# Hickman Road over the Tuolumne River Bridge Replacement Project BA



# **Biological Assessment**

Stanislaus County, California

10-STA-0-CR

Federal Project No. BRLS-5938(199)

March 2017



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# April 2017

Prepared By:

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Date: <u>4/3/17</u>

Jeff/Bray, Principal Biologist Nicole Clement, Assistant Biologist (916) 772-7450 LSA 201 Creekside Ridge Court, Suite 250 Roseville, CA 95678 Consultant

Alla

Submitted By:

Date: 4/7/17

Shoaib Ahrary, PE, Associate Civil Engineer (209) 525-4133 Stanislaus County Department of Public Works 1716 Morgan Road Modesto, CA 95358 Authorized Local Agency Representative

Recommended for Approval By:

Date: 4/26/17

Dominic Vitali, District Biologist (209) 948-7952 Caltrans District 10 Environmental 1976 E. Martin Luther King Jr. Boulevard Stockton CA, 95205

Approved By:

Date: 5/1/17

Julie Myrah, Chief (209) 948-7427 Caltrans District 10 Environmental 1976 E. Martin Luther King Jr. Boulevard Stockton CA, 95205 For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audio cassette, or on computer disk or individuals with sensory disabilities, this document can be made available in Braille, in large print, on audio cassette, or on computer, 1976 East Charter Way / East Dr. Martin Luther King Jr. Blvd., Stockton, CA 95205; (209) 948-7427 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

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# Acronym List

AASHTO	American Association of State Highway and Transportation Officials
ac	acre(s)
ACOE	Army Corps of Engineers
BMP	Best Management Practices
BSA	Biological Study Area
Caltrans	California Department of Transportation
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	Stanislaus County Department of Public Works
DGL	Diameter at Ground Level
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Environmentally Sensitive Area
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
ft	foot/feet
mi	mile(s)
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NOAA FISHERIES	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
OHWM	Ordinary High Water Mark
PCE	Primary Constituent Element
RC	Reinforced Concrete
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
VELB	Valley elderberry longhorn beetle
WPCP	Water Pollution Control Plan

# Glossary

**ACTION (1)**: Any highway construction, reconstruction, rehabilitation, repair, or improvement undertaken with Federal-aid highway funds or FHWA approval.

**ACTION (2)**: A highway or transit project proposed for FHWA or FTA funding. It also includes activities such as joint and multiple use permits, changes in access control, etc., which may or may not involve a commitment of federal funds (23 CFR 771.107(b)).

**ANADROMOUS**: Refers to fish that typically inhabit seas or lakes but ascend streams to spawn; for example, salmon.

**BEST MANAGEMENT PRACTICE (BMP)**: Any program, technology, process, operating method, measure, or device that controls, prevents, removes or reduces pollution.

**CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)**: State legislation enacted in 1970 and subsequently amended. It requires public agencies to regulate activities which may affect the quality of the environment so that major consideration is given to preventing damage to the environment.

**COFFERDAM**: Temporary watertight enclosure from which water is pumped-out to expose the bottom of a body of water and permit construction.

**DESIGN**: The type of facility identified by the project, e.g., freeway, expressway, arterial highway, grade-separated highway, reserved right-of-way rail transit, mixed-traffic rail transit, exclusive busway, etc.

**DESIGN SPEED**: A speed determined for design and correlation of the physical features of a highway that influence vehicle operation. It is the maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern.

**DIRECT EFFECTS**: Effects that are caused by and action and occur at the same time and place as the action.

**ENDANGERED**: Plant or animal species that are in danger of extinction throughout all or a significant portion of its range.

**EROSION**: The wearing away of the land surface by running water, wind, ice, or other geological agents.

FALSEWORK: A temporary frame to support a structure during construction.

**FEDERAL HIGHWAY ADMINISTRATION (FHWA)**: The Federal agency within the U.S. Department of Transportation responsible for administering the Federal-aid Highway Program and the Motor Carrier Safety Program.

FLOODPLAIN: Any land area subject to inundation by floodwaters from any source.

HABITAT: Place where a plant or animal lives.

**INDIRECT EFFECTS**: Effects that are caused by an action and occur later in time, or at another location, yet are reasonably foreseeable.

**LEAD AGENCY (CEQA)**: "Lead Agency" means the public agency which has primary responsibility for carrying out or approving a project which may have a significant effect on the environment and preparing the environmental document.

**LEAD AGENCY (NEPA):** The agency or agencies preparing or having taken primary responsibility for preparing the environmental impact statement.

**MIGRATION**: Intentional, directional, and usually seasonal movement of animals between two regions or habitats; involves departure and return of the same individual.

**MITIGATION BANK**: Large blocks of land preserved, restored, and enhanced for the purpose of consolidating mitigation and/or mitigating in advance for projects that take listed species.

**NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)**: Enacted in 1969, NEPA requires all federal agencies to consider environmental factors through a systematic interdisciplinary approach before committing to a course of action. The NEPA process is an overall framework for the environmental evaluation of federal actions.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT (NPDES)**: "...is required for facilities and activities that discharge waste into surface waters from a confined pipe or channel."

**REGULATORY AGENCY:** An agency that has jurisdiction by law.

**RESPONSIBLE AGENCY**: A "public agency, other than the lead agency which has responsibility for carrying out or approving a project" (PRC 21069). The CEQA Guidelines further explains the statutory definition by stating that a "responsible agency" includes "all public agencies other than the Lead Agency which have discretionary approval power over the project" (14 CCR 15381). State and local public agencies that have discretionary authority to issue permits, for example, fall into this category.

**REVEGETATION**: Planting of indigenous plants to replace natural vegetation that is damaged or removed as a result of highway construction projects or permit requirements.

**RIGHT-OF-WAY**: A general term denoting land, property, or interest therein, usually in a strip acquired for or devoted to transportation purposes.

RIPARIAN: Along banks of rivers and streams; riverbank forests are often called gallery forests.

**RIPRAP**: Randomly placed rock or concrete used to strengthen an embankment or protect it from erosion.

**RUDERAL**: Disturbed area with a prevalence of introduced weedy species. Ruderal habitats are associated with unpaved highway shoulders and weedy areas around and between dwellings and other structures.

**SCOUR**: Erosion caused by moving water.

**SETBACKS**: The minimum horizontal distance slopes shall be set back from site boundaries according to Chapter 70 of the Uniform Building Code. Also applies to the minimum horizontal distance required from faults to structures (see California Geological Survey Special Publication 42, pp. 27 and 29).

**SPECIAL-STATUS SPECIES**: Plant or animal species that are either (1) federally listed, proposed for or a candidate for listing as threatened or endangered; (2) bird species protected under the federal Migratory Bird Treaty Act; (3) protected under state endangered species laws and regulations, plant protection laws and regulations, Fish and Game codes, or species of special concern listings and policies; or (4) recognized by national, state, or local environmental organizations (e.g., California Native Plant Society).

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)**: A SWPPP is prepared to evaluate sources of discharges and activities that may affect storm water runoff, and implement measures or practices to reduce or prevent such discharges.

**THREATENED**: A species that is likely to become endangered in the foreseeable future in the absence of special protection.

**TURBIDITY**: Cloudiness (or a measure of the cloudiness in water due to the presence of suspended particulates).

**WATERSHED**: The area of land that drains into a specific waterbody.

**WATERS OF THE UNITED STATES**: As defined by the United States Army Corps of Engineers (USACE) in 33 CFR 328.3(a):

1. All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

2. All interstate waters including interstate wetlands;

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce, including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundment of waters otherwise defined as waters of the United States under this definition;

5. Tributaries of waters identified in paragraphs 1-4;

6. The territorial seas;

7. Wetlands adjacent to waters (waters that are not wetlands themselves) identified in paragraphs 1-6.

**WETLAND**: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

# **Executive Summary**

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

The Stanislaus County Department of Public Works (County), in cooperation with Caltrans and FHWA, proposes to replace Hickman Road Bridge over the Tuolumne River (Bridge No. 38C0004) in eastern Stanislaus County. The project is located 0.15 miles south of State Route (SR) 132 near the town of Waterford in northern Stanislaus County. The purpose of the project is to replace the existing structurally deficient and scour critical structure with a structure that would meet current standards and correct the existing deficiencies. The proposed structure would consist of a 750-foot (ft) long cast-in-place post-tensioned box girder with two 12-ft wide travel lanes and two 8-ft wide shoulders, Type 80 Concrete Barriers, and a 5-ft wide sidewalk placed along the upstream edge.

