify features/areas that may fall under the jurisdiction of the regulatory agencies. Relevant materials utilized during the literature review are summarized below with references provided in Attachment B.

Watershed

The project site is located within Mosher Creek Watershed Hydrologic Unit Code (HUC 180400030403) of the larger Bear Creek Watershed (HUC 1804000304). The major waterway within this watershed is the Calaveras River. The Calaveras River basin drains approximately 590 square miles of land in San Joaquin County. The mainstem of the Calaveras River begins at the junction of the North Fork Calaveras River and the South Fork Calaveras River, a short distance upstream of the upper extent of New Hogan Reservoir and is the basin's primary drainage channel from the headwaters to Bellota (where the river splits into the Old Calaveras River channel and Mormon Slough/Stockton Diverting Canal). The watershed is bound by the Sierra mountains to the east and the Delta Waterways to the west. The Calaveras River Watershed includes approximately 46,000 acres of highly developed agricultural land, and about 14,000 acres of urban and suburban land in and adjacent to the City of Stockton.[1]

Soils

On-site and adjoining soils were reviewed prior to conducting the field delineation using the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Web Soil Survey (refer to Attachment C). According to the *Custom Soil Resources Report for San Joaquin County, California* the project site is underlain by the San Joaquin sandy loam, 2 to 5 percent slopes (237) map unit.

[1] Calaveras River Habitat Conservation Plan, 2019

Hydric Soils List of California

Michael Baker then reviewed the *Hydric Soils List for California* (USDA 2022) to preliminarily verify whether any of the soils indicated to be within the study area are considered to be hydric. According to the aforementioned list, San Joaquin sandy loam, 2 to 5 percent slopes (237) is listed as hydric.

National Wetlands Inventory

Michael Baker reviewed the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Mapper. The portion of Mosher Creek located within the project site is mapped as Freshwater Forested/Shrub Wetland (PFOC). This mapped area was used as reference while documenting all potentially jurisdictional features as observed on-site during the field delineation. Refer to Attachment D for a depiction of the USFWS NWI map.

Flood Zone

Michael Baker also reviewed the Federal Emergency Management Agency's (FEMA's) National Flood Hazard Layer. Based on the Flood Insurance Rate Map No. 06077C0365F, the project site is located in Regulatory Floodway. Regulatory Floodway is described as the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Refer to Attachment E for a copy of the FEMA flood zone map.

Methodology

Michael Baker regulatory specialists, Tim Tidwell and John Parent, conducted a jurisdictional delineation of the project site on August 10, 2022 using the most recent, agency approved methodology, to identify and map jurisdictional limits within the project site. The delineation was conducted to determine the jurisdictional limits of waters of the U.S. (WoUS), including potential wetlands, and waters of the State located within the boundaries of the project site. For this location, potential wetlands were delineated using the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Arid West Regional Supplement; Corps, 2008). For evaluation of wetland waters of the State, methods were modified so that an area can lack vegetation and still qualify as a State wetland in accordance with the recently implemented (May 2020) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*.

While in the field, jurisdictional features were recorded on an aerial base map at a scale of 1" = 160' using topographic contours and visible landmarks as guidelines. Data points were obtained with a Garmin Map66i Global Positioning System (GPS) device to record and identify specific widths for ordinary highwater mark (OHWM) indicators, locations of photographs, soil pits, and other pertinent jurisdictional features, if present. This data was then transferred as a .shp file and added to the project's jurisdictional figures. The jurisdictional figures were prepared using ESRI ArcGIS Pro software.

Site Conditions

Refer to Attachment F for representative photographs taken within the project site during the jurisdictional delineation.

Non-Wetland Features

Mosher Creek

The project site is located at the intersection of Messick Road and Mosher Creek, where Messick Road crosses Mosher Creek. Mosher Creek is a perennial drainage feature that enters the southern boundary of the project site as an earthen channel conveying flows through two approximately 36" concrete pipes beneath an earthen road crossing, then continues beneath Messick Road and to the north through the project site. Flows originate from the Old Calaveras River in the upstream portions of the watershed and converge with Bear Creek to the north into Pixley Slough which turns into Disappointment Slough, then into the Sacramento-San Joaquin Delta (CR HCP 2019). Mosher Creek is characterized by disturbed banks, a constrained though well-developed overstory, and generally little riparian vegetation. Flowing surface water was observed within Mosher Creek and additional evidence of an OHWM was observed including the presence of a defined bed and bank. Mosher Creek consists of a dense riparian overstory consisting primarily of valley oak (*Quercus lobata* [NI]), Northern California black walnut (*Juglans hindsii* [FAC]), Oregon ash (*Fraxinus latifolia* [FACW]), Himalayan blackberry (*Rubus armeniacus* [FAC]), and American bulrush (Scirpus americanus [OBL]). Within the project site, Mosher Creek measures approximately 96 feet in length and ranges in width from approximately 30 to 50 feet for the Corps and Regional Board and 65 to 90 feet for CDFW. Table 1*, State and Federal Jurisdictional Resources within the Project Site*, below provides a summary of the jurisdictional limits for the onsite aquatic feature.

Table 1: State and Federal Jurisdictional Resources within the Project Site

Feature	Location Lat/Long	Cowardin Type	Linear Feet	Jurisdictional Limits (acres)		
				Corps/ Regional Board		CDFW Jurisdictional Streambed/Riparian
				Non-Wetland WoUS	Wetland WoUS	
Mosher Creek	38.052299°/ -121.087461°	Riverine	96	0.10	0.004	0.11/0.04
TOTAL			**96**	**0.10**	**0.004**	**0.11/0.04**

Wetland Features

Corps and Regional Board jurisdictional features consisting of .004 acre of wetlands were identified within the survey area. To assess for the presence of hydric soils and determine the presence/absence of wetlands within the project site, one soil pit (SP1) was preformed where wetland hydrology or hydrophytic vegetation was observed. SP1 was performed on a sediment bar of Mosher Creek immediately north of the Mosher Creek Bridge. SP1 was dug to a depth of 16 inches and exhibited a texture of silty-clay and displayed a matrix color of 10YR 3/1 when moist with redoximorphic features observed of concentrations within the matrix with a color of 5YR 3/4. Wetland hydrology indicators in the vicinity of SP1 included a high water table (A2), saturation (A3), a hydrogen sulfide odor (C1), saturation at 2 inches in depth, and water table

of 6 inches. Based on the results of the field delineation, it was determined that the soil pit met the required three parameters and qualified as Corps wetland WoUS or Regional Board wetland waters of the State. Refer to Attachment G for the copy of the wetland determination data form.

Findings

U.S. Army Corps of Engineers

Portions of Mosher Creek qualify as Corps wetland WoUS and non-wetland WoUS. Evidence of an OHWM was noted within the project site. Therefore, Mosher Creek would be subject to regulation under Section 404 of the CWA and Corps jurisdiction totals approximately 0.004 acre (21 linear feet) of wetland WoUS and 0.10 acre (96 linear feet) of non-wetland WoUS. Refer to Figure 4, *Corps/Regional Board Jurisdictional Map,* provided in Attachment A. Expected impacts to Corps jurisdiction are listed in Table 2. *Project Related Temporary and Permanent Impacts to Jurisdictional Features.*

Regional Water Quality Control Boards

The Regional Board regulates discharges of fill and dredged material to surface waters under Section 401 of the CWA, and the Porter-Cologne Act for those that do not. No isolated or Rapanos conditions were observed within the boundaries of the project site. Therefore, the jurisdiction of the Regional Board reflects that of the Corps and totals approximately 0.004 acre (21 linear feet) of wetland WoUS and 0.10 acre (96 linear feet) of non-wetland WoUS. Refer to Figure 4, *Corps/Regional Board Jurisdictional Map,* provided in Attachment A. Expected impacts to Regional Board jurisdiction are listed in Table 2, *Project Related Temporary and Permanent Impacts to Jurisdictional Features.*

California Department of Fish and Wildlife

Mosher Creek exhibited a bed and bank and is considered CDFW jurisdictional streambed. Based on the results of the field delineation, it was determined approximately 0.11 acre (104 linear feet) of CDFW jurisdictional streambed and associated riparian vegetation (0.04 acre) is located within the boundaries of the project site. Refer to Figure 5, *CDFW Jurisdictional Map*, provided in Attachment A. Expected impacts to CDFW jurisdiction are listed in Table 2, *Project Related Temporary and Permanent Impacts to Jurisdictional Features.*

Table 2: Project Related Temporary and Permanent Impacts to Jurisdictional Features

Feature	Impact Type	Jurisdictional Limits (acres)			
		Corps/ Regional Board		CDFW	
		Non-Wetland WoUS	Wetland WoUS	Vegetated/Non-vegetated Jurisdictional Streambed	Associated Riparian
Mosher Creek	Temporary	0.08	0.001	0.07/0.02	0.03
	Permanent	0.01	0.003	0.01/0.006	0.02
TOTAL		**0.09**	**0.004**	**0.08/0.026**	**0.05**

Regulatory Approval Process

This report has been prepared for San Joaquin County to document the jurisdictional authority of the Corps, Regional Board and CDFW within the project site. The following sections provide a general summary of the various permits, certifications, and agreements that would be required prior to any temporary or permanent impacts occurring to jurisdictional areas within the project site.

U.S. Army Corps of Engineers

The Corps regulates discharges of dredged or fill materials into WoUS, including wetlands, pursuant to Section 404 of the CWA. Based on a review of the proposed project, it will be necessary for the County to acquire a Section 404 permit from the Corps for impacts occurring with Corps jurisdictional areas. Since the proposed project will result in the permanent loss of less than a ½-acre of Corps jurisdiction, it is anticipated that the proposed project can be authorized via a Nationwide Permit (NWP), specifically NWP No. 3: *Maintenance*.

Regional Water Quality Control Boards

The Regional Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the Porter-Cologne Act. Therefore, a CWA Section 401 WQC issued from the Regional Board would be required prior to commencement of any construction activities within the Regional Board jurisdictional areas. The Regional Board also requires that California Environmental Quality Act (CEQA) compliance be obtained prior to issuance of the final WQC. Further, an application fee is required, which is calculated based on both the total temporary and permanent impact acreages (as applicable), as well as linear feet of jurisdictional impacts.

California Department of Fish and Wildlife

Pursuant to Sections 1600 et seq. of the CFGC, the CDFW regulates any activity that would divert or obstruct the natural flow or alter the bed, channel, or bank of a lake or streambed; this would also include any impacts to associated riparian vegetation. Therefore, formal notification to, and subsequent authorization from CDFW, would be required prior to commencement of any construction activities within the CDFW jurisdictional areas. The CDFW also requires that CEQA compliance be obtained prior to issuing the final Lake or Streambed Alteration Agreement (LSAA). Further, a notification fee is required, which is calculated based on project cost and duration.

Please feel free to contact me at (714) 394-5646 or at john.parent@mbakerintl.com with any questions you may have regarding the information presented in this report.

Sincerely,

John R. Parent
Regulatory Specialist, Biologist
Natural Resources and Regulatory Permitting

Attachments:

A. *Project Figures*
B. *References*
C. *USDA Custom Soil Resources Report*
D. *USFWS National Wetlands Inventory Map*
E. *FEMA Flood Zone Maps*
F. *Site Photographs*
G. *Wetland Determination Data Forms*

Attachment A.
Project Figures

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MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

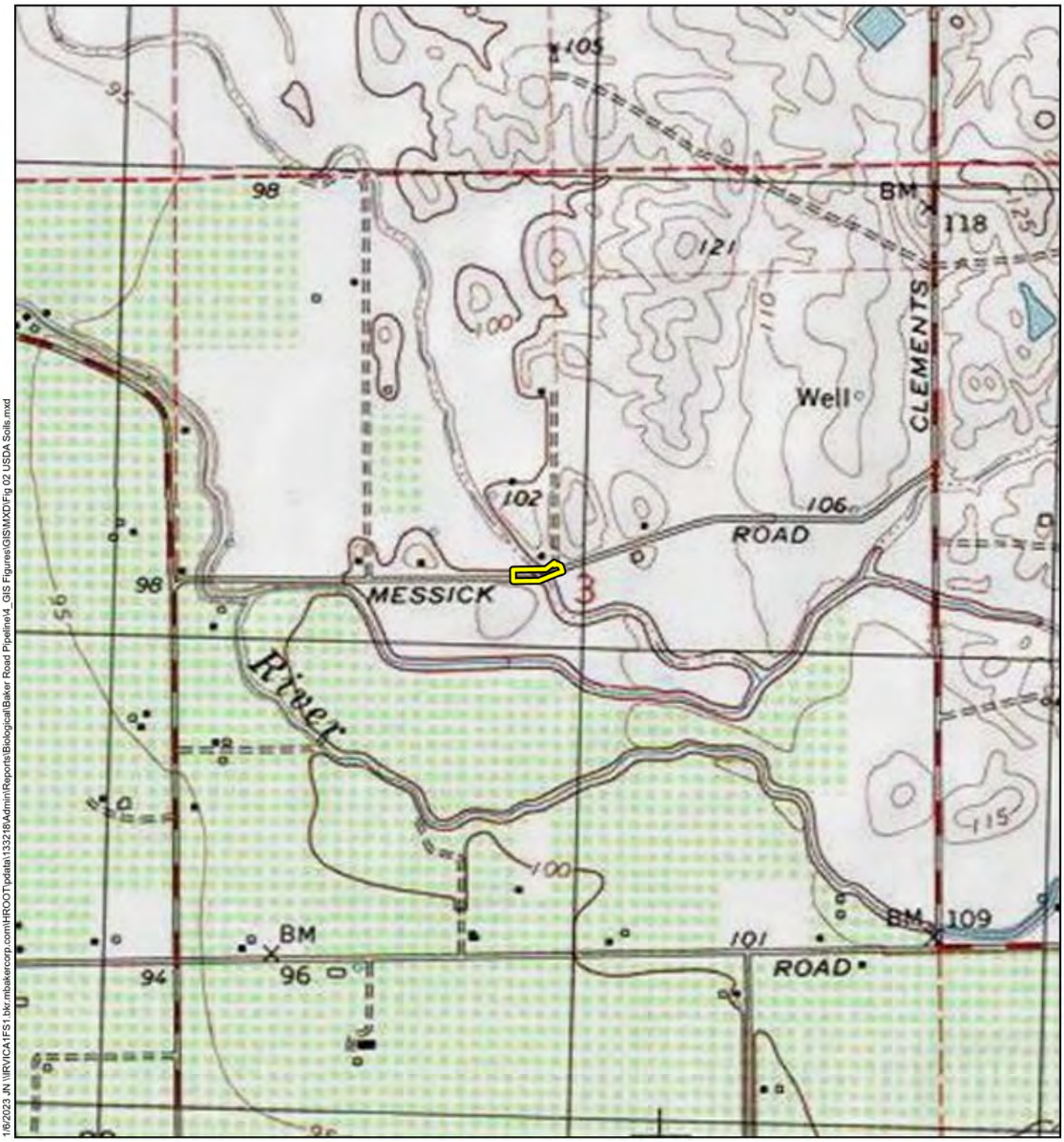
Regional Vicinity

Figure 1

Michael Baker INTERNATIONAL

0 2.5 5 Miles

Source: ArcGIS Online, 2018



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Legend

Project Boundary

Michael Baker INTERNATIONAL

0 500 1,000 Feet

Source: ArcGIS Online, USGS 7.5-Minute topographic quadrangle maps: *Linden, California*

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

Project Vicinity

Figure 2

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Legend

- Project Boundary
- Reference Point

Michael Baker INTERNATIONAL

0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

Project Site

Figure 3

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Legend

- Project Site
- Reference Point
- Flow Direction
- Corps/Regional Board Non-wetland WoUS (0.10 acre)
- Corps/Regional Board Wetland WoUS (0.004 acre)
- Non Jurisdictional Ditch
- DelineationPoints

Michael Baker INTERNATIONAL

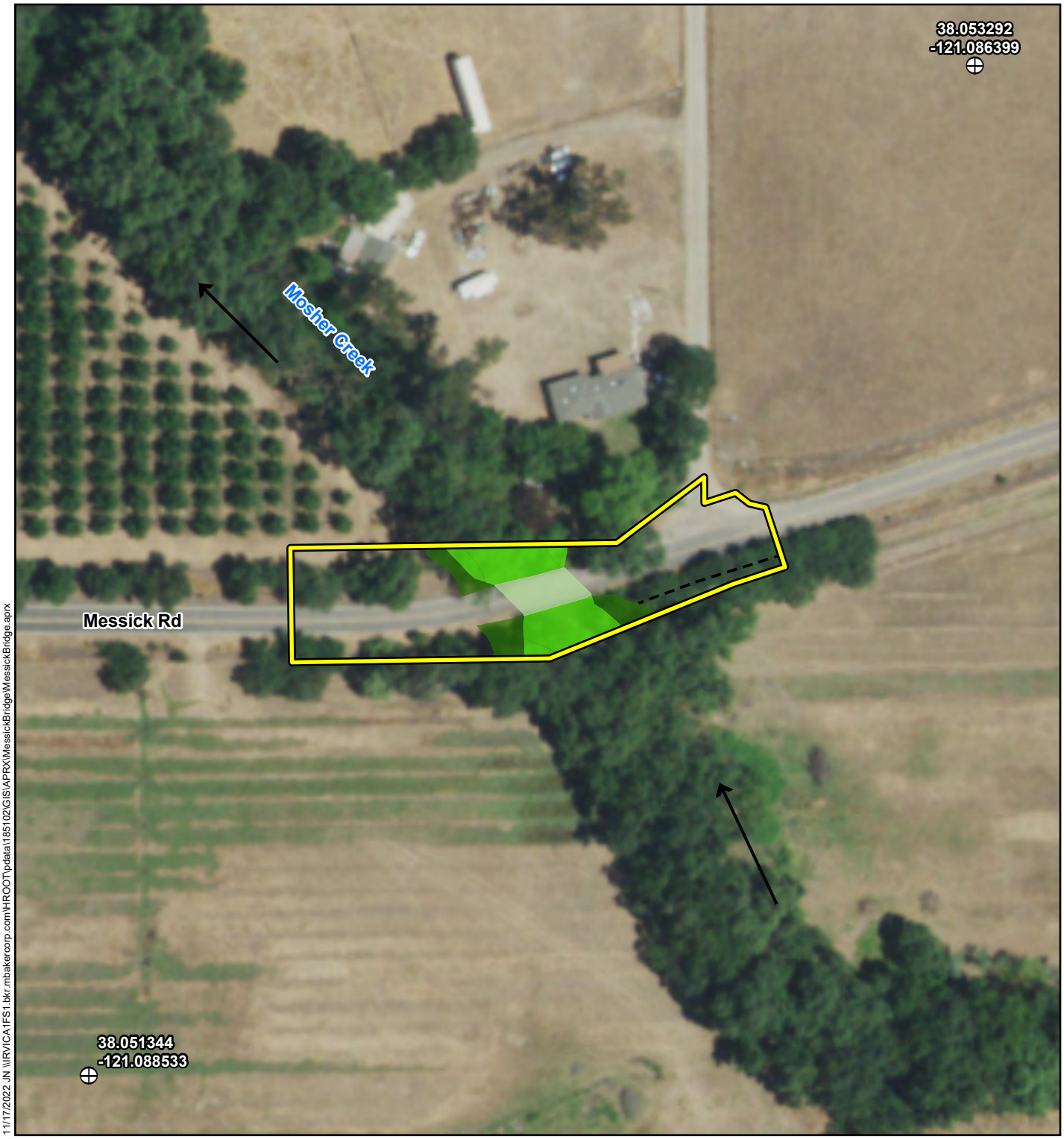
0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

Corps/Regional Board Jurisdictional Map

Figure 4



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Legend

- Project Site
- Reference Point
- Flow Line
- CDFW Vegetated Streambed (0.08 acre)
- Associated Riparian Vegetation (0.04 acre)
- CDFW Non-Vegetated Streambed (0.03 acre)
- Non Jurisdictional Ditch

Michael Baker INTERNATIONAL

0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

CDFW Jurisdictional Map

Figure 5

Attachment B.
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Attachment C.

USDA Custom Soil Resources Report

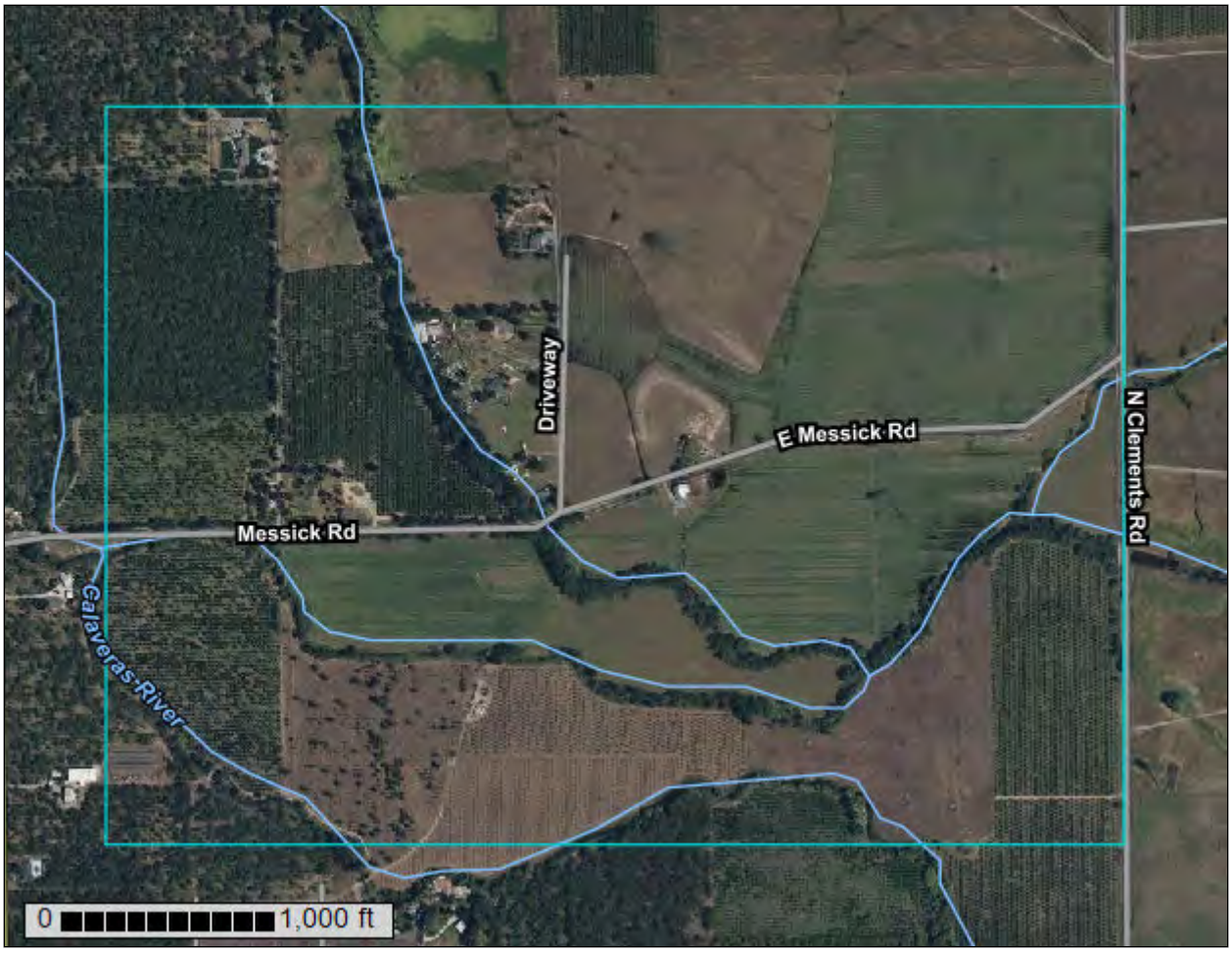
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Joaquin County, California



September 18, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
San Joaquin County, California.....13
110—Boggiano clay loam, 0 to 2 percent slopes.....13
128—Cogna loam, 0 to 2 percent slopes, overwash.....14
129—Cogna loam, 0 to 2 percent slopes.....16
130—Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17.....17
237—San Joaquin sandy loam, 2 to 5 percent slopes.....20
241—San Joaquin complex, 0 to 1 percent slopes.....21
W—Water.....23
References.....24

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

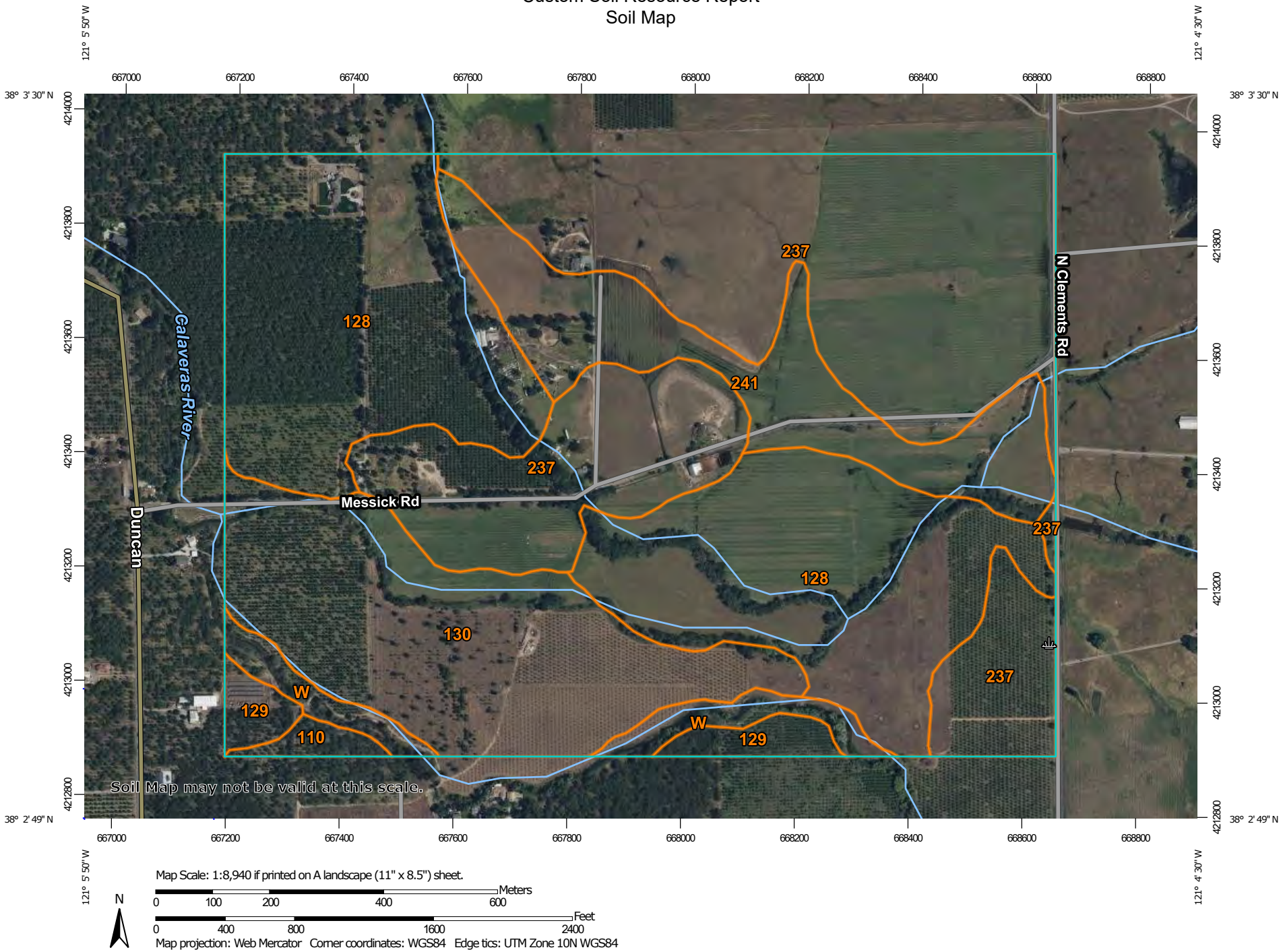
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:8,940 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: San Joaquin County, California
Survey Area Data: Version 15, Sep 9, 2021

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

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
110	Boggiano clay loam, 0 to 2 percent slopes	2.7	0.7%
128	Cogna loam, 0 to 2 percent slopes, overwash	122.6	32.1%
129	Cogna loam, 0 to 2 percent slopes	7.8	2.0%
130	Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17	62.9	16.5%
237	San Joaquin sandy loam, 2 to 5 percent slopes	135.4	35.4%
241	San Joaquin complex, 0 to 1 percent slopes	39.8	10.4%
W	Water	11.1	2.9%
Totals for Area of Interest		**382.3**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Joaquin County, California

110—Boggiano clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhr9
Elevation: 40 to 50 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Boggiano and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boggiano

Setting

Landform: Fan terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock sources

Typical profile

A - 0 to 23 inches: clay loam
Bk - 23 to 48 inches: loam
Bkqm - 48 to 60 inches: indurated

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Cogna

Percent of map unit: 3 percent

Hydric soil rating: No

Vignolo
Percent of map unit: 3 percent
Hydric soil rating: No

Archerdale
Percent of map unit: 3 percent
Hydric soil rating: No

Stockton
Percent of map unit: 2 percent
Hydric soil rating: No

Columbia
Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: Yes

Hollenbeck
Percent of map unit: 2 percent
Hydric soil rating: No

128—Cogna loam, 0 to 2 percent slopes, overwash

Map Unit Setting
National map unit symbol: 2x8lf
Elevation: 100 to 210 feet
Mean annual precipitation: 18 to 19 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 325 to 350 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Cogna and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cogna

Setting
Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile
A - 0 to 25 inches: loam
Bk - 25 to 38 inches: clay loam
C - 38 to 64 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Minor Components

Archerdale, clay loam

Percent of map unit: 6 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Nord, loam

Percent of map unit: 4 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Veritas, fine sandy loam

Percent of map unit: 3 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Honcut, sandy loam

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated

Hydric soil rating: No

Columbia, occasionally flooded

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

129—Cogna loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhrx
Elevation: 70 to 150 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cogna, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cogna, Loam

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 25 inches: loam
Bk - 25 to 38 inches: clay loam
C - 38 to 64 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None

Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Archerdale

Percent of map unit: 6 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Nord

Percent of map unit: 4 percent
Landform: Fan skirts
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Veritas

Percent of map unit: 3 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Columbia

Percent of map unit: 1 percent
Landform: Flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: Yes

Honcut

Percent of map unit: 1 percent
Landform: Flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

130—Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2xld1

Elevation: 10 to 130 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 318 to 328 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Columbia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbia

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 4 inches: fine sandy loam
A - 4 to 12 inches: fine sandy loam
C1 - 12 to 21 inches: silt loam
C2 - 21 to 26 inches: fine sandy loam
C3 - 26 to 34 inches: silt loam
C4 - 34 to 40 inches: loamy fine sand
C5 - 40 to 48 inches: fine sandy loam
C6 - 48 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 72 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Minor Components

Guard

Percent of map unit: 3 percent

Landform: Rims
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Cogna

Percent of map unit: 2 percent
Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Grangeville

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Columbia, fine-textured overwash

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Merritt

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Dello

Percent of map unit: 2 percent
Landform: Flood plains on sloughs
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

Egbert

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)

Hydric soil rating: Yes

237—San Joaquin sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hhwd
Elevation: 20 to 150 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 275 days
Farmland classification: Not prime farmland

Map Unit Composition

San joaquin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 10 inches: sandy loam
2Bt - 10 to 20 inches: clay
2Bqm - 20 to 60 inches: indurated

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XE104CA - LOAMY CLAYPAN
Hydric soil rating: No

Minor Components

Bruella
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, ponded
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

San joaquin
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: No

Jahant
Percent of map unit: 2 percent
Hydric soil rating: No

Rocklin
Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, on gentler slopes
Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, med textured with hardpan
Percent of map unit: 1 percent
Hydric soil rating: No

Redding
Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, steeper slopes
Percent of map unit: 1 percent
Hydric soil rating: No

241—San Joaquin complex, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: hhwj
Elevation: 20 to 110 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 275 days
Farmland classification: Not prime farmland

Map Unit Composition
San joaquin and similar soils: 45 percent

San joaquin, thick surface, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 16 inches: loam
2Bt - 16 to 26 inches: clay
2Bqm - 26 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of San Joaquin, Thick Surface

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 12 inches: loam
Bt - 12 to 26 inches: sandy clay loam
2Bt - 26 to 35 inches: clay
2Bqm - 35 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Rocklin

Percent of map unit: 5 percent
Hydric soil rating: No

Exeter

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, altered soils

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, mod coarse textured with hardpan

Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Attachment D.