The Action Area, totaling 26.27 acres (ac), lies in the Central Valley, which is characterized by large, flat areas of agricultural farmland interspersed with urban population centers. Natural land in the Action Area is primarily comprised the Tuolumne River and its associated riparian corridor. Remaining habitat in the Action Area includes ruderal grassland, pasture, and developed area.

Species listed under the Federal Endangered Species Act (FESA) that could occur in the Action Area include Central Valley steelhead, (*Oncorhynchus mykiss irideus*) and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB); both species are listed as threatened under FESA. The proposed project may affect, but is not likely to adversely affect, Central Valley steelhead. The proposed project may affect, and is likely to adversely affect, VELB, and may adversely modify critical habitat for Central Valley steelhead.

No special status plants are expected to occur in the Action Area.

In addition, this project may adversely modify Chinook essential fish habitat (EFH) and will require consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). Although FESA-listed Chinook salmon species do not occur in the proposed

action area, the Tuolumne River does support a fall-run Chinook population which is a National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA FISHERIES) species of concern. The proposed project includes numerous avoidance and minimization measures for special status species and habitats to reduce the potential for adverse effects. However, permanent and temporary impacts to the natural communities that cannot be avoided are discussed below.

Construction related disturbance could result in temporary increases in turbidity and/or temperature within the live channel of the Tuolumne River, which could indirectly affect Central Valley steelhead. In-water work, consisting of placement of a water diversion, could result in temporary alteration of the channel and a temporary increase in flow velocity; these temporary changes would also indirectly affect this species. Construction would result in increased human activity - pedestrian and mechanical - that could result in disturbance near the live channel and directly affecting Central Valley. Vegetation removal near the live channel could decrease shade cover, thereby increasing water temperature and indirectly affecting Central Valley steelhead.

Central Valley steelhead critical habitat and the Central Valley fall-run Chinook salmon EFH will have permanent impacts totaling 0.005 ac and temporary impacts totaling 1.46 ac. Removal of the concrete pile caps of the existing bridge piers will result in an 0.027 ac of additional steelhead aquatic habitat, and an overall net increase of 0.022 ac to this habitat when considering the 0.005 ac of permanent impact. These impacts are expected offset through implementation of avoidance and minimization measures.

The VELB rely on elderberry shrubs which will be impacted by the proposed project. A total of 8 shrubs are within the project footprint; an additional 18 shrubs are located outside of the project footprint but are within 20 ft. Additionally, a total of 44 elderberry shrubs are located between 20 ft and 100 ft of the limit of ground disturbance which may result in potential indirect effects to VELB.

Compensation for project effects to VELB will occur through purchase of credits at an approved mitigation bank. Approximately 17 credits will be required, based on a one credit to 10 plantings ratio, rounded up to the nearest credit. With a current estimated credit cost of \$4,000, the total compensatory mitigation cost is expected to be approximately \$68,000. In addition, the 8 shrubs to be removed shall be transplanted to an approved mitigation bank, if feasible (i.e., the shrubs are good candidates for transplanting), at an approximate cost of \$15,000.

# Chapter 1. Introduction

# 1.1. Purpose and Need of the Proposed Action

The existing Hickman Road Bridge was last inspected by Caltrans in 2013 and has a sufficiency rating of 64.7 out of a possible score of 100, and is classified as Structurally Deficient. In addition, the existing bridge is deemed "Scour Critical" with a scour rating of 3, meaning that the local scour and predicted future degradation will continue to undermine the bridge supports.

The purpose of this project is to remove the existing structurally deficient structure and replace it with a new bridge designed to current structural and geometric standards while minimizing adverse impacts to the Tuolumne River and the surrounding riparian area.

# 1.2. Threatened, Endangered, Proposed Threatened or Proposed Endangered Species, Critical Habitat

An updated <u>species list</u> was provided by U.S. Fish and Wildlife Service (USFWS) and/or NOAA FISHERIES for the Action Area of this project (Appendix A). The following listed and proposed species and/or designated critical habitats (also shown in Table 1) were identified on the updated federal species list and were considered during this analysis:

- California tiger salamander (Ambystoma californiense) FT; ST
- California red-legged frog (Rana draytonii) FT, CSC
- Central Valley steelhead (Oncorhynchus mykiss irideus) FT
- Central Valley steelhead Critical Habitat
- Central Valley Fall-Run Chinook salmon EFH
- Colusa grass (Neostapfia colusana) FT; SE; List 1B
- Delta smelt (Hyopmesus transpacificus) FT
- Giant garter snake (Thamnophis gigas) FT, ST
- Greene's tructoria (Tuctoria greenei) FE; SR; List 1B
- Hairy orcutt grass (Oricutta pilosa) FE; SE; List 1B
- Hartweg's golden sunburst (Pseudobahia bahiifolia) FE; SE; List 1B
- Hoover's spurge (Euphorbia hooveri) FT; List 1B
- San Joaquin kit fox (Vulpes macrotis mutica) FE, ST
- San Joaquin Valley orcutt grass (Oricutta inaequalis) FT; SE; List 1B
- Valley elderberry longhorn beetle (Desmocerus californicus dimorphus) FT
- Vernal pool fairy shrimp (Branchinecta lynchi) FT
- Vernal pool tadpole shrimp (Lepidurus packardi) FE

Table 1 includes an evaluation of the specific habitats required by each species listed above, and the specific habitats and habitat conditions present in the Action Area. Based on this evaluation, it was determined whether the species had potential to occur in the Action Area. Special status species that were observed, or determined to potentially occur in the Action Area based on availability of suitable habitat or other factors such as plucking posts, scat, nests, dens, etc., are discussed more fully in Section 4 of this report. Species determined unlikely to occur in the Action Area based on these same factors are documented accordingly in the table and not discussed further in this report.

Common Name	Scientific Name	Status	Determination
California tiger salamander	Ambystoma californiense	FT; ST	No Effect
California red-legged frog	Rana draytonii	FT, CSC	No Effect
Central Valley steelhead	Oncorhynchus mykiss irideus	FT	May Affect, Not Likely to Adversely Affect
Central Valley steelhead Critical Habitat	_	_	May Adversely Modify
Central Valley Fall-Run Chinook salmon Essential Fish Habitat	_	_	May Adversely Modify
Colusa grass	Neostapfia colusana	FT; SE; List 1B	No Effect
Delta smelt	Hyopmesus transpacificus	FT	No Effect
Giant garter snake	Thamnophis gigas	FT, ST	No Effect
Greene's tructoria	Tuctoria greenei	FE; SR; List 1B	No Effect
Hairy orcutt grass	Oricutta pilosa	FE; SE; List 1B	No Effect
Hartweg's golden sunburst	Pseudobahia bahiifolia	FE; SE; List 1B	No Effect
Hoover's spurge	Euphorbia hooveri	FT; List 1B	No Effect

#### Table 1: Federally-Listed Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status	Determination
San Joaquin kit fox	Vulpes macrotis mutica	FE, ST	No Effect
San Joaquin Valley orcutt	Oricutta inaequalis	FT; SE; List	No Effect
grass		1B	
Valley elderberry longhorn	Desmocerus californicus	FT	May Affect, Likely
beetle	dimorphus		to Adversely Affect
Vernal pool fairy shrimp	Branchinecta lynchi	FT	No Effect
Vernal pool tadpole shrimp	Lepidurus packardi	FE	No Effect

Only two of the listed species, Central Valley steelhead and Valley elderberry longhorn beetle, have a determination of May Affect. The Proposed Action May Affect, but is Not Likely to Adversely Affect, Central Valley steelhead; the Proposed Action May Affect and is Likely to Adversely Affect VELB. All other species have a No Effect determination.

#### Candidate Species

There are no federal candidate species that may be affected by the Proposed Action.

#### Critical Habitat

The Proposed Action addressed within this document falls within critical habitat for Central Valley steelhead.

# **1.3. Consultation History**

No consultation had been undertaken at the time this document was prepared.