USFWS National Wetlands Inventory Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

Messick Bridge Replacement Project

September 19, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

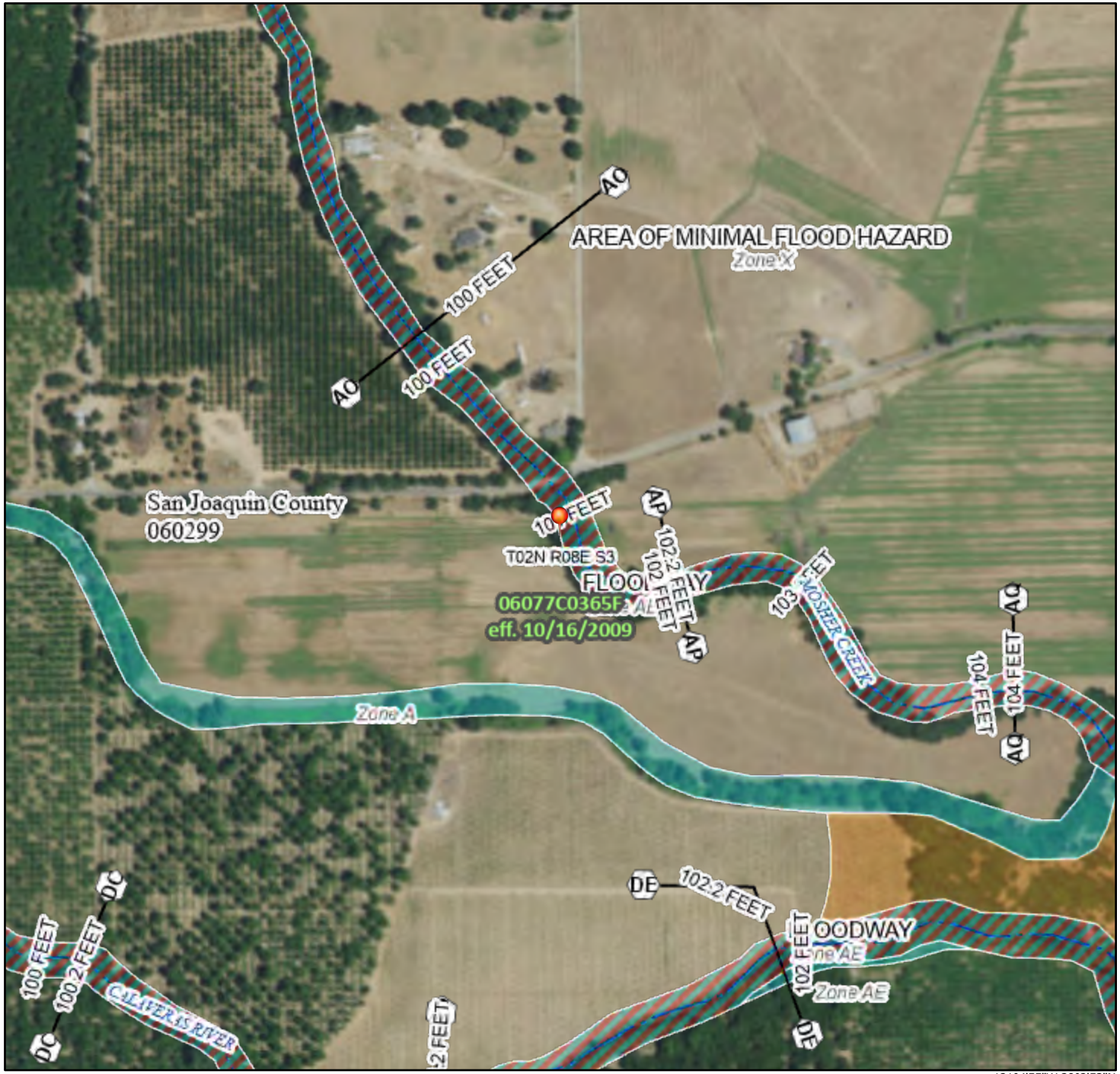
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Attachment E.
FEMA Flood Zone Maps

National Flood Hazard Layer FIRMette

FEMA

121°5'33"W 38°3'21"N



121°4'55"W 38°2'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/18/2022 at 12:46 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment F.
Site Photographs

Photograph 1: Standing on the bridge over Mosher Creek looking south along the creek.

Photograph 2: Standing on Messick Road looking south along the western edge of Mosher Creek into the agriculture field.

Photograph 3: Standing on Messick Road looking north along the western edge of Mosher Creek into the agriculture orchard.

Photograph 4: Standing at the western end of the bridge over Mosher Creek and looking east along Messick Road.

Photograph 5: Standing on the northern edge of Messick Road and looking at the north side of Mosher Creek.

Photograph 6: Standing in Mosher Creek looking west along the north side of the bridge.

Photograph 7: Standing in Mosher Creek looking towards Soil Pit 1 within the feature.

Attachment G.

Wetland Determination Data Forms

8-10-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Messick Bridge City/County: _____ Sampling Date: SP1

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Oregon Ash Fraxinus Lati latifolia	35	Y	
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Bolboschoenus Americanus	50	Y	
2. CA Blackberry	20		
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

SOIL

Sampling Point: SP1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/1	70	5YR3/4	30	C	M	SCL	Silty Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: —

Depth (inches): —

Hydric Soil Present? Yes ____ No ____

Remarks: Significant organic matter (roots) in soil profile

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes X No ____ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 2"

Wetland Hydrology Present? Yes X No ____

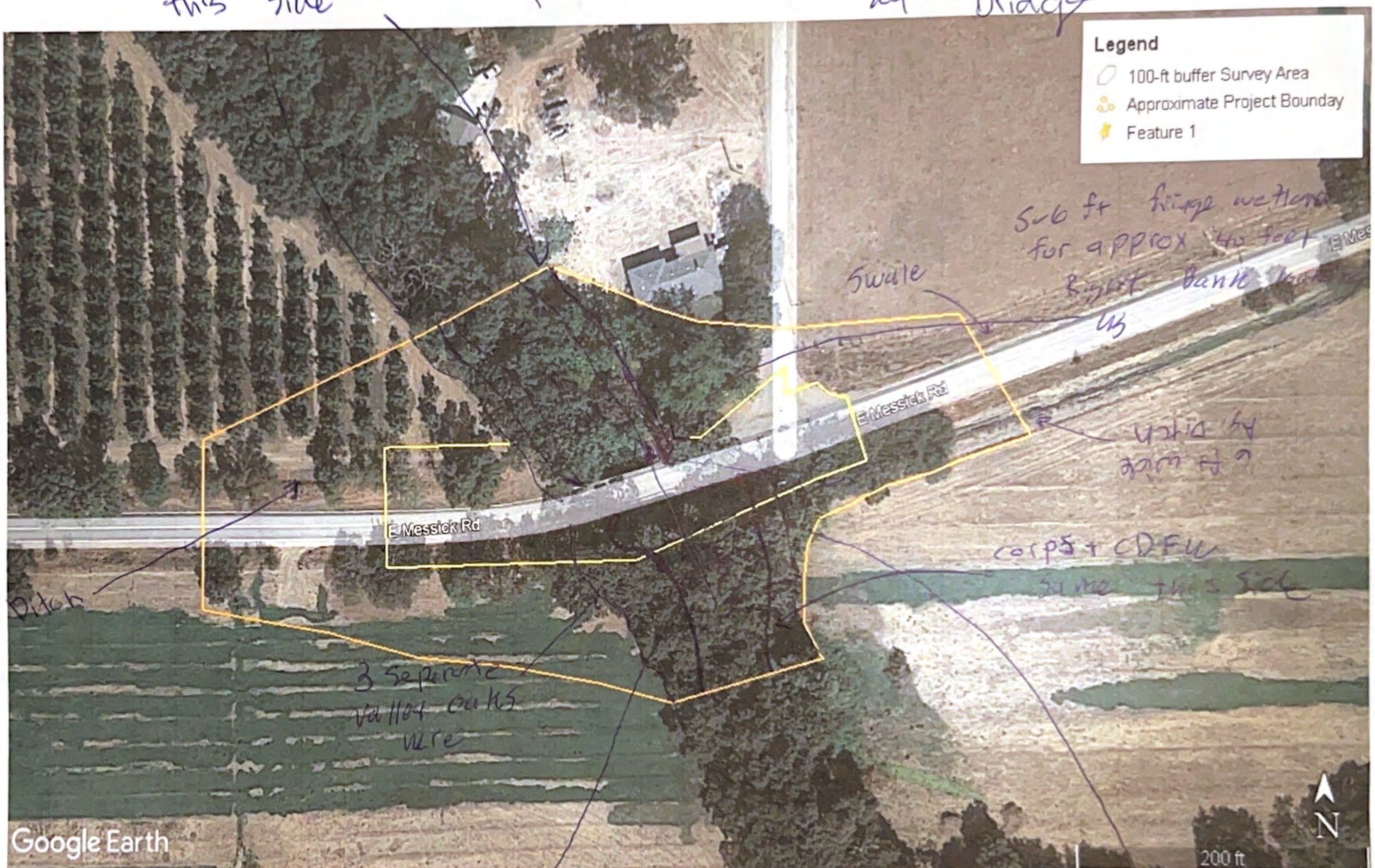
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Pit performed at toe of slope in wet area approx. 5-6 feet from surface water

8 ft CDFW banks this side

↖ flow

50 ft between Abutments at Bridge



35-40 ft approx. width

18 x 20 ft wide Access road with 2 x 36" concrete culverts, approx. 30 ft off Bridge

Valley Oak

Blackberry

~~Tree of Heaven~~

Fig

~~CA Bay Laurel~~

Black walnut

Valley Oak walnut

Oregon Ash

Michael Baker
INTERNATIONAL

We Make a Difference

January 4, 2023 JN 185102

SAN JOAQUIN COUNTY PUBLIC WORKS
Attn: *Mr. Brian Newburg*

SUBJECT: Delineation of State and Federal Jurisdictional Waters for the Proposed Messick Bridge Replacement Project located in unincorporated San Joaquin County, California

Dear Mr. Newburg,

On behalf of San Joaquin County (County), Michael Baker International (Michael Baker) has prepared this technical letter report to document the jurisdictional authority of the U.S. Army Corps of Engineers Sacramento District (Corps), Central Valley Regional Water Quality Control Board (Regional Board), and California Department of Fish and Wildlife North Central Region (CDFW) within the proposed Messick Bridge Replacement Project (project or project site). Specifically, this report has been prepared to describe, map, and quantify aquatic and other hydrologic features located within the project site. The fieldwork for this jurisdictional delineation was conducted on August 10, 2022.

This report explains the methodology utilized throughout the course of the delineation, defines the jurisdictional authority of the regulatory agencies, and documents the findings made by Michael Baker. This report presents Michael Baker's determination of jurisdictional boundaries using the most up-to-date regulations, written policy, and guidance provided by the regulatory agencies. However, it should be noted that the regulatory agencies must confirm this determination.

Project Location

The proposed project is generally located east of State Route 99 and north of the City of Linden, in San Joaquin County, California (refer to Figure 1, *Regional Vicinity*). The project is depicted in Section 3 of Township 2 north, Range 8 east on the United States Geological Survey's (USGS) *Linden, California* 7.5-minute quadrangle (refer to Figure 2, *Project Vicinity*). Specifically, the project site is located along Messick Road as it crosses over Mosher Creek at San Joaquin County Bridge No. 29C-274 (refer to Figure 3, *Project Site*).

Project Description

The County of San Joaquin proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate three-foot shoulders within County right-of-way. The project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. The profile of the proposed bridge would match the existing

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configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on Cast in Steel Shell (CISS) or Cast in Drilled Hole (CIDH) piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current American Association of State Highway and Transportation Officials (AASHTO) and Caltrans standards.

Summary of Regulations

There are three (3) key agencies that regulate activities within streams, wetlands, and riparian areas applicable to this project. The Corps Regulatory Division regulates activities pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFW regulates activities under Sections 1600 *et seq*. of the California Fish and Game Code (CFGC) and the Regional Board regulates activities pursuant to Section 401 of the CWA and Section 13263 of the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Literature Review

A thorough review of relevant literature and materials was conducted to obtain a general understanding of the environmental setting and preliminarily identify features/areas that may fall under the jurisdiction of the regulatory agencies. Relevant materials utilized during the literature review are summarized below with references provided in Attachment B.

Watershed

The project site is located within Mosher Creek Watershed Hydrologic Unit Code (HUC 180400030403) of the larger Bear Creek Watershed (HUC 1804000304). The major waterway within this watershed is the Calaveras River. The Calaveras River basin drains approximately 590 square miles of land in San Joaquin County. The mainstem of the Calaveras River begins at the junction of the North Fork Calaveras River and the South Fork Calaveras River, a short distance upstream of the upper extent of New Hogan Reservoir and is the basin's primary drainage channel from the headwaters to Bellota (where the river splits into the Old Calaveras River channel and Mormon Slough/Stockton Diverting Canal). The watershed is bound by the Sierra mountains to the east and the Delta Waterways to the west. The Calaveras River Watershed includes approximately 46,000 acres of highly developed agricultural land, and about 14,000 acres of urban and suburban land in and adjacent to the City of Stockton.[1]

Soils

On-site and adjoining soils were reviewed prior to conducting the field delineation using the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Web Soil Survey (refer to Attachment C). According to the *Custom Soil Resources Report for San Joaquin County, California* the project site is underlain by the San Joaquin sandy loam, 2 to 5 percent slopes (237) map unit.

[1] Calaveras River Habitat Conservation Plan, 2019

Hydric Soils List of California

Michael Baker then reviewed the *Hydric Soils List for California* (USDA 2022) to preliminarily verify whether any of the soils indicated to be within the study area are considered to be hydric. According to the aforementioned list, San Joaquin sandy loam, 2 to 5 percent slopes (237) is listed as hydric.

National Wetlands Inventory

Michael Baker reviewed the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Mapper. The portion of Mosher Creek located within the project site is mapped as Freshwater Forested/Shrub Wetland (PFOC). This mapped area was used as reference while documenting all potentially jurisdictional features as observed on-site during the field delineation. Refer to Attachment D for a depiction of the USFWS NWI map.