# 1.4. Description of Proposed Action

#### 1.4.1. Project Summary

#### 1.4.1.1. EXISTING BRIDGE

Constructed in 1946, the existing Hickman Road Bridge over the Tuolumne River is a reinforced concrete (RC) box girder on RC solid pier walls and RC wing abutments supported by steel piles. The bridge is 652.9 ft long, 33.5 ft wide, and within the existing 175 to 200 ft public right-of-way. The curb-to-curb width is 27.9 ft, with two 12 ft wide travel lanes and two 2 ft wide shoulders. The bridge is classified as Structurally Deficient and Scour Critical. The Caltrans bridge inspection report identifies major deficiencies:

- The bridge deck has 12 to 16 inch long transverse and pattern cracks throughout.
- There are several edge spalls or up to 3 ft long by 4 inch wide by 1 inch deep along the right curb in Span 4.
- There is an erosion gulley of approximately 3 ft wide by 5 ft deep along the right slope embankment at Abutment 8 due to roadway runoff.
- The scour protection at Piers 4 and 5 has deteriorated in front and at the upstream right side of the footing with up to 6 ft wide sections missing.
- Settlement and displacement has been observed at Piers 4 and 5.

The existing bridge is approximately 60 feet above the low flow water surface elevation of the Tuolumne River.

#### 1.4.1.2. REPLACEMENT BRIDGE

The replacement bridge will consist of a 750-ft long cast-in-place post-tensioned box girder with two 12-ft wide travel lanes and two 8-ft wide shoulders, Type 80 Concrete Barriers (1 ft, 9 inch wide – each), and one 5-ft wide sidewalk placed along the upstream edge. The replacement bridge will be constructed immediately upstream of the existing structure, in order to keep the existing road and bridge open to public traffic during construction. The new upstream road alignment will transition and connect back to the existing Hickman Road alignment using a design speed of 45 mph.

The new bridge would be the same height as the existing bridge but 15 ft wider.

#### 1.4.1.3. UTILITY RELOCATION

Several utilities run through the project site, including a PG&E gas pipe and AT&T telecommunication lines which are mounted to the bridge on the upstream and downstream face respectively. There are no overhead utilities located within the project area. All existing utilities will be relocated onto the new bridge without the need of a temporary relocation.

#### 1.4.1.4. RIGHT-OF-WAY

Construction of the new bridge on the proposed upstream alignment will require additional permanent right-of-way takes. In addition, temporary construction easements will be required to construct the project.

#### 1.4.1.5. DETOUR ROUTE

The new bridge will be constructed on a new alignment adjacent to the existing bridge. Traffic will be able to use the existing bridge to cross Tuolumne River during construction of the replacement bridge. The existing bridge will be demolished upon completion of the new bridge construction.

#### 1.4.1.6. DEMOLITION AND CONSTRUCTION STAGING

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications modified to meet environmental permit requirements. Following removal of the existing bridge superstructure, the piers and abutments will be removed. The piers are founded on pile caps supported by driven steel H piles. The pile caps will be removed from the river channel and banks.

All concrete and other debris resulting from the demolition of the existing bridge will be removed from the project site and disposed of by the contractor. The construction contractor will prepare a bridge demolition plan.

As is standard with all roadway projects, the contractor will be required to install temporary Best Management Practices (BMPs) to control any runoff or erosion from the project site, into the surrounding waterways. These temporary BMPs will be installed prior to any construction operations and will be in place for the duration of the contract. The removal of these BMPs will be the final operation, along with the project site cleanup.

#### 1.4.1.7. DEWATERING/IN-WATER WORK

One set of pier columns on the replacement bridge and two of the pier walls on the existing bridge are directly adjacent to the current low flow channel. This channel changes each year, so any given year these features could be inside or outside of the water in the low flow channel.

A water diversion shall be installed in the Tuolumne River in order to enclose the construction area and reduce sedimentation during work in or adjacent to the channel. The water diversion will consist of corrugated metal pipe culverts, sheet pile cofferdam, K-rail with visquine, or an equivalent method.

Trestles will also be constructed over the low flow channel to access the work in the middle of the river channel. The trestles will span over the low flow channel but the supports will be close to the edges.

All in-water work associated with the proposed project shall be conducted between June 1 and October 31.

#### 1.4.1.8. CONSTRUCTION ACTIVITIES

Construction will consist of the following activities (in the order listed):

- Removing trees, clearing, and grubbing to accommodate the new bridge structure and road approach work
- Excavating for the new bridge foundations (maximum of 80 to 100 feet deep)
- Constructing the new bridge and road approaches, including excavating for and placing asphalt concrete.
- Removing the existing bridge

• Placing erosion control native grass seeds and mulch

Table 2 provides a description of the type of equipment likely to be used during the construction of the proposed action.

Equipment	Construction Purpose
drill rig	construction of drilled shaft foundations
backhoe	soil manipulation + drainage work
bobcat	fill distribution
bulldozer / loader	earthwork construction + clearing and grubbing
Crane	falsework girder placement and drilled shaft foundation installation
dump truck	fill material delivery
excavator	soil manipulation
front-end loader	dirt or gravel manipulation
grader	ground leveling
haul truck	earthwork construction + clearing and grubbing
roller / compactor	earthwork construction
truck with seed sprayer	landscaping
water truck	earthwork construction + dust control

**Table 2: Construction Equipment** 

#### 1.4.1.9. CONSTRUCTION SEQUENCE/SCHEDULE AND TIMING

Construction is currently scheduled to start in 2018 and take approximately 8 months to complete.

Design plans are included in Appendix B.

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#### 1.4.2. Authorities and Discretion

Stanislaus County Department of Public Works proposes to replace the existing bridge on Hickman Road over the Tuolumne River (Bridge No. 38C0004). The project is funded primarily by the federal-aid Highway Bridge Program administered by the FHWA through Caltrans Local Assistance. The replacement bridge will meet current applicable County, American Association of State Highway and Transportation Officials (AASHTO), and Caltrans design criteria and standards.

#### 1.4.3. Project Location

The project is located along Hickman Road where it crosses the Tuolumne River approximately 0.15 mile (mi) south of SR 132 near the town of Waterford in northern Stanislaus County, California (Figures 1–3). The project is located in the 7.5-Minute USGS Waterford quadrangle, T3S R11E 33 NE. The general setting is rural with recreational uses associated with the Tuolumne River.

#### 1.4.4. Define Action Area

The Action Area, totaling 26.27 ac, consists of the project footprint, access and staging areas, and lands beyond the footprint to the edge of the road right-of-way that could directly or indirectly affected by the Proposed Action (Figure 4). Potential noise, visual, and water quality effects were considered during development of the Action Area.

#### 1.4.5. Conservation Measures

#### 1.4.5.1. PROJECT DESIGN MODIFICATIONS FOR AVOIDANCE AND MINIMIZATION

#### Central Valley Steelhead/Critical Habitat

- All in-water work associated with the proposed project shall be conducted between June 1 and October 31, which is within the seasonal work window recommended by NOAA FISHERIES to minimize effects to steelhead.
- 2. Brightly colored Environmentally Sensitive Area (ESA) fencing shall be placed along the limits of work to prevent unnecessary encroachment into the Tuolumne River. Fencing shall be maintained in good condition for the duration of construction activities.
- 3. Prior to any work in the live river channel, a water diversion shall be installed in the Tuolumne River in order to enclose the construction area and reduce sedimentation during work in the channel. The water diversion will consist of corrugated metal pipe culverts, sheet pile cofferdam, K-rail with visquine, or an equivalent method. Dewatering the work area will minimize the potential water quality impacts (e.g., siltation) and ensure that no salmonids are directly affected by project construction activities (i.e., no work will be conducted in flowing water).



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# Caltrans

FEET



Hickman Road Bridge (38C0004) Replacement Project Stanislaus County, California 10-STA-0-CR Federal Project No. BRLS-5938 (199)

Federal Project No. BRLS-5938 (199) Project Vicinity on Aerial Base

SOURCE: NAIP Aerial Imagery (7/2014)

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- 6. During removal of any part of the existing bridge, a tarp or other approved method shall be used below the bridge to prevent debris from falling into the Tuolumne River. The tarp (or equivalent) will be left in place until removal is complete.
- 7. All construction shall be conducted during daylight hours to allow for an extended period of inactivity (i.e., night time) for salmonids, if present, to migrate undisturbed through the Action Area.

#### VELB

1. Initially, conceptual upstream and downstream alignments were under consideration for the proposed bridge replacement. The conceptual downstream alignment was ultimately rejected as it would have resulted in substantially more impacts to elderberry shrubs.

# 1.4.5.2. SPECIES SPECIFIC AVOIDANCE/MINIMIZATION MEASURES OR BMPS FROM THE USFWS/NOAA FISHERIES BA CHECKLISTS

#### Central Valley Steelhead/Critical Habitat

- Measures consistent with the current Caltrans' Construction Site BMPs Manual (including the Storm Water Pollution Prevention Plan [SWPPP] and Water Pollution Control Plan [WPCP] Manuals) shall be implemented to minimize effects to steelhead during construction.
- 2. A SWPPP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction Activities (on file with the Central Valley RWQCB). The SWPPP will contain a Spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials. Implementation of the SWPPP will minimize effects to salmonids and their habitat from potential spills associated with construction activities.
- 3. Any emergent or submergent aquatic vegetation shall be retained. Other vegetation shall be retained as practical within the constraints of the proposed project. Where vegetation removal is necessary, rapidly sprouting plants, such as willows, shall be cut off at the ground line and the root systems left intact.

#### VELB

 A qualified biologist shall survey for elderberry shrubs within 100 ft of the project footprint. Data to be collected shall include the number of stems 1 inch or greater (measured at ground level), signs of VELB exit holes, type of habitat where the shrub is located, and associated native species.

- 2. Once the final limits of construction are set, highly visible ESA fencing shall be installed at the 20-ft setback around the perimeter of each elderberry plant or plant group. ESA fencing shall consist of highly visible construction fencing or equivalent, and shall be maintained until construction is complete. A qualified biologist shall be present during the installation of fencing.
- 3. Signs shall be erected every 50 ft along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable from a distance of 20 ft, and shall be maintained for the duration of construction.
- 4. Employee awareness training shall be provided for the contractor to emphasize the need to avoid damaging elderberry plants and the possible penalties for not complying with these requirements.
- 5. A qualified biologist shall periodically inspect the construction area to assure that the project is not affecting any elderberry plants.
- 6. No insecticides, herbicides, fertilizers, or other chemicals that might harm the VELB or elderberry plants shall be used within 100 ft of any elderberry plant with stems measuring greater than 1-inch in diameter.
- 7. Any damage occurring within the elderberry buffer areas (within 100 ft of the elderberry plants) shall be restored and revegetated with appropriate native species at the completion of construction.
- 8. If a minimum 20-ft setback from the dripline of all elderberry plants in the Action Area cannot be maintained for all project activities, USFWS shall be contacted and additional mitigation measures may be required.

#### 1.4.6. Interrelated and Interdependent Actions

There are no interrelated or interdependent actions associated with the Proposed Action.

# 2.1. Summary

#### 2.1.1. Field Surveys

The studies required to fully document the environmental conditions of the Action Area included a general biological survey, vegetation mapping, delineation of jurisdictional waters, tree inventory, elderberry shrub inventory, and a bat habitat assessment.

#### 2.1.1.1. GENERAL BIOLOGICAL SURVEY/VEGETATION MAPPING

A general biological survey of the Action Area was conducted by LSA biologists Mike Trueblood and Dayna Winchell on May 15, 2015 and by LSA biologists Laura Belt and Stefan de Barros on September 16, 2015. Naturally occurring vegetation in the Action Area was classified according to A Manual of California Vegetation, Second Edition (Sawyer, Keeler-Wolf, and Evans 2008), as appropriate. Managed or developed areas were classified according to their dominant plant species. The names of the plant species are consistent with The Jepson Manual: Vascular Plants of California, Second Edition (Baldwin, B. G., et. al., editors 2012).

Wildlife species observed during the survey were identified and recorded. During this survey, the Action Area was also surveyed for potential habitat to support special status plants.

#### 2.1.1.2. POTENTIAL JURISDICTIONAL WATERS DETERMINATION AND DELINEATION

Potential waters of the U.S. in the Action Area were delineated in accordance with the 1987 Army Corps of Engineers (ACOE) Wetland Delineation Manual, the September 2008 Regional Supplement - Arid West Region, and the ACOE Regulatory Guidance Letter 08-02 regarding Preliminary Jurisdictional Delineations (June 2008).

LSA biologists Mike Trueblood and Stefan de Barros conducted a preliminary jurisdictional delineation on December 8, 2015. The field investigation was conducted in accordance with the ACOE Routine Approach for small areas (i.e., equal to or less than 5 ac), as described in the 1987 Manual. Data was collected for soils, hydrology, and vegetation where necessary to determine the extent of potential waters of the U.S. Data sheets and photopoint photos are included in Appendix C.

#### 2.1.1.3. TREE INVENTORY

LSA biologists Laura Belt and Stefan de Barros conducted an inventory of native trees on September 16, 2015. Data was collected on species, diameter at breast height, and any notable characteristics. The results of the tree survey are included in Appendix D.

#### 2.1.1.4. VALLEY ELDERBERRY LONGHORN BEETLE INVENTORY SURVEY

LSA biologists Mike Trueblood and Dayna Winchell conducted inventory surveys for blue elderberry (*Sambucus nigra* ssp. *caerulea*) on May 15, 2015, in accordance with the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle, dated July 1999. All lands within the Action Area and a 100 ft radius of proposed ground disturbance were surveyed for presence of blue elderberry, the obligate host plant for the VELB. An inventory list of all elderberry shrubs identified in the Action Area is included in Appendix E.

#### 2.1.1.5. BAT HABITAT ASSESSMENT

Wildlife Research Associates bat specialist Greg Tatarian conducted a daytime habitat assessment and bridge survey on November 5, 2015. The survey involved the use of a high-powered spotlight, spotting scope and binoculars to survey the existing bridge structure. There results of the survey and recommended avoidance measures are included in Appendix F.

# 2.2. Personnel and Survey Dates

Table 3 below provides a summary of the field surveys performed for this project.

Date	Task	Personnel
May 15, 2015	general site survey, valley elderberry beetle survey	M. Trueblood, D. Winchell
September 16, 2015	general site survey, tree survey	L. Belt, S. de Barros
November 5, 2015	bat habitat assessment	G. Tatarian <sup>1</sup>
December 8, 2015	jurisdictional waters delineation	M. Trueblood, S. de Barros

#### Table 3: Survey Dates and Personnel

Note: <sup>1</sup> G. Tatarian works for Wildlife Research Associates. Mr. Tatarian conducted the bat habitat assessment as a subconsultant to LSA.

# 2.3. Resource Agency Coordination and Professional Contacts

There has been no agency coordination for this project to date. Current species lists were obtained from USFWS and NOAA FISHERIES for the Action Area of this project, as described in Section 1.2. The lists are included in Appendix A.

# 2.4. Limitations and Assumptions that may Influence Results

No problems or limitations were encountered during the research, fieldwork, or document preparation that influenced the results presented herein.

# Chapter 3. Environmental Baseline

The Environmental Baseline describes the setting in which the project will occur and includes the effects from past and present Federal, State, private actions; proposed Federal projects with completed section 7 consultations; and contemporaneous State or private actions with consultation in progress. The environmental baseline also considers non-permitted actions (i.e., other nonfederal actions occurring within the Action Area).

# 3.1. Habitat Conditions in the Action Area

#### 3.1.1. Natural Communities

Three natural communities were identified in the Action Area: valley oak woodland, red willow thicket, and riverine. Natural communities comprise approximately 9.37 ac of the Action Area, as summarized in Table 4 and shown in Figure 5. Other vegetation communities in the Action Area included ruderal grassland and pasture, totaling 13.54 ac.

Community/Land Use	Acres
Natural Communities	
Red Willow Thicket	3.31
Valley Oak Woodland	3.53
Riverine	2.53
Subtotal Natural Communities	9.37
Other Vegetation Communities	
Ruderal Grassland	11.7
Pasture	1.84
Subtotal Other Vegetation Communities	13.54
Land Uses	
Developed	3.34
Subtotal Developed	3.34
Total	26.27

Table 4: Vegetation Communities and Land Uses in the Action Area (acres)





SOURCE: Basemap - Microsoft Aerial Imagery (2/2012); Mapping - LSA (2015)

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#### 3.1.1.1. RED WILLOW THICKET

In the Action Area, red willow thickets, totaling 3.31 ac, are located on both banks of the Tuolumne River and on an interior gravel bar. This community is dominated by red willow (*Salix laevigata*) and black willow (*Salix gooddingii*). Other representative trees observed included Fremont's cottonwood (*Populus fremontii*), narrow-leaved willow (*Salix exigua*), and tree tobacco (*Nicotiana glauca*). The understory is dominated by Himalayan blackberry (*Rubus armeniacus*).