Flood Zone

Michael Baker also reviewed the Federal Emergency Management Agency's (FEMA's) National Flood Hazard Layer. Based on the Flood Insurance Rate Map No. 06077C0365F, the project site is located in Regulatory Floodway. Regulatory Floodway is described as the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Refer to Attachment E for a copy of the FEMA flood zone map.

Methodology

Michael Baker regulatory specialists, Tim Tidwell and John Parent, conducted a jurisdictional delineation of the project site on August 10, 2022 using the most recent, agency approved methodology, to identify and map jurisdictional limits within the project site. The delineation was conducted to determine the jurisdictional limits of waters of the U.S. (WoUS), including potential wetlands, and waters of the State located within the boundaries of the project site. For this location, potential wetlands were delineated using the methods outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (Arid West Regional Supplement; Corps, 2008). For evaluation of wetland waters of the State, methods were modified so that an area can lack vegetation and still qualify as a State wetland in accordance with the recently implemented (May 2020) *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*.

While in the field, jurisdictional features were recorded on an aerial base map at a scale of 1" = 160' using topographic contours and visible landmarks as guidelines. Data points were obtained with a Garmin Map66i Global Positioning System (GPS) device to record and identify specific widths for ordinary highwater mark (OHWM) indicators, locations of photographs, soil pits, and other pertinent jurisdictional features, if present. This data was then transferred as a .shp file and added to the project's jurisdictional figures. The jurisdictional figures were prepared using ESRI ArcGIS Pro software.

Site Conditions

Refer to Attachment F for representative photographs taken within the project site during the jurisdictional delineation.

Non-Wetland Features

Mosher Creek

The project site is located at the intersection of Messick Road and Mosher Creek, where Messick Road crosses Mosher Creek. Mosher Creek is a perennial drainage feature that enters the southern boundary of the project site as an earthen channel conveying flows through two approximately 36" concrete pipes beneath an earthen road crossing, then continues beneath Messick Road and to the north through the project site. Flows originate from the Old Calaveras River in the upstream portions of the watershed and converge with Bear Creek to the north into Pixley Slough which turns into Disappointment Slough, then into the Sacramento-San Joaquin Delta (CR HCP 2019). Mosher Creek is characterized by disturbed banks, a constrained though well-developed overstory, and generally little riparian vegetation. Flowing surface water was observed within Mosher Creek and additional evidence of an OHWM was observed including the presence of a defined bed and bank. Mosher Creek consists of a dense riparian overstory consisting primarily of valley oak (*Quercus lobata* [NI]), Northern California black walnut (*Juglans hindsii* [FAC]), Oregon ash (*Fraxinus latifolia* [FACW]), Himalayan blackberry (*Rubus armeniacus* [FAC]), and American bulrush (Scirpus americanus [OBL]). Within the project site, Mosher Creek measures approximately 96 feet in length and ranges in width from approximately 30 to 50 feet for the Corps and Regional Board and 65 to 90 feet for CDFW. Table 1, *State and Federal Jurisdictional Resources within the Project Site*, below provides a summary of the jurisdictional limits for the onsite aquatic feature.

Table 1: State and Federal Jurisdictional Resources within the Project Site

Feature	Location Lat/Long	Cowardin Type	Linear Feet	Jurisdictional Limits (acres)		
				Corps/ Regional Board		CDFW Jurisdictional Streambed/Riparian
				Non-Wetland WoUS	Wetland WoUS	
Mosher Creek	38.052299°/ -121.087461°	Riverine	96	0.10	0.004	0.11/0.04
TOTAL			**96**	**0.10**	**0.004**	**0.11/0.04**

Wetland Features

Corps and Regional Board jurisdictional features consisting of .004 acre of wetlands were identified within the survey area. To assess for the presence of hydric soils and determine the presence/absence of wetlands within the project site, one soil pit (SP1) was preformed where wetland hydrology or hydrophytic vegetation was observed. SP1 was performed on a sediment bar of Mosher Creek immediately north of the Mosher Creek Bridge. SP1 was dug to a depth of 16 inches and exhibited a texture of silty-clay and displayed a matrix color of 10YR 3/1 when moist with redoximorphic features observed of concentrations within the matrix with a color of 5YR 3/4. Wetland hydrology indicators in the vicinity of SP1 included a high water table (A2), saturation (A3), a hydrogen sulfide odor (C1), saturation at 2 inches in depth, and water table

of 6 inches. Based on the results of the field delineation, it was determined that the soil pit met the required three parameters and qualified as Corps wetland WoUS or Regional Board wetland waters of the State. Refer to Attachment G for the copy of the wetland determination data form.

Findings

U.S. Army Corps of Engineers

Portions of Mosher Creek qualify as Corps wetland WoUS and non-wetland WoUS. Evidence of an OHWM was noted within the project site. Therefore, Mosher Creek would be subject to regulation under Section 404 of the CWA and Corps jurisdiction totals approximately 0.004 acre (21 linear feet) of wetland WoUS and 0.10 acre (96 linear feet) of non-wetland WoUS. Refer to Figure 4, *Corps/Regional Board Jurisdictional Map,* provided in Attachment A. Expected impacts to Corps jurisdiction are listed in Table 2. *Project Related Temporary and Permanent Impacts to Jurisdictional Features.*

Regional Water Quality Control Boards

The Regional Board regulates discharges of fill and dredged material to surface waters under Section 401 of the CWA, and the Porter-Cologne Act for those that do not. No isolated or Rapanos conditions were observed within the boundaries of the project site. Therefore, the jurisdiction of the Regional Board reflects that of the Corps and totals approximately 0.004 acre (21 linear feet) of wetland WoUS and 0.10 acre (96 linear feet) of non-wetland WoUS. Refer to Figure 4, *Corps/Regional Board Jurisdictional Map,* provided in Attachment A. Expected impacts to Regional Board jurisdiction are listed in Table 2, *Project Related Temporary and Permanent Impacts to Jurisdictional Features.*

California Department of Fish and Wildlife

Mosher Creek exhibited a bed and bank and is considered CDFW jurisdictional streambed. Based on the results of the field delineation, it was determined approximately 0.11 acre (104 linear feet) of CDFW jurisdictional streambed and associated riparian vegetation (0.04 acre) is located within the boundaries of the project site. Refer to Figure 5, *CDFW Jurisdictional Map,* provided in Attachment A. Expected impacts to CDFW jurisdiction are listed in Table 2, *Project Related Temporary and Permanent Impacts to Jurisdictional Features.*

Table 2: Project Related Temporary and Permanent Impacts to Jurisdictional Features

Feature	Impact Type	Jurisdictional Limits (acres)			
		Corps/ Regional Board		CDFW	
		Non-Wetland WoUS	Wetland WoUS	Vegetated/Non-vegetated Jurisdictional Streambed	Associated Riparian
Mosher Creek	Temporary	0.08	0.001	0.07/0.02	0.03
	Permanent	0.01	0.003	0.01/0.006	0.02
TOTAL		**0.09**	**0.004**	**0.08/0.026**	**0.05**

Regulatory Approval Process

This report has been prepared for San Joaquin County to document the jurisdictional authority of the Corps, Regional Board and CDFW within the project site. The following sections provide a general summary of the various permits, certifications, and agreements that would be required prior to any temporary or permanent impacts occurring to jurisdictional areas within the project site.

U.S. Army Corps of Engineers

The Corps regulates discharges of dredged or fill materials into WoUS, including wetlands, pursuant to Section 404 of the CWA. Based on a review of the proposed project, it will be necessary for the County to acquire a Section 404 permit from the Corps for impacts occurring with Corps jurisdictional areas. Since the proposed project will result in the permanent loss of less than a ½-acre of Corps jurisdiction, it is anticipated that the proposed project can be authorized via a Nationwide Permit (NWP), specifically NWP No. 3: *Maintenance*.

Regional Water Quality Control Boards

The Regional Board regulates discharges to surface waters pursuant to Section 401 of the CWA and the Porter-Cologne Act. Therefore, a CWA Section 401 WQC issued from the Regional Board would be required prior to commencement of any construction activities within the Regional Board jurisdictional areas. The Regional Board also requires that California Environmental Quality Act (CEQA) compliance be obtained prior to issuance of the final WQC. Further, an application fee is required, which is calculated based on both the total temporary and permanent impact acreages (as applicable), as well as linear feet of jurisdictional impacts.

California Department of Fish and Wildlife

Pursuant to Sections 1600 et seq. of the CFGC, the CDFW regulates any activity that would divert or obstruct the natural flow or alter the bed, channel, or bank of a lake or streambed; this would also include any impacts to associated riparian vegetation. Therefore, formal notification to, and subsequent authorization from CDFW, would be required prior to commencement of any construction activities within the CDFW jurisdictional areas. The CDFW also requires that CEQA compliance be obtained prior to issuing the final Lake or Streambed Alteration Agreement (LSAA). Further, a notification fee is required, which is calculated based on project cost and duration.

Please feel free to contact me at (714) 394-5646 or at john.parent@mbakerintl.com with any questions you may have regarding the information presented in this report.

Sincerely,

John R. Parent
Regulatory Specialist, Biologist
Natural Resources and Regulatory Permitting

Attachments:

A. *Project Figures*
B. *References*
C. *USDA Custom Soil Resources Report*
D. *USFWS National Wetlands Inventory Map*
E. *FEMA Flood Zone Maps*
F. *Site Photographs*
G. *Wetland Determination Data Forms*

Attachment A.
Project Figures

1/6/2023 JN H:\pdata\185102\GIS\APRX\MessickBridge\MessickBridge.aprx

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

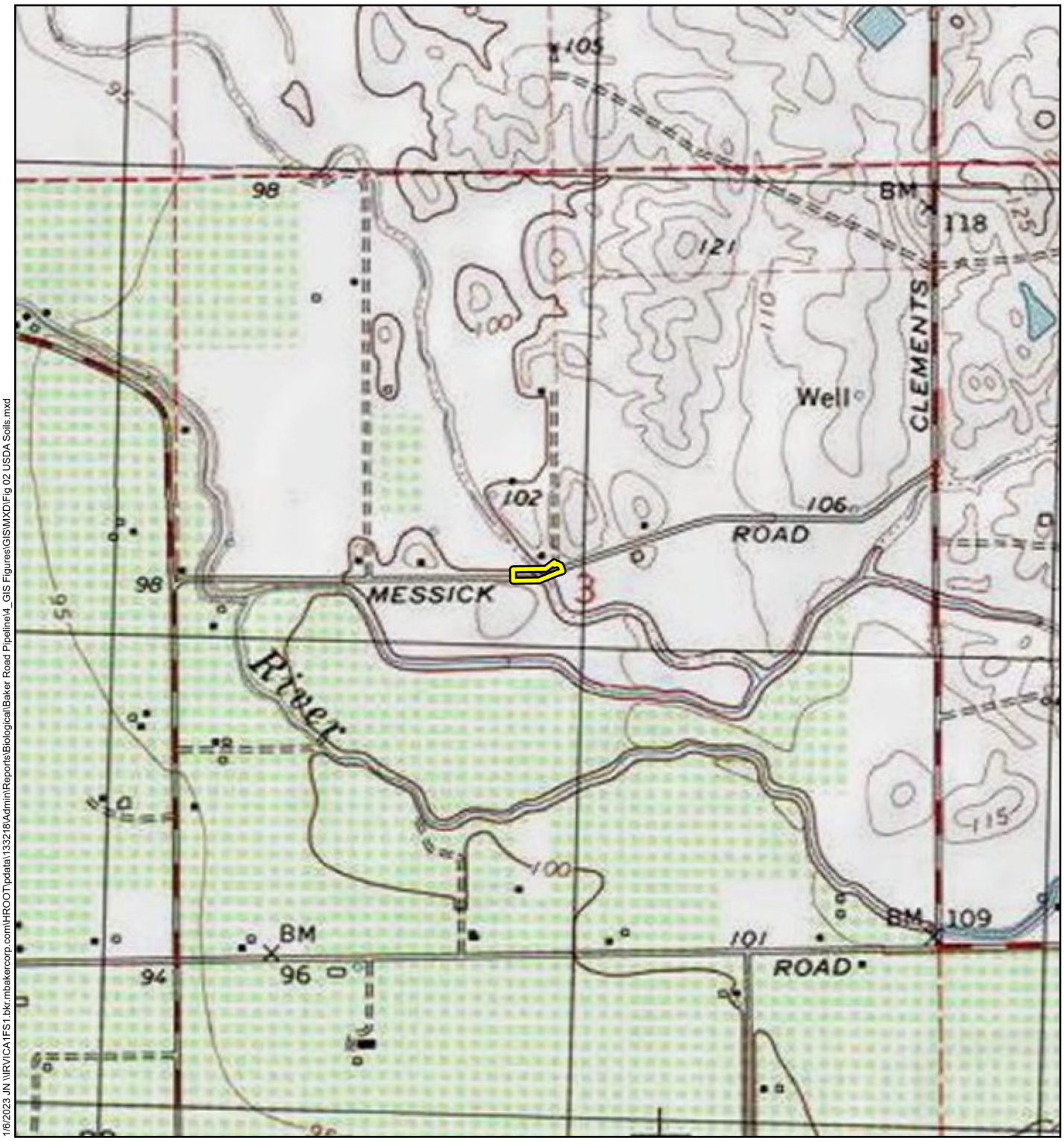
Regional Vicinity

Figure 1

Michael Baker INTERNATIONAL

0 2.5 5 Miles

Source: ArcGIS Online, 2018



1/6/2023 JN \\IRVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\133218\Admin\Reports\Biological\Baker Road Pipeline\4_GIS Figures\GIS\MXD\Fig 02 USDA Soils.mxd