Blue elderberry, host plant to the VELB, occurs in this community within the Action Area; however, elderberry are most common in the valley oak woodland community.

#### 3.1.1.2. VALLEY OAK WOODLAND

In the Action Area, valley oak woodlands, totaling 3.53 ac, occur parallel to the red willow thickets on the north bank of the Tuolumne River and in two areas on the south bank. valley oak (*Quercus lobata*) is the dominant overstory species. The understory consists of Italian rye grass (*Festuca perennis*), bicolored lupine (*Lupinus bicolor*), blue wild rye (*Elymus glaucus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*).

The majority of the elderberry shrubs within the Action Area occur within the valley oak woodland community; although several elderberry shrubs also occur within the red willow thicket community.

#### 3.1.1.3. RIVERINE

This 2.53 ac area consists of the Tuolumne River and braided low flow channels associated with the river. Also included in the community are gravel bars that are present during low-flow periods in late spring, summer, and fall.

Central Valley steelhead can occur in the reach of the Tuolumne River within the Action Area during all life stages (e.g., spawning, migration, rearing). However, no suitable spawning habitat for steelhead was observed in the Action Area. The reach of the Tuolumne River within the Action Area is within designated critical habitat for Central Valley steelhead. Primary Constituents Elements (PCEs) for this species in the subject reach of the Tuolumne River include the water column for movement, protection, foraging, the river bottom for spawning and incubation, and the adjacent riparian zone which provides shade (i.e., thermoregulation) and is used by fry and juveniles for rearing.

#### 3.1.2. Other Vegetation Communities

Other vegetation communities within the Action Area, totaling 16.9 ac, include ruderal grassland, pasture and developed land.

#### 3.1.2.1. RUDERAL GRASSLAND

The ruderal grassland community is likely a former natural community that has been subject to regular disturbance and now has a large component of ruderal species. The vegetation that grows in these areas are those able to quickly colonize and can grow in poor soil and soil that is often disturbed. In the Action Area, ruderal grassland, totaling 11.7 ac, occurs primarily along the roadway shoulders and north of the river bordering the Tuolumne River riparian corridor. The dominant plants are rye grass, bicolored lupine, blue wild rye, and ripgut brome. Yellow star thistle (*Centaurea solstitialis*) is also present.

#### 3.1.2.2. PASTURE

Pastures, totaling 1.84 ac, occur on the southeastern side of the Action Area and are bisected from east to west by valley oak woodland. The dominant plants in the community are rye grass, blue wild rye, ripgut brome, soft chess, and mustard (*Brassica* sp.).

#### 3.1.2.3. DEVELOPED

There are two types of development within the Action Area (paved roadway and a tree nursery), totaling 3.34 ac. The nursery is located the southwestern portion of the Action Area and Hickman Road bisects the Action Area from north to south. There is another private road in the northeast corner of the Action Area.

# 3.2. Describe the Action Area

As noted in Section 1.4.4, the Action Area totals 26.27 ac and consists of the project footprint, access and staging areas, and lands beyond the footprint to the edge of the road right-of-way that could directly or indirectly affected by the Proposed Action. Potential noise, visual, and water quality effects were considered during development of the Action Area.

Natural communities and other vegetation types in the Action Area are described above in Section 3.1.1 and 3.1.2.

#### 3.2.1. Common Animal Species

The sections below discuss animal species observed and/or likely to occur within the Action Area.

#### 3.2.1.1. MAMMALS

Two mammal species, California ground squirrel (*Otospermophilus beecheyi*) and unknown bat species (sign), were observed in the Action Area during field surveys. Other common species likely to occur in the Action Area include coyote (*Canis latrans*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and opossum (*Didelphis virginiana*).

#### 3.2.1.2. BIRDS

Birds observed in the Action Area during field surveys include red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), turkey vulture

(*Cathartes aura*), northern mockingbird (*Mimus polyglottos*), yellow-billed magpie (*Pica nuttalli*), European starling, (*Sturnus vulgaris*), black phoebe (*Sayornis nigricans*), Black-and-white warbler (*Mniotilta varia*), killdeer (*Charadrius vociferus*), western scrub jay (*Aphelocoma californica*), California quail (*Callipepla californica*), Anna's hummingbird (*Calypte anna*), belted kingfisher (*Megaceryle alcyon*), mourning dove (*Zenaida macroura*), and cliff swallow (*Petrochelidon pyrrhonota*).

Other common bird species that may occur in the Action Area include: American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), Brewer's blackbird (*Euphagus cyanocephalus*); rock pigeon (*Columba livia*), California towhee (*Melozone crissalis*), spotted towhee (*P. maculatus*), Bewick's wren (*Thryomanes bewickii*), white breasted nuthatch (*Sitta carolinensis*), wild turkey (*Meleagris gallopavo*), northern flicker (*Colaptes auratus*), American robin (*Turdus migratorius*), bushtit (*Psaltriparus minimus*), and wrentit (*Chamaea fasciata*).

#### 3.2.1.3. AMPHIBIANS AND REPTILES

No amphibians were observed during the field surveys. Common amphibian species likely to occur in the Action Area include the American bullfrog (*Lithobates catesbeianus*), Pacific chorus frog (*Pseudacris sierra*), and California toad (*Anaxyrus boreashalophilus*).

No reptile species were observed during the field surveys. The Action Area provides marginal habitat for the Pacific pond turtle (*Emys marmorata*), in some of the backwater ponded areas. Other reptile species likely to occur in the Action Area include western terrestrial garter snake (*Thamnophis elegans*), western rattlesnake (*Crotalus oreganus*), common gopher snake (*Pituophis catenifer*), and western fence lizard (*Sceloporus occidentalis*).

#### 3.2.2. Migration Corridors

Wildlife movement corridors are linear habitats that function to connect two or more areas of significant wildlife habitat. These corridors may function on a local level as links between small habitat patches (e.g., streams in urban settings) or may provide critical connections between regionally significant habitats (e.g., deer movement corridors). Wildlife corridors typically include vegetation and topography that facilitate the movements of wild animals from one area of suitable habitat to another in order to fulfill foraging, breeding, and territorial needs. These corridors often provide cover and protection from predators that may be lacking in surrounding habitats. Wildlife corridors generally include riparian zones and similar linear expanses of contiguous habitat.

The Tuolumne River originates east of the Action Area in Yosemite National Park within the Sierra Nevada Mountains. It joins the San Joaquin River approximately 22.75 mi west of the Action Area. The Tuolumne River, and its tributaries, and associated riparian habitat provide a network of suitable migration corridors for wildlife. The river itself serves as a migration route and established movement corridor for aquatic and terrestrial wildlife through the Action Area between the mountains to the east and the valley to the west.

#### 3.2.3. Aquatic Resources

Aquatic resources in the Action Area consist of the Tuolumne River, its associated wetlands and riparian corridor, and two ephemeral roadside ditches adjacent to the Hickman Road Bridge southern approach. The Tuolumne River is a perennial waterway that originates from the Yosemite Valley in the high sierras, meanders through the Central Valley, and eventually confluences with San Joaquin River. The reach of the Tuolumne River within the Action Area is low gradient with steep banks consisting of a series of riffles, glides, and small pools approximately 12-48 inches deep. The bed is composed of river rock, cobble, and sand. The ordinary high water mark (OHWM) ranges from approximately 220-390 ft within the Action Area; the low-flow channel (in November 2015) was approximately 50 ft wide. Indicators used to determine the limits of the OHWM included scour marks along the incised banks of channel, watermarks and vegetative drift deposits, and general topography of the area. The subject reach of the river supports a well-established riparian corridor.

Potential wetlands in the Action Area are limited to the Tuolumne River above the low-flow channel and consist of fringe wetlands on both banks of the live channel and a few scattered ponded areas (Figure 6). These satellite ponded areas inundate during high river flows and appear to remain ponded perennially. Vegetation within the wetland areas are dominated by a variety of hydrophytic species including knotweed (*Polygonum* sp.), water hyacinth (*Eichhornia crassipes*), spikerush (*Eleocharis* sp), duckweed (*Lemna minor*), western vervain (*Verbena lasiostachys*), red willow, and narrow-leaved willow. Other representative hydrophytic species include water primrose (*Ludwigia peploides*), Bermuda grass (*Cynodon datylon*), dallis grass (*Paspalum dilatatum*), buttonbush (*Cephalanthus occidentalis*), pennyroyal (*Mentha pulegium*), nutsedge (*Cyperus eragrostis*), cocklebur (*Xanthium strumarium*), and black willow. Therefore, these areas meet the ACOE vegetation criterion for wetlands.