Legend

Project Boundary

Michael Baker INTERNATIONAL

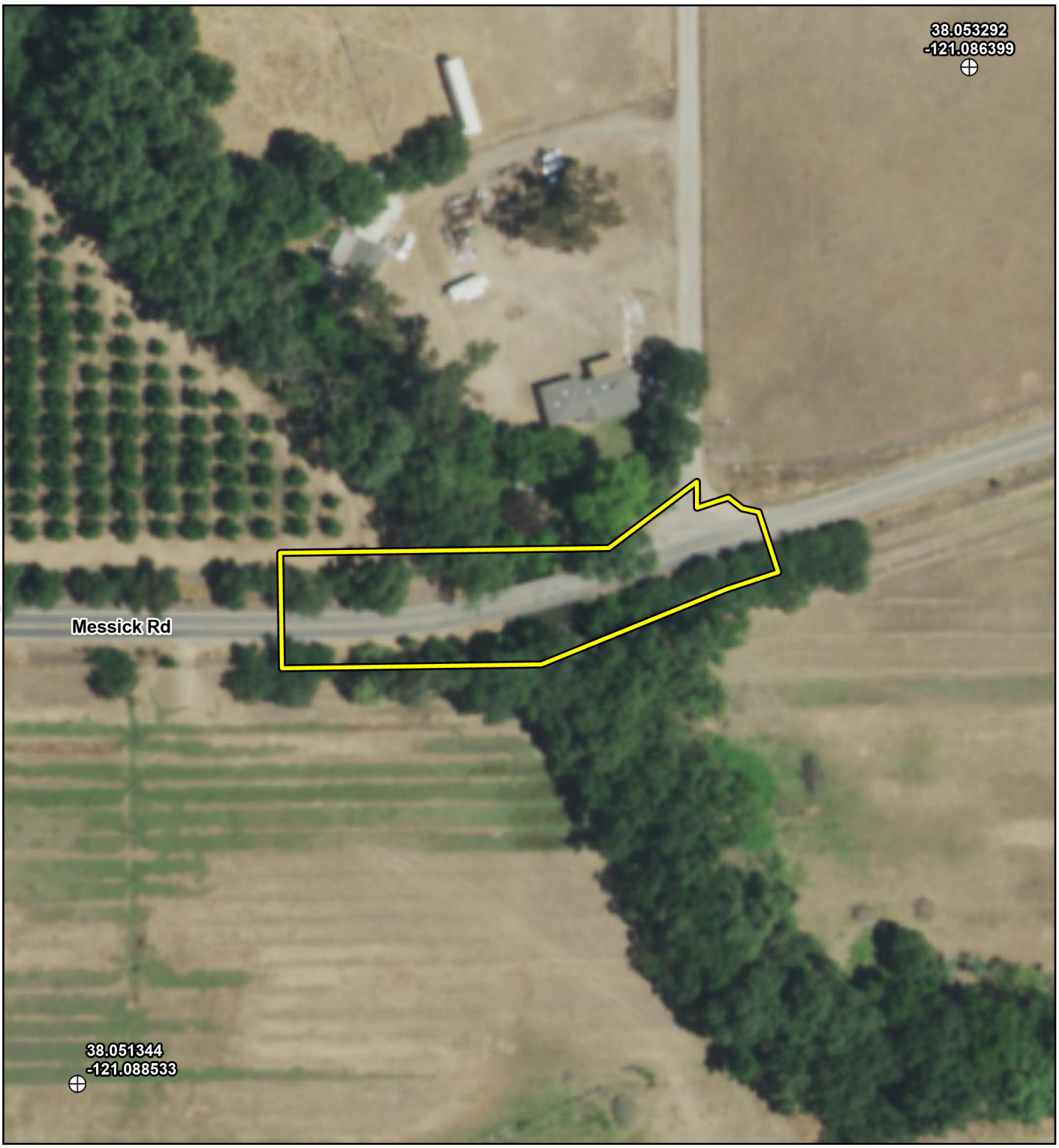
0 500 1,000 Feet

Source: ArcGIS Online, USGS 7.5-Minute topographic quadrangle maps: *Linden, California*

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

Project Vicinity

Figure 2



1/6/2023 JN \\IRVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\133218\Admin\Reports\Biological\Baker Road Pipeline\4_GIS Figures\GIS\MXD\Fig 02 USDA Soils.mxd

Legend

- Project Boundary
- Reference Point

Michael Baker INTERNATIONAL

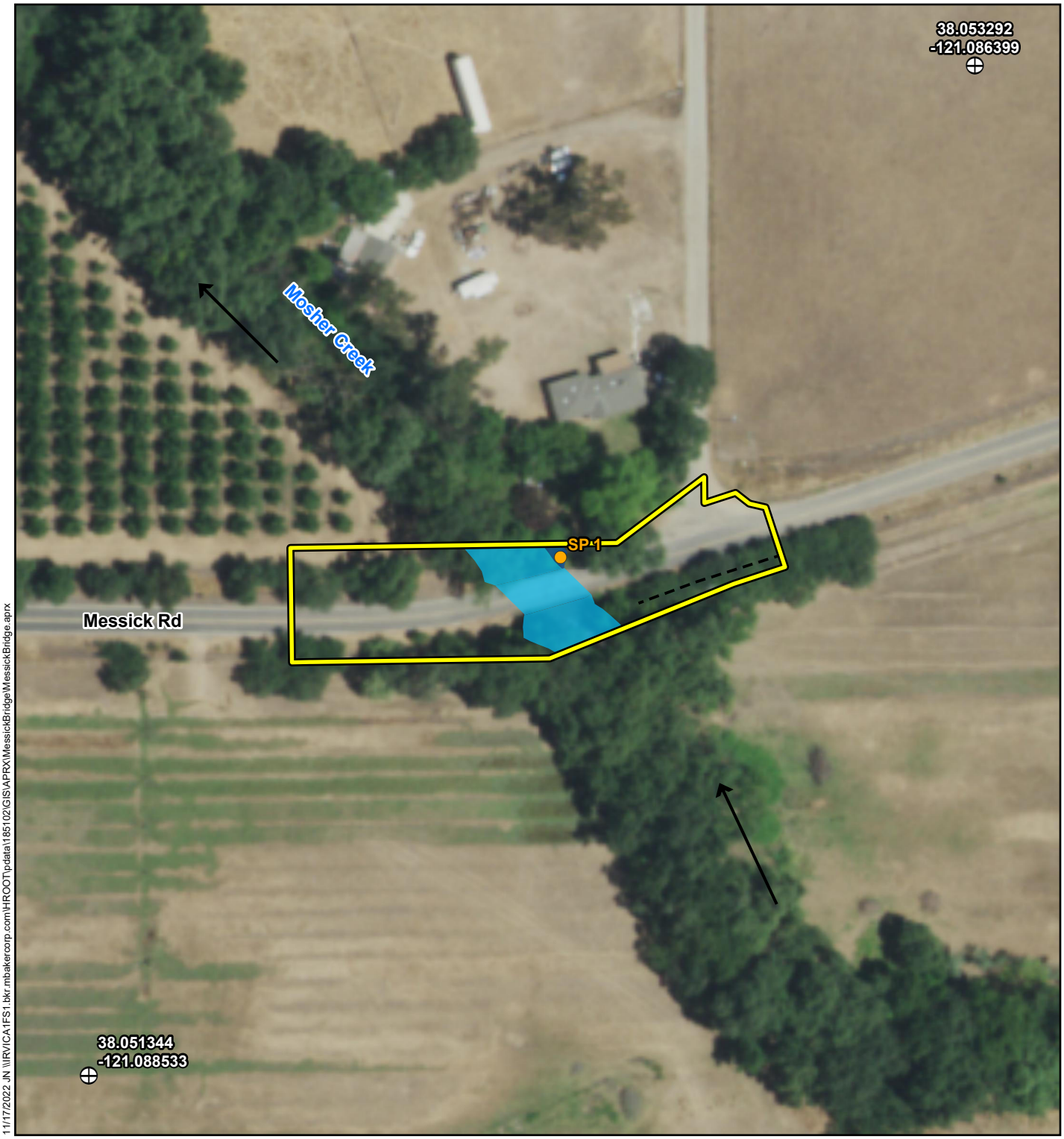
0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

Project Site

Figure 3



11/17/2022 JN \\IRVICA1FS1.bkr.mbakercorp.com\HROOT\pdata\185102\GIS\APRX\MessickBridge\MessickBridge.aprx

Legend

- Project Site
- Reference Point
- Flow Direction
- Corps/Regional Board Non-wetland WoUS (0.10 acre)
- Corps/Regional Board Wetland WoUS (0.004 acre)
- Non Jurisdictional Ditch
- DelineationPoints

Michael Baker INTERNATIONAL

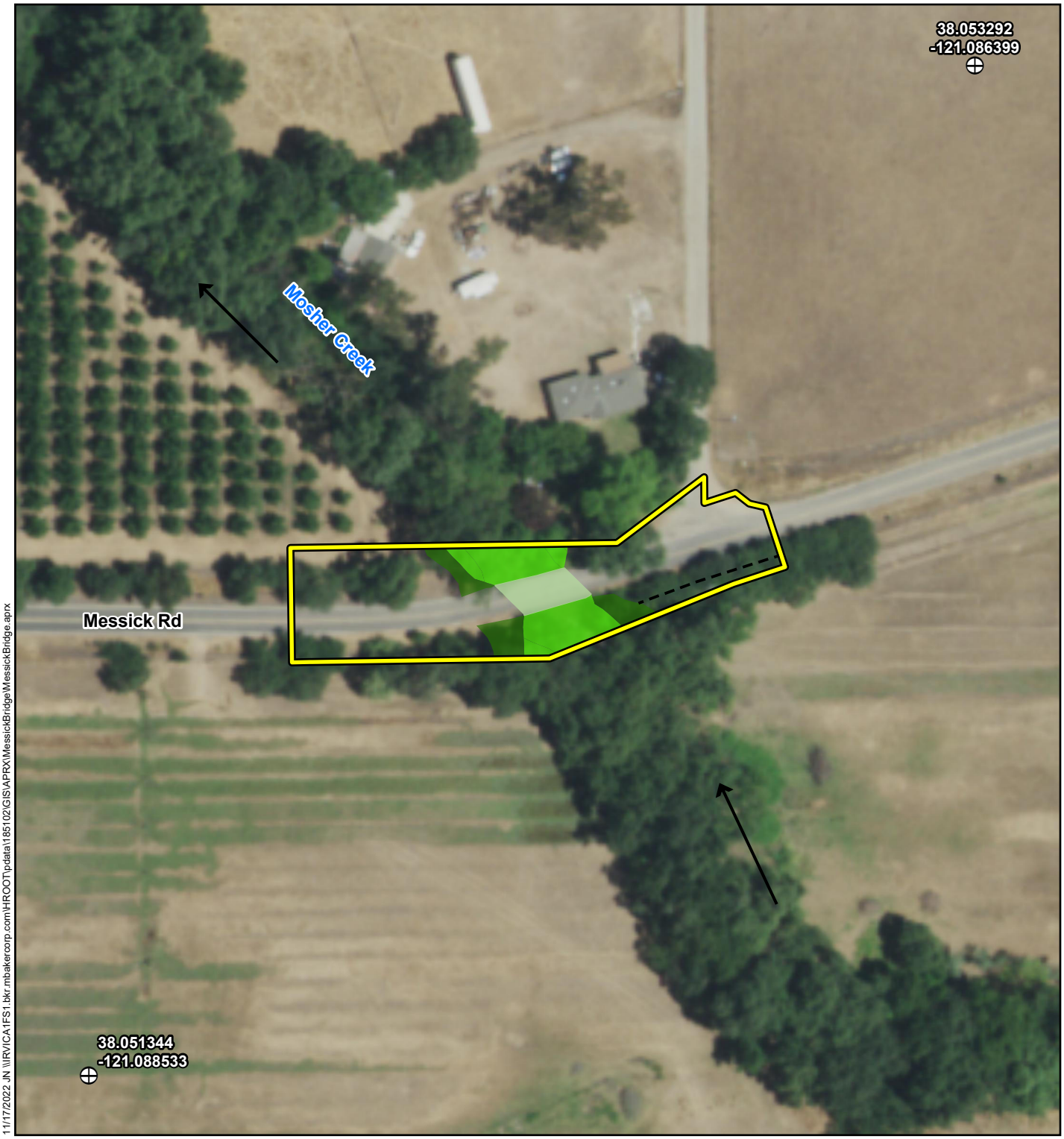
0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

Corps/Regional Board Jurisdictional Map

Figure 4



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Legend

- Project Site
- Reference Point
- Flow Line
- CDFW Vegetated Streambed (0.08 acre)
- Associated Riparian Vegetation (0.04 acre)
- CDFW Non-Vegetated Streambed (0.03 acre)
- Non Jurisdictional Ditch

Michael Baker INTERNATIONAL

0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE REPLACEMENT PROJECT
DELINEATION OF STATE AND FEDERAL JURISDICTIONAL WATERS

CDFW Jurisdictional Map

Figure 5

Attachment B.
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Attachment C.

USDA Custom Soil Resources Report

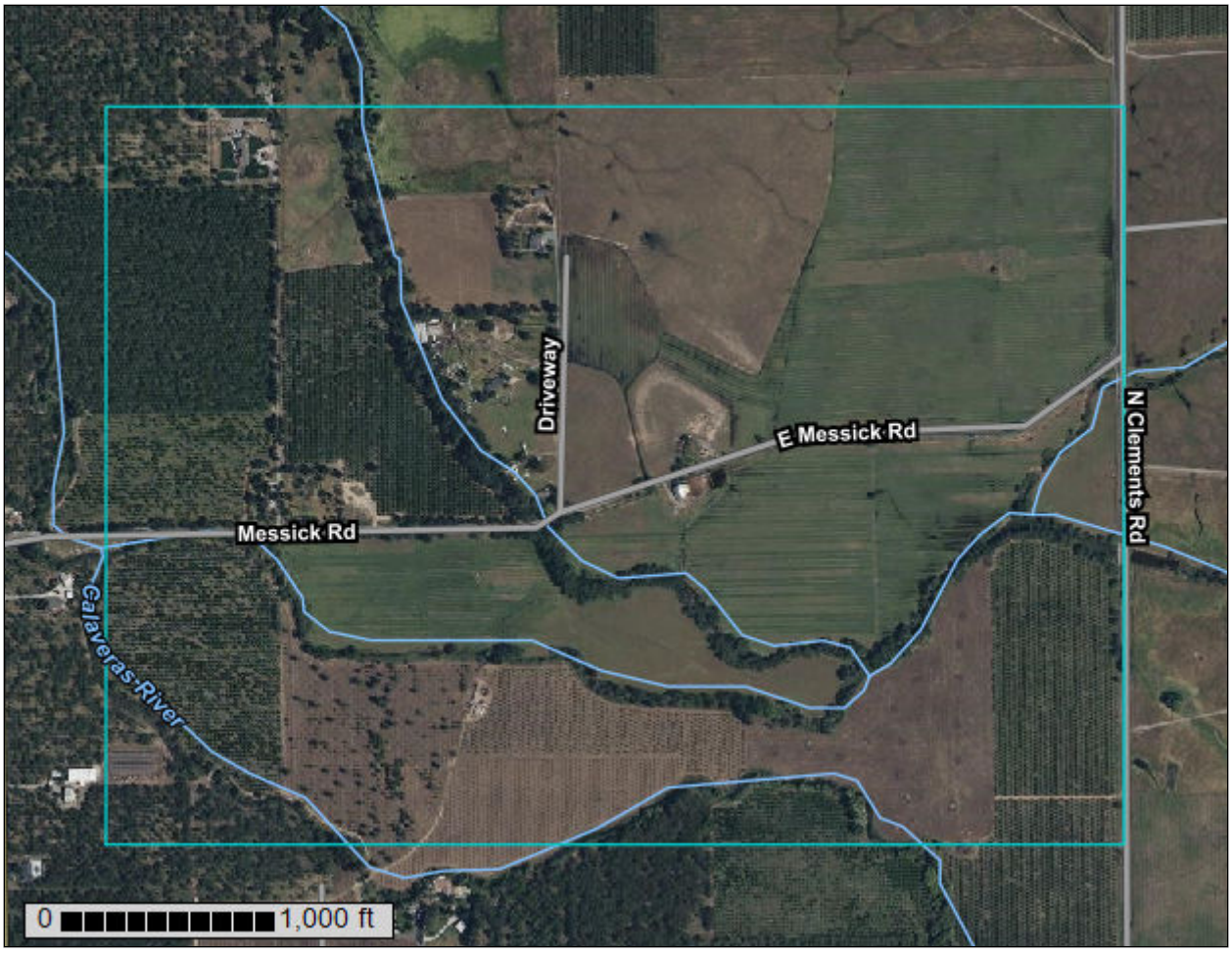
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Joaquin County, California



September 18, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
San Joaquin County, California.....13
110—Boggiano clay loam, 0 to 2 percent slopes.....13
128—Cogna loam, 0 to 2 percent slopes, overwash.....14
129—Cogna loam, 0 to 2 percent slopes.....16
130—Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17.....17
237—San Joaquin sandy loam, 2 to 5 percent slopes.....20
241—San Joaquin complex, 0 to 1 percent slopes.....21
W—Water.....23
References.....24