#### LEGEND

0

C Action Area

Data Point

**5** CDFW Waters - (9.09 ac)



Wetlands - (1.28 ac)

Non-wetland Waters - (4.35 ac)

Hickman Road Bridge (38C0004) Replacement Project Stanislaus County, California 10-STA-0-CR Federal Project No. BRLS-5938 (199)

Potential Jurisdictional Waters

SOURCE: Basemap - Microsoft Aerial Imagery (2/2012); Mapping - LSA (2015) I:\DHG1401\GIS\Reports\BA\BA\_fig6\_juris\_water.mxd (1/3/2017)

# **Chapter 4.** Federally-Listed/Proposed Species and Designated Critical Habitat within Action Area

# 4.1. Central Valley Steelhead

### 4.1.1. Discussion of Species

The Central Valley steelhead (*Oncorhynchus mykiss irideus*) Distinct Population Segment (DPS) was listed as threatened on March 19, 1998, and reaffirmed on January 5, 2005. Critical habitat was designated for this species on September 2, 2005, and includes the Sacramento and San Joaquin Rivers. The Central Valley DPS includes all natural-occurring steelhead in the Sacramento River and San Joaquin River watersheds.

All steelhead stocks in the Central Valley of California are winter-run steelhead (McEwan and Jackson 1996). Most Central Valley steelhead spawning migration occurs between from October through February and spawning occurs from December to April. Newly emerged fry move to shallow stream margins to escape high water velocities and predation (Barnhart 1986). Juveniles emigrate episodically from natal streams during fall, winter and spring high flows.

#### 4.1.2. Survey Results

Central Valley steelhead can occur in the reach of the Tuolumne River within the Action Area during all life stages (e.g., spawning, migration, rearing). However, no suitable spawning habitat for steelhead was observed in the Action Area. Although the reach of the Tuolumne River in the Action Area is not suitable spawning habitat for Central Valley steelhead, this reach does provide suitable migration habitat for adults spawning upstream of the project and out-migrating smolts. The Action Area also provides suitable rearing habitat for juveniles and fry.

There are no CNDDB records for Central Valley steelhead within 10 mi of the Action Area.

## 4.1.3. Status of Designated Critical Habitat in the Action Area for Species

The reach of the Tuolumne River within the Action Area is within designated critical habitat for Central Valley steelhead. PCEs for this species in the subject reach of the Tuolumne River include the water column for movement, protection, foraging, the river bottom for spawning and incubation, and the adjacent riparian zone which provides shade (i.e., thermoregulation) and is used by fry and juveniles for rearing.

# 4.2. Valley Elderberry Longhorn Beetle

## 4.2.1. Discussion of Species

The VELB is federally listed as threatened. The only designated critical habitat is located approximately 75 mi north along the American River in Sacramento County.

This species ranges from Redding to Madera County, into the western foothills of the Sierra Nevada, and into the eastern foothills of the Coast Range. Critical habitat was designated for VELB in Sacramento County; essential habitat for the recovery of the species also exists in Solano County. The VELB is typically found in mature riparian vegetation associated with large river systems, but its range extends from the valley floor to 3,000 ft elevation.

The beetle is dependent on its host plant, blue elderberry, which is a common component of Central Valley riparian forests. VELB larvae feed and mature within elderberry stems 1 in or larger in diameter, and exit prior to metamorphosing to the pupal stage. The life cycle takes 1 to 2 years to complete. The beetle spends most of its life in the larval stage, living within the stems of an elderberry plant. Adults emerge from late March through June, about the same time the elderberry produces flowers. The larval beetles cannot be detected within the stems, and the adult stage is short-lived; generally the only evidence of beetle use is the exit holes in the stems of sufficient size anywhere within the beetle's known range.

#### 4.2.2. Survey Results

There are eight records of VELB within 12 mi of the Action Area. The closest record, dated 1991, is located 2.4 mi southwest of the Action Area. The most recent record, dated 2009, is approximately 10.8 mi north of the Action Area.

Surveys for elderberry shrubs were conducted on May 15, 2015. The survey area included the Action Area and lands outside of the Action Area within 100 ft of the limits of work. A total of 82 elderberry shrubs with at least one stem that measured 1 in in diameter at ground level (DGL) were identified in the survey area. For each shrub, data was collected for stem size, height, and dripline diameter; it was also determined if the shrub was located in a riparian area and if exit holes were present. A table summarizing the data collected for each shrub is included in Appendix E.

**4.2.3.** Status of Designated Critical Habitat in the Action Area for Species Designated critical habitat for VELB is not present in the Action Area.
# Chapter 5. Effects of the Project on the Action Area

#### 5.1. Deconstruct Action

#### 5.1.1. Construction Scenario (Summary)

#### 5.1.1.1. REPLACEMENT BRIDGE

The replacement bridge will consist of a 750-ft long cast-in-place post-tensioned box girder with two 12-ft wide travel lanes and two 8-ft wide shoulders, Type 80 Concrete Barriers (1 ft, 9 inch wide – each), and one 5-ft wide sidewalk placed along the upstream edge. The replacement bridge will be constructed immediately upstream of the existing structure, in order to keep the existing road and bridge open to public traffic during construction. The new upstream road alignment will transition and connect back to the existing Hickman Road alignment using a design speed of 45 mph.

The new bridge would be the same height as the existing bridge but 15 ft wider.

#### 5.1.1.2. UTILITY RELOCATION

Several utilities run through the project site, including a PG&E gas pipe and AT&T telecommunication lines which are mounted to the bridge on the upstream and downstream face respectively. There are no overhead utilities located within the project area. All existing utilities will be relocated onto the new bridge without the need of a temporary relocation.

#### 5.1.1.3. RIGHT-OF-WAY

Construction of the new bridge on the proposed upstream alignment will require additional permanent right-of-way takes. In addition, temporary construction easements will be required to construct the project.

#### 5.1.1.4. DETOUR ROUTE

The new bridge will be constructed on a new alignment adjacent to the existing bridge. Traffic will be able to use the existing bridge to cross Tuolumne River during construction of the replacement bridge. The existing bridge will be demolished upon completion of the new bridge construction.

#### 5.1.1.5. DEMOLITION AND CONSTRUCTION STAGING

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications modified to meet environmental permit requirements. Following removal of the existing bridge superstructure, the piers and abutments will be removed. The piers are founded on pile caps supported by driven steel H piles. The pile caps will be removed from the river channel and banks.

All concrete and other debris resulting from the demolition of the existing bridge will be removed from the project site and disposed of by the contractor. The construction contractor will prepare a bridge demolition plan.

As is standard with all roadway projects, the contractor will be required to install temporary BMPs to control any runoff or erosion from the project site, into the surrounding waterways. These temporary BMPs will be installed prior to any construction operations and will be in place for the duration of the contract. The removal of these BMPs will be the final operation, along with the project site cleanup.

#### 5.1.1.6. DEWATERING/IN-WATER WORK

One set of pier columns on the replacement bridge and two of the pier walls on the existing bridge are directly adjacent to the current low flow channel. This channel changes each year, so any given year these features could be inside or outside of the water in the low flow channel.

A water diversion shall be installed in the Tuolumne River in order to enclose the construction area and reduce sedimentation during work in or adjacent to the channel. The water diversion will consist of corrugated metal pipe culverts, sheet pile cofferdam, K-rail with visquine, or an equivalent method.

Trestles will also be constructed over the low flow channel to access the work in the middle of the river channel. The trestles will span over the low flow channel but the supports will be close to the edges.

#### 5.1.1.7. IMPACTS DISCUSSION

#### Central Valley Steelhead/Critical Habitat

The project will result in permanent impacts to potential steelhead aquatic habitat in the Tuolumne River, totaling 0.005 ac, and temporary impacts, totaling 1.46 ac, as a result of pier installation of the new bridge and construction access; however, removal of the concrete pile caps for the existing bridge piers will result in an 0.027 ac of additional steelhead aquatic habitat, and an overall net increase of 0.022 ac to this habitat when considering the 0.005 ac of permanent impact.

The new bridge will be 15 ft wider than the old bridge and result in approximately 0.15 acre more shading (calculated using the distance between Piers 2 and 5). However, due to the height of the bridge (approximately 60 feet above the low water surface elevation) there is virtually no change to the vegetation beneath the existing bridge and the same is expected to be true when the new bridge is constructed. Consequently, the additional shading from the new bridge is considered a negligible impact to CV steelhead and designated critical habitat.