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

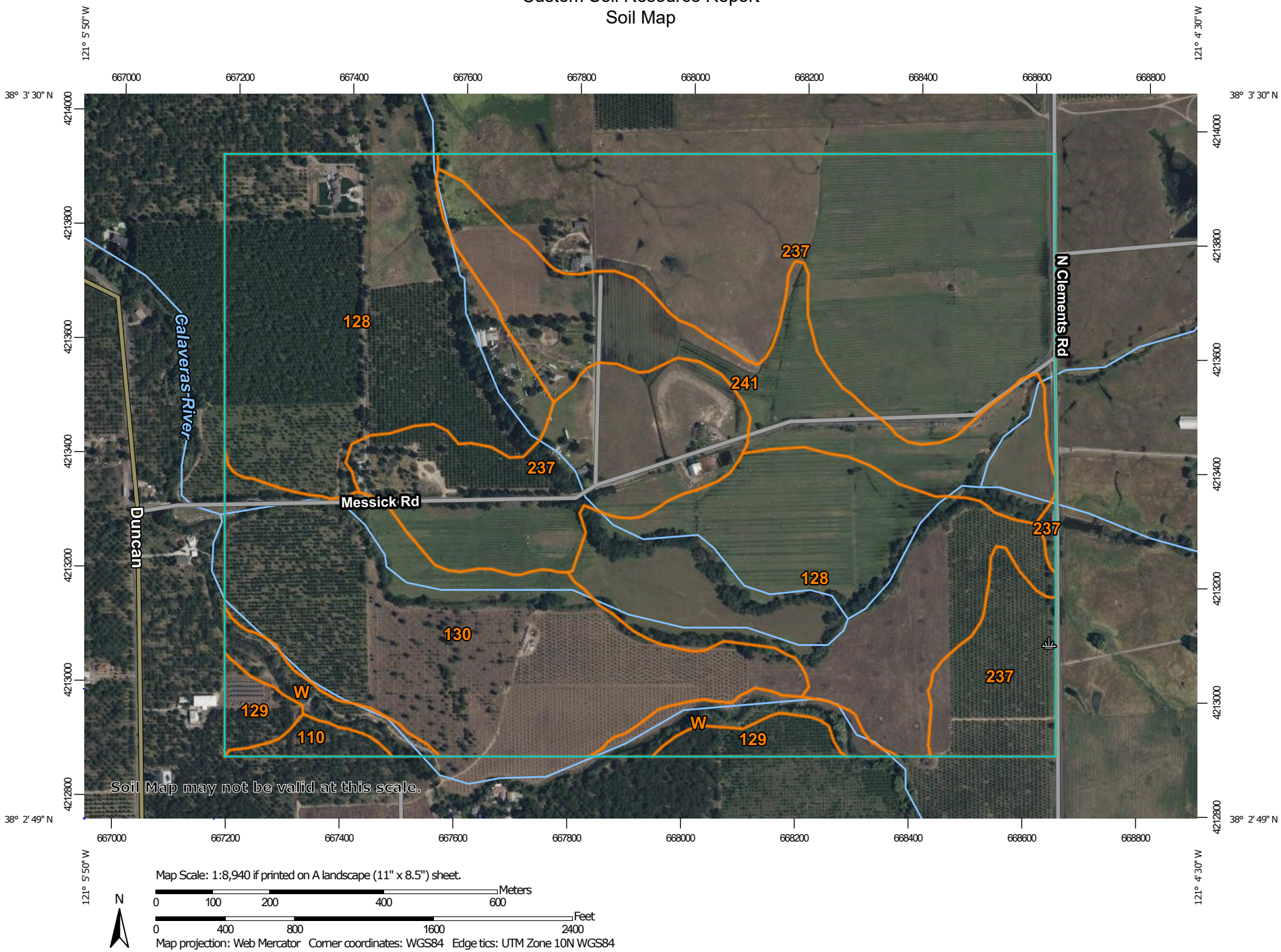
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: San Joaquin County, California
Survey Area Data: Version 15, Sep 9, 2021

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

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
110	Boggiano clay loam, 0 to 2 percent slopes	2.7	0.7%
128	Cogna loam, 0 to 2 percent slopes, overwash	122.6	32.1%
129	Cogna loam, 0 to 2 percent slopes	7.8	2.0%
130	Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17	62.9	16.5%
237	San Joaquin sandy loam, 2 to 5 percent slopes	135.4	35.4%
241	San Joaquin complex, 0 to 1 percent slopes	39.8	10.4%
W	Water	11.1	2.9%
Totals for Area of Interest		**382.3**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Joaquin County, California

110—Boggiano clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhr9
Elevation: 40 to 50 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Boggiano and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boggiano

Setting

Landform: Fan terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock sources

Typical profile

A - 0 to 23 inches: clay loam
Bk - 23 to 48 inches: loam
Bkqm - 48 to 60 inches: indurated

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Cogna

Percent of map unit: 3 percent

Hydric soil rating: No

Vignolo

Percent of map unit: 3 percent
Hydric soil rating: No

Archerdale

Percent of map unit: 3 percent
Hydric soil rating: No

Stockton

Percent of map unit: 2 percent
Hydric soil rating: No

Columbia

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: Yes

Hollenbeck

Percent of map unit: 2 percent
Hydric soil rating: No

128—Cogna loam, 0 to 2 percent slopes, overwash

Map Unit Setting

National map unit symbol: 2x8lf
Elevation: 100 to 210 feet
Mean annual precipitation: 18 to 19 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 325 to 350 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cogna and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cogna

Setting

Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 25 inches: loam
Bk - 25 to 38 inches: clay loam
C - 38 to 64 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Minor Components

Archerdale, clay loam

Percent of map unit: 6 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Nord, loam

Percent of map unit: 4 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Veritas, fine sandy loam

Percent of map unit: 3 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Honcut, sandy loam

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated

Hydric soil rating: No

Columbia, occasionally flooded

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

129—Cogna loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhrx
Elevation: 70 to 150 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cogna, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cogna, Loam

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 25 inches: loam
Bk - 25 to 38 inches: clay loam
C - 38 to 64 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None

Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Archerdale

Percent of map unit: 6 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Nord

Percent of map unit: 4 percent
Landform: Fan skirts
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Veritas

Percent of map unit: 3 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Columbia

Percent of map unit: 1 percent
Landform: Flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: Yes

Honcut

Percent of map unit: 1 percent
Landform: Flood plains
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

130—Columbia fine sandy loam, drained, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2xld1

Elevation: 10 to 130 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 318 to 328 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Columbia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbia

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 4 inches: fine sandy loam
A - 4 to 12 inches: fine sandy loam
C1 - 12 to 21 inches: silt loam
C2 - 21 to 26 inches: fine sandy loam
C3 - 26 to 34 inches: silt loam
C4 - 34 to 40 inches: loamy fine sand
C5 - 40 to 48 inches: fine sandy loam
C6 - 48 to 60 inches: loamy fine sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 72 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Minor Components

Guard

Percent of map unit: 3 percent

Landform: Rims
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Cogna

Percent of map unit: 2 percent
Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R018XI999CA - Miscellaneous - Cannot Be Correlated
Hydric soil rating: No

Grangeville

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Columbia, fine-textured overwash

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Merritt

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Dello

Percent of map unit: 2 percent
Landform: Flood plains on sloughs
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

Egbert

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)

Hydric soil rating: Yes

237—San Joaquin sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: hhwd
Elevation: 20 to 150 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 275 days
Farmland classification: Not prime farmland

Map Unit Composition

San joaquin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 10 inches: sandy loam
2Bt - 10 to 20 inches: clay
2Bqm - 20 to 60 inches: indurated

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XE104CA - LOAMY CLAYPAN
Hydric soil rating: No

Minor Components

Bruella
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, ponded
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

San joaquin
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: No

Jahant
Percent of map unit: 2 percent
Hydric soil rating: No

Rocklin
Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, on gentler slopes
Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, med textured with hardpan
Percent of map unit: 1 percent
Hydric soil rating: No

Redding
Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, steeper slopes
Percent of map unit: 1 percent
Hydric soil rating: No

241—San Joaquin complex, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: hhwj
Elevation: 20 to 110 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 275 days
Farmland classification: Not prime farmland

Map Unit Composition
San joaquin and similar soils: 45 percent

San joaquin, thick surface, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 16 inches: loam
2Bt - 16 to 26 inches: clay
2Bqm - 26 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of San Joaquin, Thick Surface

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitic rock sources

Typical profile

Ap - 0 to 12 inches: loam
Bt - 12 to 26 inches: sandy clay loam
2Bt - 26 to 35 inches: clay
2Bqm - 35 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Rocklin

Percent of map unit: 5 percent
Hydric soil rating: No

Exeter

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, altered soils

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, mod coarse textured with hardpan

Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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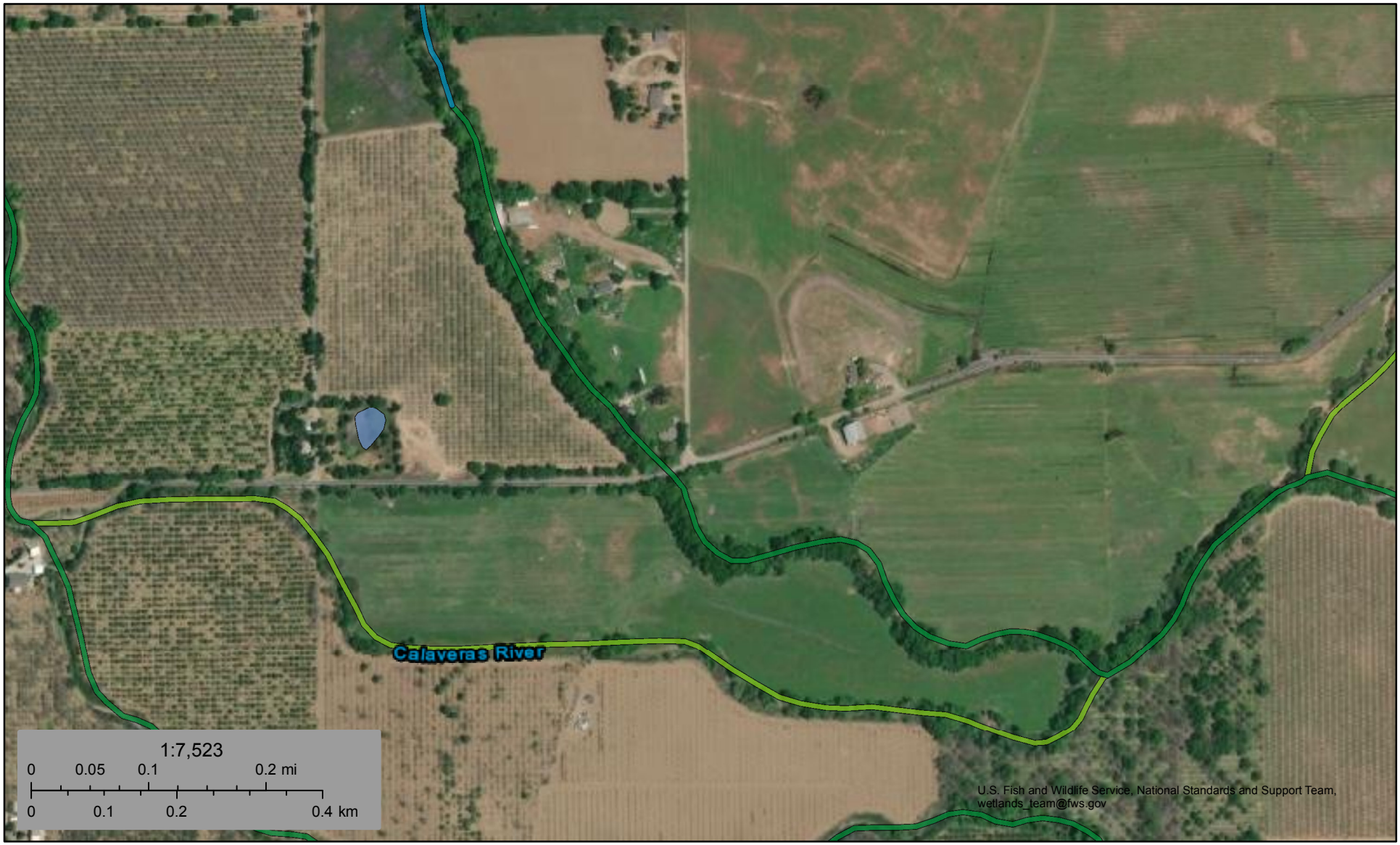
Attachment D.

USFWS National Wetlands Inventory Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

Messick Bridge Replacement Project



September 19, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

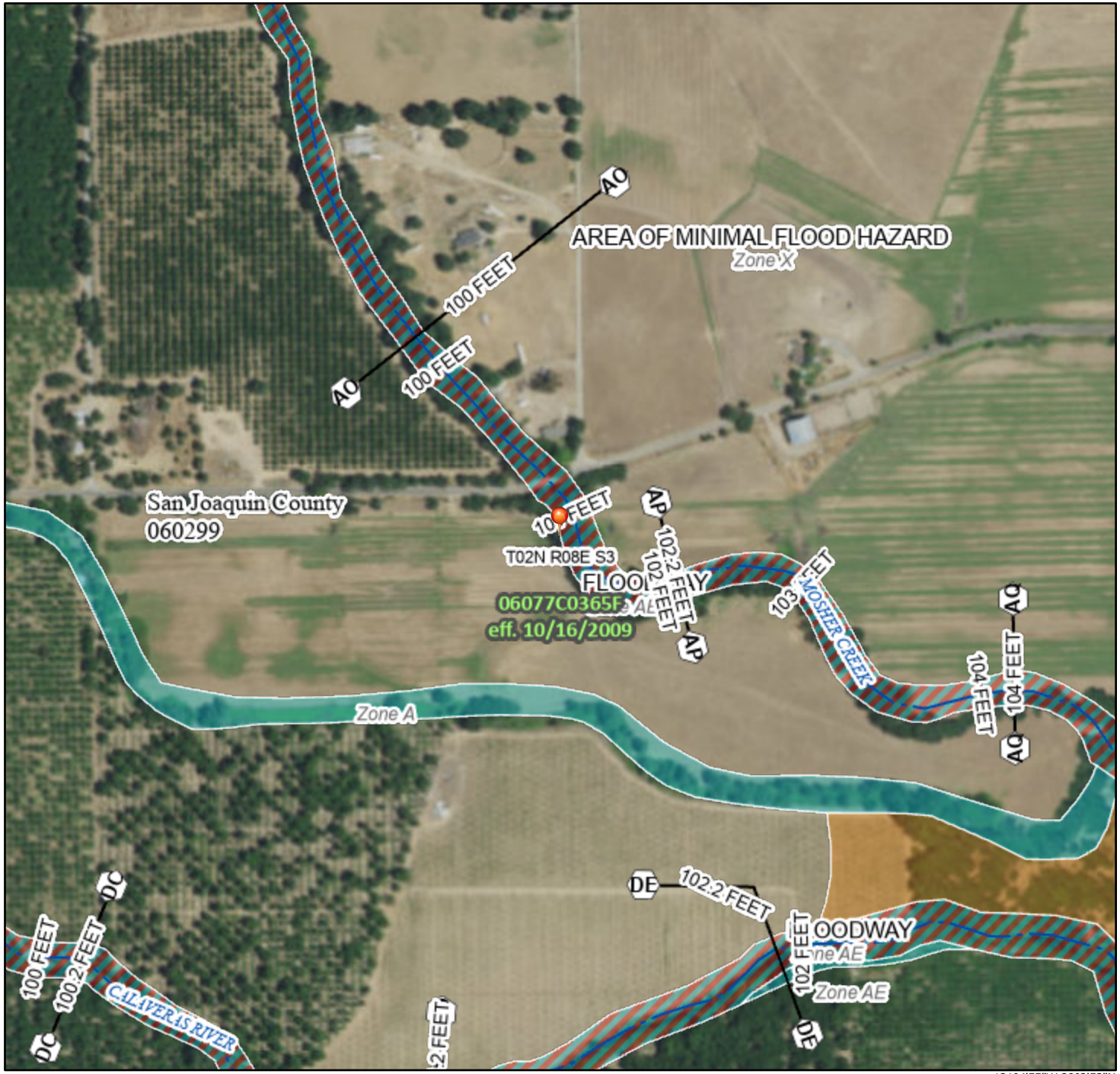
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Attachment E.
FEMA Flood Zone Maps

National Flood Hazard Layer FIRMette

FEMA

121°5'33"W 38°3'21"N



121°4'55"W 38°2'53"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/18/2022 at 12:46 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment F.
Site Photographs

Photograph 1: Standing on the bridge over Mosher Creek looking south along the creek.

Photograph 2: Standing on Messick Road looking south along the western edge of Mosher Creek into the agriculture field.

Photograph 3: Standing on Messick Road looking north along the western edge of Mosher Creek into the agriculture orchard.

Photograph 4: Standing at the western end of the bridge over Mosher Creek and looking east along Messick Road.

Photograph 5: Standing on the northern edge of Messick Road and looking at the north side of Mosher Creek.

Photograph 6: Standing in Mosher Creek looking west along the north side of the bridge.

Photograph 7: Standing in Mosher Creek looking towards Soil Pit 1 within the feature.

Attachment G.

Wetland Determination Data Forms

8-10-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Messick Bridge City/County: _____ Sampling Date: SP1

Applicant/Owner: _____ State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Oregon Ash Fraxinus Latifolia	35	Y	
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Bolboschoenus Americanus	50	Y	
2. CA Blackberry	20		
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

SOIL

Sampling Point: SP1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/1	70	5YR3/4	30	C	M	SCL	Silty Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: —

Depth (inches): —

Hydric Soil Present? Yes ____ No ____

Remarks: Significant organic matter (roots) in soil profile

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes X No ____ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 2"

Wetland Hydrology Present? Yes X No ____

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

Remarks: Pit performed at toe of slope in wet area approx. 5-6 feet from surface water


8ft CDFW banks this side
Flow
50 ft between Abutments at Bridge
Legend
100-ft buffer Survey Area
Approximate Project Boundary
Feature 1
5-6 ft fringe wetland for approx 40 feet
Swale
E Messick Rd
Ag Ditch
corps + CDFW
3 separate valley oaks
35-40 ft approx. width
18 x 20 ft wide
Access road with 2 x 36" concrete culverts, approx 30 ft off Bicycle
Google Earth
200 ft
N

Valley Oak

Blackberry

~~Tree of Heaven~~

Fig

~~CA Bay Laurel~~

Black walnut

Valley Oak walnut

Oregon Ash

Michael Baker
INTERNATIONAL

We Make a Difference

July 27, 2023 JN 185102

SAN JOAQUIN COUNTY PUBLIC WORKS
Attn: *Mr. Brian Newburg*
1810 East Hazelton Avenue
Stockton, California 95205

SUBJECT: Bat Habitat Suitability Assessment and Out-flight Survey for the Proposed Messick Bridge Replacement Project located in unincorporated San Joaquin County, California

Dear Mr. Newburg,

On behalf of San Joaquin County (County), Michael Baker International (Michael Baker) has prepared this technical letter report to document the results of a bat habitat suitability and out flight survey performed for the proposed Messick Bridge Replacement Project (project or project site). This reconnaissance-level bat habitat suitability assessment was conducted in May 2023 to locate any potential day or night bat-roosting sites and to evaluate the potential for bat foraging and roosting activity within the project site. The project limits and a 100-foot buffer, combined the survey area, was investigated. Prior to the field assessment, potential bat roosting sites were identified by examining aerial imagery for the presence of any mature trees, rock cliffs, boulders, and anthropogenic structures such as bridges, culverts, and buildings that may provide suitable bat-roosting habitat.

PROJECT LOCATION

The proposed project is generally located east of State Route 99 and north of the City of Linden, in San Joaquin County, California (refer to Figure 1, *Regional Vicinity*, Attachment A). The project is depicted in Section 3 of Township 2 north, Range 8 east on the United States Geological Survey's (USGS) *Linden, California* 7.5-minute quadrangle (refer to Figure 2, *Project Vicinity*, Attachment A). Specifically, the project site is located along Messick Road as it crosses over Mosher Creek at San Joaquin County Bridge No. 29C-274 (refer to Figure 3, *Project Site*, Attachment A).

PROJECT DESCRIPTION

The County proposes to replace the existing Messick Road Bridge (29C-274) that crosses Mosher Creek with a new bridge structure. The replacement bridge structure would be approximately 55 feet and 4 inches long and 29 feet and 6 inches wide. The new structure would accommodate one 10-foot lane of traffic in each east-west direction and would incorporate three-foot shoulders within County right-of-way. The

project would not be capacity-increasing (maintaining a two-lane configuration) and is not anticipated to include right-of-way acquisition. The profile of the proposed bridge would match the existing configuration to reduce impact to the structure approach areas. The number of spans associated with the bridge would be reduced from the current three-span configuration to a single span. The proposed structure type is a cast-in-place voided slab and would be supported by abutments at each bank of the creek founded on Cast in Steel Shell (CISS) or Cast in Drilled Hole (CIDH) piles. Wing walls would be constructed adjacent to the abutments and rock slope protection would be placed along the exterior of each wing wall. A new metal beam guard rail is proposed at all tie-in points to the bridge barriers to meet current American Association of State Highway and Transportation Officials (AASHTO) and Caltrans standards.

METHODOLOGY

Literature Review

Prior to conducting the field assessment, the potential for bat roosting habitat to occur within the survey area (depicted in Figure 3, *Project Site*, Attachment A) was reviewed by examining aerial and street level imagery for the presence of any mature trees, rock cliffs, boulders, and anthropogenic structures such as bridges, culverts, and buildings. The survey area's proximity to vegetated areas and water that may provide foraging habitat, which increases the desirability of a given structure as a potential roost site, were also noted during the preliminary desk-top review.

Twenty-five (25) bat species are known to occur in California (Harvey & Associates 2021). Those species whose known distribution range coincide with the survey area, roosting habitats preferred by these species, and their potential to occur within the survey area are presented below in Table 1. Although none of these species are listed under the federal or State Endangered Species Acts, several species have been designated by California Department of Fish and Wildlife (CDFW) as special-status (Brylski *et al*. 1998). A review of the California Natural Diversity Database (CNDDB) (CDFW 2023) for records of special-status bat species from within the USGS *Linden, CA* quadrangle was conducted to determine if any special-status bats have been recorded from the project vicinity; none were determined to have been recorded from the *Linden* quadrangle.

Table 1: Bat Species Expected to Occur within the Project Survey Area

Species Name (Scientific/Common)	Status*	Description of Roosting Habitat	Potential to Occur within the Survey Area
Antrozous pallidus pallid bat	SSC	Roosts in crevices in rocky outcrops and cliffs, caves, mines, hollows or cavities of large trees, and anthropogenic structures such as bridges and buildings. May also roost near the ground in rock piles (Rambaldini 2005).	**Moderate.** Marginally **s**uitable trees and structures for day roosting present. Likely forages in survey area.
Corynorhinus townsendii Townsend's big-eared bat	SSC	Predominantly uses mines, caves, and cave-like areas for roosting. There are some reports of this species utilizing buildings, bridges, rock crevices, and hollow trees as roost sites (Piaggio 2005).	**Low.** No suitable day roosting habitat in or immediately adjacent to survey area. May forage in survey area.
Eptesicus fuscus big brown bat	-	Roosts in trees, caves, and crevices in cliff faces and in anthropogenic structures such as bridges, buildings, and mines (Perkins 2005a).	**High.** Suitable trees and structures present for day roosting. Likely forages in survey area.

Table 1: Bat Species Expected to Occur within the Project Survey Area

Species Name (Scientific/Common)	Status*	Description of Roosting Habitat	Potential to Occur within the Survey Area
Lasionycteris noctivagans silver-haired bat	CNDDB	Found primarily in north temperate zone conifer and mixed conifer/hardwood forests. Roosts inside cavities or under loose bark of large-diameter snags. In winter and during seasonal migrations found in low elevation, xeric habitats (Perkins 2005b).	**Low.** Possible winter migrant. Marginally suitable trees present for day roosting; may forage in wooded riparian areas within survey area.
Lasiurus blossevillii western red bat	SSC	Roosts in the foliage of broad-leafed trees or shrubs within streams or fields, in orchards, and occasionally urban areas; commonly roosts in mature cottonwoods and sycamores. Also documented roosting in mature eucalyptus trees (Bolster 2005).	**Present.** Suitable large trees present for day roosting in riparian areas and citrus groves. Detected during out-flight survey.
Myotis californicus California myotis	-	Roosts in crevices within caves, mines, rocky hillsides, as well as under tree bark and in buildings (Bogan et al. 2005a).	**High.** Suitable trees present for day roosting. May forage in survey area.
Myotis evotis long-eared myotis	CNDDB	Roosts under exfoliating tree bark and in hollow trees, caves, mines, cliff crevices, and rocky outcrops; may also roost in buildings and bridges. Found in semiarid shrublands, sage, chaparral, and agricultural areas, but is usually associated with coniferous forests (Bogan et al. 2005b).	**Moderate.** Marginally suitable trees present for day roosting; may forage in survey area.
Myotis volans long-legged myotis	CNDDB	Roosts in abandoned buildings, cliff crevices, exfoliating tree bark, and hollows within snags; usually overwinters in caves and mine tunnels. Primarily found in coniferous forests, but also occurs seasonally (winter visitor) in riparian and desert habitats (Bogan et al. 2005c).	**Low.** Possible seasonal visitor only. Marginally suitable trees present for day roosting; may forage in wooded riparian areas within survey area.
Myotis yumanensis Yuma myotis	CNDDB	Roosts in crevices within bridges, buildings, culverts, cliff crevices, caves, mines, and trees, typically near a perennial water source (Bogan et al. 2005d).	**Present.** Occupied day roost observed on the existing bridge. Likely forages in Survey area.
Tadarida brasiliensis Mexican free-tailed bat	-	Roosts in caves, rock crevices on cliff faces, and anthropogenic structures such as mines, culverts, tunnels, and bridges (BCI 2005).	**Present.** Occupied day roost observed on the existing bridge.

***California Department of Fish and Wildlife**

SSC Species of Special Concern – any species, subspecies, or distinct population of fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following criteria:

- is extirpated from California or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

CNDDB Species for which there is a conservation concern that are tracked in the CNDDB.

Field Survey

A bat roosting habitat assessment and out-flight survey was conducted on May 3, 2023 by Michael Baker bat biologist John Parent to assess the survey area's suitability to provide bat habitat and to identify any potential maternity roosts and day or night-roosting sites. The survey was conducted between 3:15 p.m. and 5:00 p.m., with weather conditions of approximately 68º Fahrenheit with overcast skies. The bat survey was carried out in two parts as described below.

The initial survey consisted of a preliminary daytime habitat assessment. The biologist walked meandering transects throughout the entire survey area to assess the potential for the survey area to provide maternity roosting and day and night-roosting habitat by examining the on-site vegetation community, anthropogenic structures, and other physical features that may provide suitable roosting habitat, as well remaining alert for the presence of any bat sign (e.g., guano deposits, urine staining, or vocalizations). Suitable roosting habitat in structures, such as the existing bridge, is generally based upon the presence of crevices having widths ranging from 0.5 to 4.0 inches, with minimal exposure to elements above, but allowing entry from below or the side. Cavities of any size that provide shelter from wind and light may also be utilized by bats. The survey area's potential to provide foraging habitat for bats was also evaluated on the basis of vegetation composition, existence of adjacent foraging or roosting habitat, and/or the presence of a permanent water source.

After the habitat assessment, a bat out-flight and presence/absence survey was conducted by the bat biologist (Mr. Parent) and Michael Baker Project Manager Sofia Landis. This survey was supplemented by the use of acoustic monitoring equipment (i.e.SonoBat) to aid in identifying the bat species present and to determine an index of relative bat activity within the survey area. The out flight survey consisted of walking a meandering path in and around the survey area, focusing on the bridge structure and vegetation within the survey area, while operating acoustic equipment, and documenting observations which correlated with acoustic recordings made by the SonoBat. The survey began 30 minutes before sundown and continued for approximately 90 minutes after sundown, between roughly 7:30 and 9:30 PM. The SonoBat bat detection program, in conjunction with a Pettersson ultrasound microphone, was used to detect, record, and identify bat species within the study area. The SonoBat bat detection program allows for active collection and the autoclassification of data in real-time, which can aid in the identification of the bat species present. The SonoBat data collected during the survey are the basis of the results summarized below. Additionally, in order to estimate the population of day-roosting bats emerging from the existing bridge for the evening, the biologists positioned themselves at the most advantageous locations to count emerging bats. Refer to Attachment B, *Site Photographs*.

SURVEY LIMITATIONS

Some limitations are inherent in acoustic monitoring and in the analysis of acoustic data and include (but are not limited to) human bias and past experience in data interpretation, as well as the fact that some species are not equally detectable or may not be recorded at all. Some bats, such as Mexican free-tailed bats emit loud low-frequency echolocation calls that can be recorded from great distances and will be overrepresented

in the data, while "whispering" bats, such as Townsend's big-eared bats (*Corynorhinus townsendii*), emit faint calls that may not be recorded at all. In addition, not all call sequences are identifiable; different bat species may use similar types of echolocation calls, or the same species may use different types of echolocation calls based on the perceptual task and the immediate environment or habitat. Finally, the species composition and activity levels recorded during a single nighttime visit to a site may not necessarily reflect long-term patterns of use (e.g., seasonal and nightly use of an area).

Despite these limitations inherent in acoustic monitoring, the data gathered from the acoustic call identifications and concurrent field observations are useful in understanding the behavior and activities of the bats utilizing each site. In addition, exit counts performed by trained biologists, combined with crevice inspection, provide useful data with regard to estimating the number of bats roosting at a given location and ascertaining the presence of maternity or hibernation colonies. Efforts were made to evaluate use and presence of bats conservatively at each structure and within the adjacent riparian and upland habitats within the proposed project area.

RESULTS AND DISCUSSION

Day-roosting Mexican free-tailed bats (*Tadarida brasillensis*) and Yuma myotis (*Myotis yumanensis*) were observed beneath Messick Bridge during the field survey. Bats were concentrated within and along gaps within the wooden support structures of support piers 2 and 3 (as counted from the west) and were estimated to number approximately 150 – 200 individuals. Given the time of year, number of bats observed, migratory nature of these species, and survey limitations, it is likely that this colony is a maternity colony that is estimated to be up to 300 individuals at the height of maternity season. As a maternity colony it is afforded protections as a wildlife nursey. In addition to the direct observation of bats within the day-roost, bat sign in the form of urine staining and guano deposits (bat droppings) were observed beneath the roost, and throughout the underside of Messick Bridge.

In addition to Messick Bridge, several large trees within the riparian corridor running along Mosher Creek provide potentially suitable habitat for day-roosting cavity and foliar-roosting bats, and consists of a dense riparian overstory consisting primarily of valley oak (*Quercus lobata)*, northern California black walnut (*Juglans hindsii*), Oregon ash (*Fraxinus latifolia*), Himalayan blackberry (*Rubus armeniacus*), and American bulrush (*Scirpus americanus*). Roosting activity at these locations could not be confirmed during the assessment due to the nature of this roosting behavior; these species tend to roost singly, beneath leaves or bark, and may roost in a different location each night making them difficult to detect. The oaks, walnuts, and ash trees are suitable for the foliage-roosting western red bat (*Lasiurus blossevillii*; SSC), which were determined to be present within the survey area. Western red bats are strongly associated with established riparian habitats containing a variety of riparian tree and shrub species, as well as with orchards and agricultural areas, which occur immediately adjacent to the survey area. Many of these potential tree roosts occur in high-quality riparian habitat consisting of native shrub and herbaceous species, increasing the value of the surrounding area as foraging habitat and the likelihood that roosting occurs in the project vicinity.