#### Valley Elderberry Longhorn Beetle

Per the VELB Guidelines, complete avoidance of VELB consists of no ground disturbing activities within 100 feet of the drip line of any elderberry shrub providing suitable VELB habitat (stems greater than 1 inch DGL). Ground disturbance within 100 ft of the dripline of elderberry shrubs providing suitable habitat may affect VELB.

Of the 82 elderberry shrubs inventoried, a total of 70 elderberry shrubs with stems greater than 1 inch DGL were located within 100 ft of ground disturbance activities.

A total of 26 elderberry shrubs were inventoried within the limits of ground disturbance activities or within 20 ft. Eight of the 26 shrubs are within the project footprint (i.e., at the embankment for the new south bridge abutment, within the work area for the new bridge columns, and within the alignment of the temporary work trestle); these shrubs contain a total of 25 stems greater than 1 inch DGL. The remaining 18 shrubs are located outside of the project footprint but are within 20 ft, which may result in a temporary direct adverse effect to VELB; these shrubs contain a total of 137 stems greater than 1 inch DGL.

Additionally, a total of 44 elderberry shrubs are located between 20 ft and 100 ft of the limit of ground disturbance (resulting in potential indirect effects to VELB); these shrubs contain a total of 182 stems greater than 1 inch DGL. A summary of the affected elderberry shrubs is provided below in Table 5 and shown in Figure 7. The elderberry shrub inventory is attached in Appendix E.

	Number of Shrubs	DGL Stems 1" - 3"	DGL Stems 3" - 5"	DGL Stems > 5"	Total Stems Impacted
Elderberry Shrubs to be Removed	8	17	3	5	25
Located within 20 Feet of Ground Disturbance Activities	18	100	23	14	137
Located within 20 and 100 Feet of Ground Disturbance Activities	44	157	19	6	182
Total	70	274	45	25	

#### 5.1.2. Sequencing and Schedule

#### 5.1.2.1. CONSTRUCTION SEQUENCE/SCHEDULE AND TIMING

Construction is currently scheduled to start in 2018 and take approximately 8 months to complete.

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#### LEGEND Caltrans Biological Study Area **▲** (>) Permanent Impact Area Temporary Impact Area 20-Foot Buffer FEET 100-Foot Buffer

ESA Fencing

- Elderberry Shrubs to be Removed 8 Count
- Elderberry Shrubs within 20 Feet 18 Count
- Elderberry Shrubs Between 20 and 100 Feet 44 Count
- Elderberry Shrubs Beyond 100 Feet 12 Count

Hickman Road Bridge (38C0004) Replacement Project Stanislaus County, California 10-STA-0-CR Federal Project No. BRLO-5938 (199) Elderberry Locations and ESA Fencing

SOURCE: Basemap - Microsoft Aerial Imagery (2/2012); Mapping - LSA Associates, Inc. (2016) I:\DHG1401\GIS\Reports\NES\NES\_fig7\_velb\_loc.mxd (6/14/2016)

#### 5.1.2.2. CONSTRUCTION ACTIVITIES

Construction will consist of the following activities (in the order listed):

- Removing trees, clearing, and grubbing to accommodate the new bridge structure and road approach work
- Excavating for the new bridge foundations (maximum of 80 to 100 ft deep)
- Constructing the new bridge and road approaches, including excavating for and placing asphalt concrete
- Removing the existing bridge
- Placing erosion control native grass seeds and mulch

#### 5.1.2.3. IN-WATER WORK WINDOW

All in-water work associated with the proposed project shall be conducted between June 1 and October 31.

#### 5.1.3. Stressors from Project Actions

Stressors induce an adverse response in an organism by any physical, chemical, or biological alteration of the environment (or resource) that can lead to a response from the individual. Stressors can act directly on an individual, or indirectly through effects to a resource.

#### 5.1.3.1. CENTRAL VALLEY STEELHEAD

Construction related disturbance could result in temporary increases in turbidity and/or temperature within the live channel of the Tuolumne River. In-water work, consisting of placement of a water diversion, could result in temporary alteration of the channel and a temporary increase in flow velocity. Construction would result in increased human activity - pedestrian and mechanical – adjacent to the live channel of the Tuolumne River. Lastly, construction will result in the removal of riparian vegetation in the Tuolumne River corridor.

#### 5.1.3.2. CENTRAL VALLEY STEELHEAD CRITICAL HABITAT

Stressors for Central Valley steelhead critical habitat would be the same as those for Central Valley steelhead, as described in Section 5.1.3.1., with the exception of increased human activity which would not be a stressor for Central Valley steelhead critical habitat.

#### 5.1.3.3. VALLEY ELDERBERRY LONGHORN BEETLE

Construction would result in the removal of riparian and other native vegetation in the Tuolumne River corridor, including elderberry shrubs.

#### 5.1.4. Project Operation and Maintenance

Operation and maintenance activities for the new bridge would be minimal and primarily limited to the new bridge and approach roadway sections. With the exception of monitoring and/or remediation of erosion control measures, it is not expected that these activities would require work beneath the bridge or within any native vegetation or in the Tuolumne River.

Consequently, operation and maintenance activities for the Proposed Action will not substantially affect Central Valley steelhead, Central Valley steelhead critical habitat, or VELB.

### 5.2. 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.

#### 5.2.1.1. CENTRAL VALLEY STEELHEAD

Central Valley steelhead could experience increases in turbidity and/or temperature within the live channel of the Tuolumne River as a result of construction related disturbance and vegetation removal. This species could also experience a temporary alteration of the channel and a temporary increase in flow velocity as a result of placement of a water diversion. Construction activities could also expose Central Valley steelhead to increased human activity.

#### 5.2.1.2. CENTRAL VALLEY STEELHEAD CRITICAL HABITAT

The live channel of the Tuolumne River could experience increases in turbidity and/or temperature as a result of construction related disturbance and vegetation removal. The channel could also experience a temporary alteration and a temporary increase in flow velocity as a result of placement of a water diversion. Riparian vegetation associated with the reach of the Tuolumne River in the Action Area would be reduced through vegetation removal and potentially disturbed through increased human activity during construction.

#### 5.2.1.3. VALLEY ELDERBERRY LONGHORN BEETLE

VELB could be harmed or killed if present in elderberry shrubs when they are removed. VELB would experience less habitat availability due to the removal of elderberry shrubs.

#### 5.3. Response to the Exposure

#### 5.3.1.1. CENTRAL VALLEY STEELHEAD

Construction related disturbance could result in temporary increases in turbidity and/or temperature within the live channel of the Tuolumne River, which could indirectly affect Central Valley steelhead by decreasing the ability to feed and respire. In-water work, consisting of placement of a water diversion, could result in temporary alteration of the channel and a temporary increase in flow velocity; these temporary changes would also indirectly affect this species by making it more difficult for Central Valley steelhead to move (upstream) through the work area. Construction would result in increased human activity - pedestrian and mechanical - that could result in disturbance near the live channel and directly affecting Central Valley steelhead potentially moving through the work area.

Vegetation removal near the live channel could decrease shade cover, thereby increasing water temperature and indirectly affecting Central Valley steelhead as described above. The Proposed Action will result in permanent impacts to potential steelhead aquatic habitat in the

Tuolumne River, totaling 0.005 ac, and temporary impacts, totaling 1.46 ac, as a result of pier installation of the new bridge and construction access; however, removal of the concrete pile caps for the existing bridge piers will result in an 0.027 ac of additional steelhead aquatic habitat, and an overall net increase of 0.022 ac to this habitat when considering the 0.005 ac of permanent impact.

Although the reach of the Tuolumne River in the Action Area provides suitable migration habitat for adults spawning upstream of the project and out-migrating smolts, since in-water work will occur between June 1 and October 31, it is not likely these life stages would be present during construction and therefore these effects would not occur. The Action Area provides suitable rearing habitat for juveniles and fry; these life stages could be present during construction and subject to these effects.

#### 5.3.1.2. CENTRAL VALLEY STEELHEAD CRITICAL HABITAT

Construction related disturbance could result in temporary increases in turbidity and/or temperature within the live channel of the Tuolumne River, which would directly affect Central Valley steelhead critical habitat. In-water work, consisting of placement of a water diversion, could result in temporary alteration of the channel and a temporary increase in flow velocity; these temporary changes would also directly affect Central Valley steelhead critical habitat.