Bats were also observed foraging within and around the survey area during the course of the surveys, as well as observed leaving the day roost beneath Messick Bridge. The surrounding riparian habitat, and the agricultural orchards and fields around the project site all serve as suitable foraging habitat for a variety of bat species.

CONCLUSIONS AND RECOMMENDATIONS

Foraging Habitat

Temporary impacts to bat foraging habitat, consisting of vegetated areas, are anticipated due to removal of vegetation within the project limits during project implementation. However, foraging habitat similar to that occurring within the survey area is abundant in the project vicinity and as a result, significant impacts to bat foraging habitat are not anticipated.

Anthropogenic Structures

Based on the field survey, Messick Bridge is known to contain bat roosting habitat. The presence of bats and their sign confirmed suitable day and night-roosting habitat is present in the existing bridge. With the presence of nearly 200 bats during the May 2023 field survey within the bridge, this structure may also serve as maternity roosting habitat. With removal of the existing bridge during project implementation, significant permanent impacts to presumed bat maternity and roosting habitat are anticipated to occur.

Permanent impacts to bat roosting habitat can be minimized by considering the design features present below for the new bridge:

- The configuration that supports roosting should be retained where feasible. Design of the replacement structures should consider use of a similar design when the roost is large, is unique, or supports a rare species.
- Replacement-incorporated cavity/crevice roosts and add-on roosts must be coordinated in advance with the structural engineer and incorporated into the project planning process.
- Critical issues as they relate to replacement roosts include access, ventilation, protection, search image, and thermal conditions. Crevice roosts should be replaced with crevices of similar area, and cavities should be replaced with cavities of similar parameters.

Tree Roosts

Bats are highly mobile species; therefore, there is a potential for the bats to occupy any tree containing suitable roosting habitat at any time. Disruption and disturbance of maternity colonies and winter hibernacula sites would be particularly significant, as disturbance of these roosting areas can lead to roost abandonment and/or mortality of the bats within that roost. Due to the nature of the project, which will include demolition and replacement of Messick Bridge, no substantial direct or indirect impacts to tree roosts are anticipated. If any direct impacts to any tree roosts are required, focused surveys of those locations should be conducted by a qualified bat biologist. If bats are found roosting in the subject trees during a survey, or are expected to roost at said locations, then impacts to roosting bats could be minimized

by scheduling disruptive activities, such as tree trimming or impacts at or near potential roosting sites, outside of the winter and spring maternity seasons to avoid impacts to hibernating bats and nonvolant (flightless) young.

The following avoidance and minimization measures (AMM) are recommended prior to and during project implementation to reduce significant impacts to roosting bats, and if determined present, maternity-roosting bats utilizing the existing bridge structure.

AMM-1 **Pre-Construction Bat Surveys.** The bridge and related structures where construction activities will occur, and where there is also potential for maternity roosting, a bat habitat assessment, as well as nighttime bat surveys should be performed by a qualified bat biologist during the peak period (June or July) of the bat maternity season (April 1–August 31) to confirm whether maternity colonies are present. These surveys should be performed by a qualified bat biologist at least 1 year in advance of construction so that appropriate site-specific and species-specific minimization measures can be developed in coordination with the California Department of Fish and Wildlife (CDFW) and a qualified bat biologist. Should it be determined that a day or maternity roost is present, then a Bat Mitigation Plan will be prepared that addresses any permanent impacts to bats as well as specific avoidance and minimization measures devised for bats within the survey area.

AMM-2 **Compensation for Direct Impacts to Bats.** Should a maternity roost be discovered, then compensation for permanent and direct impacts to bat-roosting habitat will be required. Resident bats will be humanely evicted/excluded, and alternate roosting habitat shall be provided to ensure no net loss of bat-roosting habitat. The design, numbers, and locations of these roost structures should be determined in consultation with a qualified bat biologist. This action shall be coordinated with the California Department of Transportation (Caltrans), the CDFW, and a qualified bat biologist to ensure that the installed habitat will provide adequate mitigation for impacts.

AMM-3 **Humane Eviction and Exclusion.** Direct impacts to bats and bat-roosting habitat are anticipated from the proposed project. Humane evictions and exclusions of roosting bats should be performed under the supervision of a qualified bat biologist in the fall (September or October) prior to any work activities that would result in direct impacts or direct mortality to roosting bats. This action will be performed in coordination with the CDFW. To avoid potential mortality of flightless juvenile bats, evictions and exclusions of bats cannot be performed during the maternity season (April 1–August 31). Winter months are also inappropriate for bat eviction because not all individuals in a roost will emerge on any given night. In addition, long-distance movements to other roost sites are more difficult during the winter when prey availability is scarce, resulting in high mortality rates of evicted bats.

AMM-4 The proponent will ensure that all construction work will take place during the day to the best extent feasible. Should evening and/or night construction be required, then the Project proponent will require that all lighting and noise be directed away from the surrounding habitat.

AMM-5 The proponent will ensure that the final design specifically minimizes vegetation removal within the project footprint where feasible. Prior to vegetation removal, the area will be surveyed by a qualified Bat biologist to minimize impacts to foliar roosting bats.

AMM-6 Prior to and during construction, the proponent will require the contractor to properly implement the designs and specifications for bat exclusion and habitat replacement structures included in the project specifications. The installation and maintenance of those structures will be monitored by the Designated Qualified Biologist.

AMM-7 **Post-Construction Surveys and Monitoring**. In order to ensure that impacts to bat-roosting habitat have been mitigated for successfully, post-construction surveys and monitoring will be required in order to determine that the artificial habitat adequately supports the same species- and number of bats relative to seasonal uses.

Please feel free to contact me at (714) 394-5646 or at john.parent@mbakerintl.com with any questions you may have regarding the information presented in this report.

Sincerely,

John R. Parent
Bat Biologist

Attachments:

A. Project Figures
B. Site Photographs
C. References

ATTACHMENT A

Project Figures

Source: ArcGIS Online, 2018

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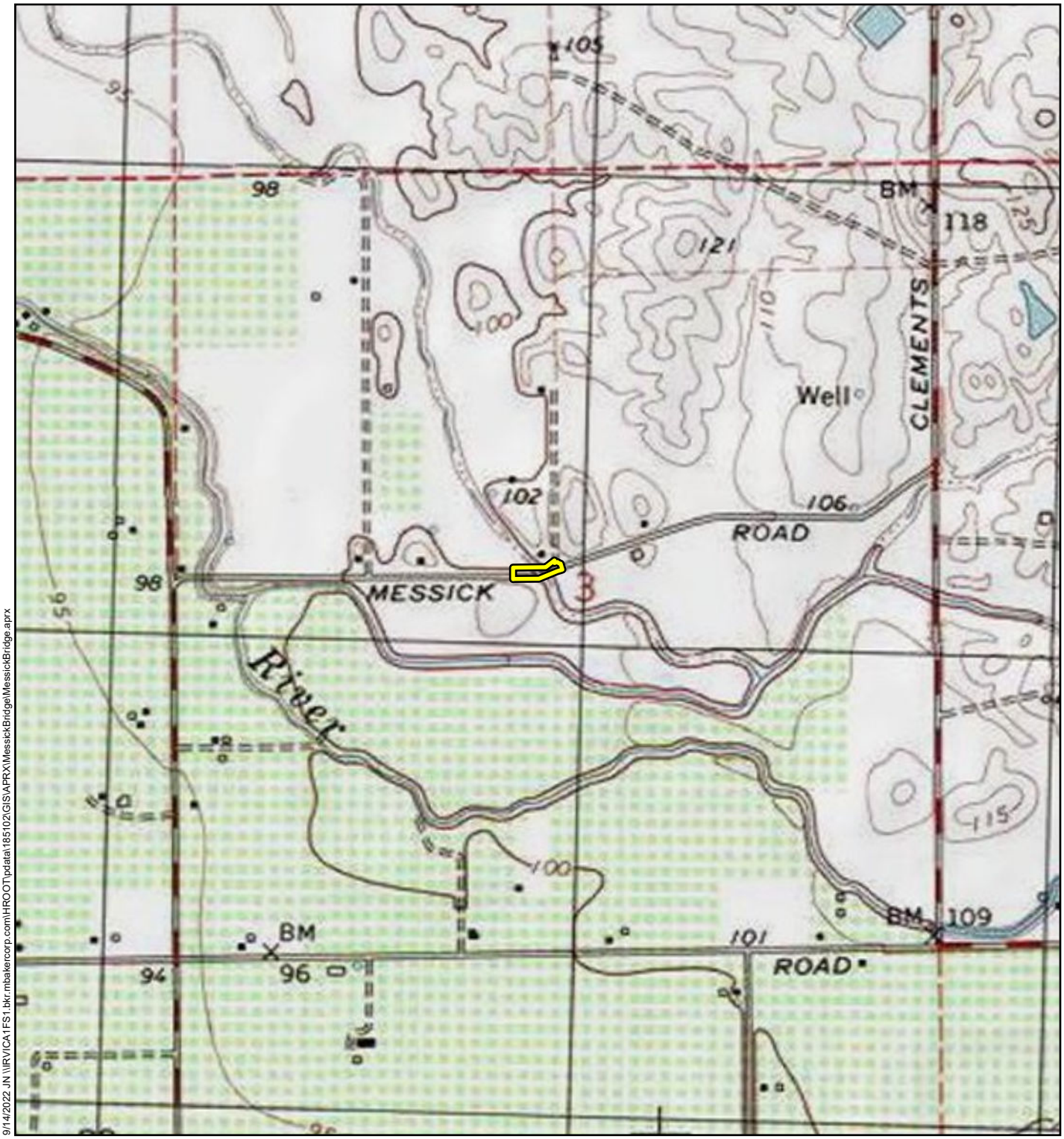
Michael Baker INTERNATIONAL

MESSICK BRIDGE PROJECT
BAT HABITAT ASSESSMENT REPORT

Regional Vicinity

Figure 1



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Legend

Project Boundary

Michael Baker INTERNATIONAL

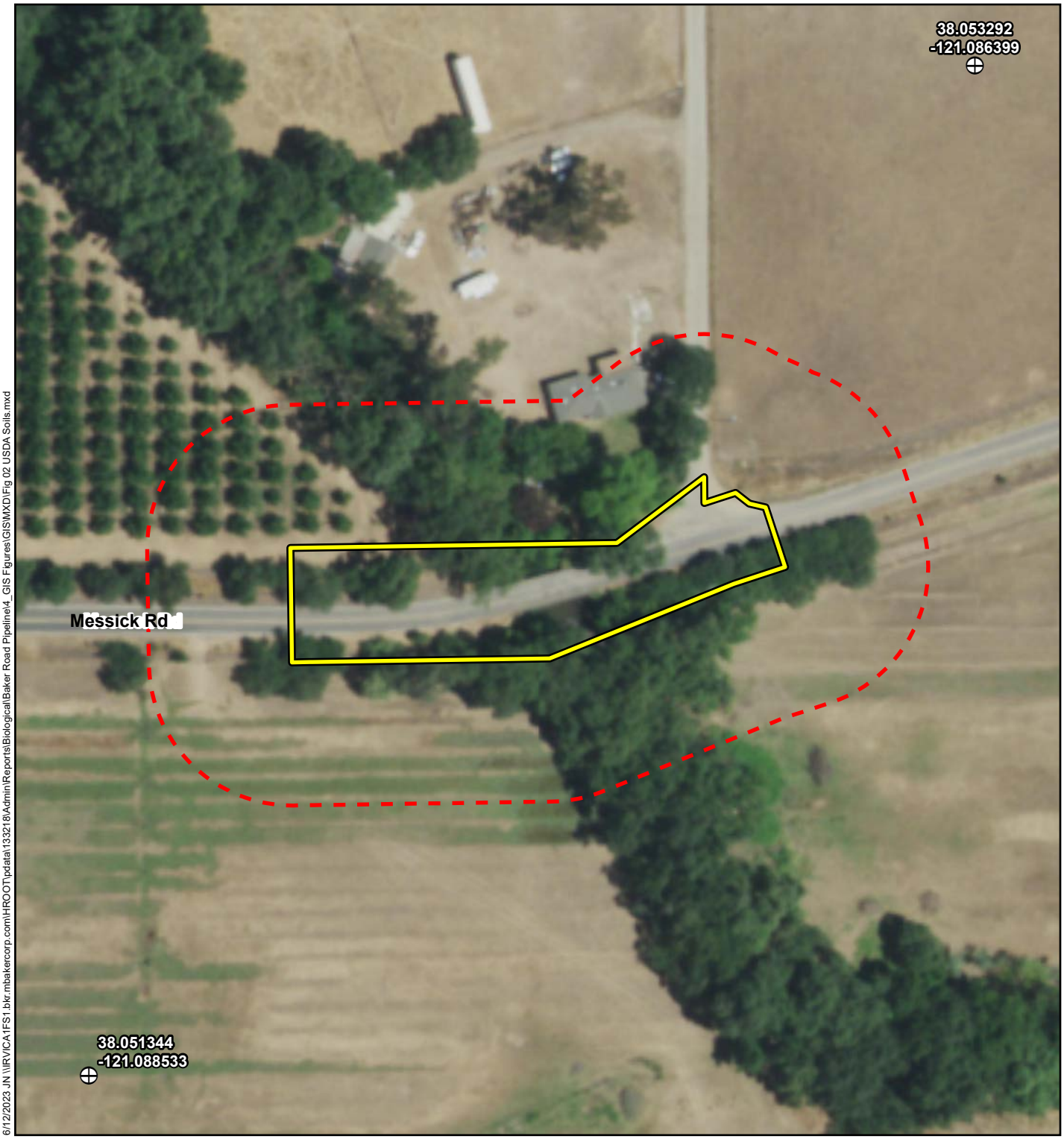
0 500 1,000 Feet

Source: ArcGIS Online, USGS 7.5-Minute topographic quadrangle maps: *Linden, California*

MESSICK BRIDGE PROJECT
BAT HABITAT ASSESSMENT REPORT

Project Vicinity

Figure 2



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Legend

- Project Boundary
- Survey Area
- Reference Point

Michael Baker INTERNATIONAL

0 50 100 Feet

Source: ArcGIS Online, NAIP Aerial (2019)

MESSICK BRIDGE PROJECT
BAT HABITAT ASSESSMENT REPORT

Project Site

Figure 3

ATTACHMENT B

Site Photographs

Photograph 1: Standing on the south side of the bridge over Mosher Creek looking north.

Photograph 2: Standing on the north side of the bridge over Mosher Creek looking south.

Photograph 3: Standing beneath the bridge over Mosher Creek looking towards the western abutment.

Photograph 4: Standing beneath the bridge over Mosher Creek looking towards the eastern abutment.

Photograph 5: Standing beneath the bridge over Mosher Creek looking along the underside of the bridge towards the east from the western end.

Photograph 6: Standing beneath the bridge over Mosher Creek looking along the underside of the bridge towards the east from the middle of the creek.

Photograph 7: Yuma myotis observed within a crevice in framing on the underside of the bridge over Mosher Creek.

Photograph 8: Crevice in which Yuma myotis were observed prior to exiting during the outflight survey. The bats were observed in the notch at the top of the beam pictured.

Photograph 9: Standing within the creek south of the bridge over Mosher Creek and looking south at the surrounding riparian habitat.

Photograph 10: Standing on the north side of the bridge over Mosher Creek and north at the surrounding riparian habitat.

ATTACHMENT C

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