Vegetation removal near the live channel could decrease shade cover, thereby increasing water temperature and indirectly affecting Central Valley steelhead as described above. However, as discussed previously, the Proposed Action will result in an overall net increase of 0.022 ac to this Central Valley steelhead critical habitat.

#### 5.3.1.3. VALLEY ELDERBERRY LONGHORN BEETLE

Removal of riparian and other native vegetation in the Tuolumne River corridor, including elderberry shrubs, would directly affect VELB (i.e., this species could be harmed or killed) if elderberry shrubs are removed that contain VELB. Removal of elderberry shrubs would also indirectly affect VELB by decreasing the amount of available habitat.

A total of 8 shrubs are within the project footprint (i.e., at the embankment for the new south bridge abutment, within the work area for the new bridge columns, and within the alignment of the temporary work trestle); these shrubs contain a total of 25 stems greater than 1 inch DGL. An additional 18 shrubs are located outside of the project footprint but are within 20 ft., which could result in a temporary direct adverse effect to VELB; these shrubs contain a total of 137 stems greater than 1 inch DGL.

## 5.4. Effects of the Action

Effect is a description of the manner in which the action may affect any listed species or critical habitat and an analysis of any cumulative effect (50 CFR 402.02). The effect of the action is the consequence (behavioral, physical, or physiological) of a response to a stressor.

#### 5.4.1.1. CENTRAL VALLEY STEELHEAD

Indirect effects to Central Valley steelhead from construction related disturbance could decrease the ability of individuals to feed and respire, resulting in a reduced physiological condition and adversely affecting individual's potential for survival. Similar indirect effects could also occur from vegetation removal but these effects would persist following the completion of construction until the revegetation reestablishes. Indirect effects from in-water work and direct effects from increased human activity could make it more difficult for Central Valley steelhead to move through the work area. This could result in behavioral changes as individuals would have to adjust to utilizing different areas of the river, potentially decreasing access to important habitat for foraging, cover, etc. The conservation measures described in Sections 1.4.5 and 5.5 would decrease the severity of these effects.

#### 5.4.1.2. CENTRAL VALLEY STEELHEAD CRITICAL HABITAT

Direct effects to Central Valley steelhead critical habitat from construction related disturbance could result in temporary increases in turbidity and/or temperature within the live channel of the Tuolumne River, reducing the value of this habitat for Central Valley steelhead. Similar direct effects could also occur from vegetation removal but these effects would persist following the completion of construction until the revegetation reestablishes. Direct effects from in-water work could result in temporary alteration of the channel and a temporary increase in flow velocity, potentially rendering the affected reach of the river temporarily inaccessible to Central Valley steelhead. The conservation measures described in Sections 1.4.5 and 5.5 would decrease the severity of these effects.

#### 5.4.1.3. VALLEY ELDERBERRY LONGHORN BEETLE

Direct and indirect effects to VELB from removal of riparian and other native vegetation in the Tuolumne River corridor, including elderberry shrubs, could result in a slight decrease in the population due to the loss of individuals and/or habitat. The conservation measures described in Sections 1.4.5 and 5.5 would decrease the severity of these effects.

#### 5.5. Conservation Measures and Compensation Proposal

#### 5.5.1. Conservation Measures

#### 5.5.1.1. CENTRAL VALLEY STEELHEAD/CRITICAL HABITAT

- All in-water work associated with the proposed project shall be conducted between June 1 and October 31, which is within the seasonal work window recommended by NOAA FISHERIES to minimize effects to steelhead.
- 2. Brightly colored ESA fencing shall be placed along the limits of work to prevent unnecessary encroachment into the Tuolumne River. Fencing shall be maintained in good condition for the duration of construction activities.
- 3. Prior to any work in the live river channel, a water diversion shall be installed in the Tuolumne River in order to enclose the construction area and reduce sedimentation during

work in the channel. The water diversion will consist of corrugated metal pipe culverts, sheet pile cofferdam, K-rail with visquine, or an equivalent method. Dewatering the work area will minimize the potential water quality impacts (e.g., siltation) and ensure that no salmonids are directly affected by project construction activities (i.e., no work will be conducted in flowing water).

- 4. During removal of any part of the existing bridge, a tarp or other approved method shall be used below the bridge to prevent debris from falling into the Tuolumne River. The tarp (or equivalent) will be left in place until removal is complete.
- 5. All construction shall be conducted during daylight hours to allow for an extended period of inactivity (i.e., night time) for salmonids, if present, to migrate undisturbed through the Action Area.
- 6. Measures consistent with the current Caltrans' Construction Site BMPs Manual (including the SWPPP and WPCP Manuals) shall be implemented to minimize effects to steelhead during construction.
- 7. A SWPPP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction Activities (on file with the Central Valley RWQCB). The SWPPP will contain a Spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials. Implementation of the SWPPP will minimize effects to salmonids and their habitat from potential spills associated with construction activities.
- 8. Any emergent or submergent aquatic vegetation shall be retained. Other vegetation shall be retained as practical within the constraints of the proposed project. Where vegetation removal is necessary, rapidly sprouting plants, such as willows, shall be cut off at the ground line and the root systems left intact.

#### 5.5.1.2. VALLEY ELDERBERRY LONGHORN BEETLE

- A qualified biologist shall survey for elderberry shrubs within 100 ft of the project footprint. Data to be collected shall include the number of stems 1 inch or greater (measured at ground level), signs of VELB exit holes, type of habitat where the shrub is located, and associated native species.
- 2. Once the final limits of construction are set, highly visible ESA fencing shall be installed at the 20-ft setback around the perimeter of each elderberry plant or plant group. ESA fencing shall consist of highly visible construction fencing or equivalent, and shall be maintained until construction is complete. A qualified biologist shall be present during the installation of fencing. The approximate location of ESA fencing is shown in Figure 7.

- 3. Signs shall be erected every 50 ft along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable from a distance of 20 ft, and shall be maintained for the duration of construction.
- 4. Employee awareness training shall be provided for the contractor to emphasize the need to avoid damaging elderberry plants and the possible penalties for not complying with these requirements.
- 5. A qualified biologist shall periodically inspect the construction area to assure that the project is not affecting any elderberry plants.
- 6. No insecticides, herbicides, fertilizers, or other chemicals that might harm the VELB or elderberry plants shall be used within 100 ft of any elderberry plant with stems measuring greater than 1-inch in diameter.
- 7. Any damage occurring within the elderberry buffer areas (within 100 ft of the elderberry plants) shall be restored and revegetated with appropriate native species at the completion of construction.

#### 5.5.2. Compensation

#### 5.5.2.1. CENTRAL VALLEY STEELHEAD/CRITICAL HABITAT

The project will impact a very small area of potential migration habitat for steelhead and, with removal of the concrete bent caps, will result in a net increase of potential migration habitat. Due to the relatively small magnitude of this impact and use of the habitat (migration, non-natal rearing), no compensatory mitigation is proposed with implementation of the measures included in Section 5.5.1.1.

#### 5.5.2.2. VALLEY ELDERBERRY LONGHORN BEETLE

The project will result in the removal of 8 elderberry shrubs; these 8 shrubs shall require compensation in accordance with the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (VELB Guidelines), dated July 1999.

Compensation will occur through purchase of credits through an approved mitigation bank per the total plantings shown in Table 6. Credit purchase will be based on a one credit to 10 plantings ratio, rounded up to the nearest credit. Based on the number of stems that will be impacted, 17 credits will be required. With a current estimated credit cost of \$4,000, the total compensatory mitigation cost is expected to be approximately \$68,000. In addition, the 8 shrubs to be removed shall be transplanted to an approved mitigation bank, if feasible (i.e., the shrubs are good candidates for transplanting). The estimated cost for transplanting is \$15,000.

Size Category	Total Number of Stems Impacted	Elderberry Planting Ratio	Elderberry Plantings	Associated Native Species Planting Ratio	Associated Species Planting	Total Mitigation Planting		
		Non-F	Riparian – No Ex	it Holes				
> 1" and < 3"	2	1:1	2	1:1	2	4		
> 3" and < 5"	2	2:1	4	1:1	4	8		
> 5"	3	3:1	9	1:1	9	18		
	Riparian – No Exit Holes							
> 1" and < 3"	14	2:1	28	1:1	28	56		
> 3" and < 5"	0	3:1	0	1:1	0	0		
> 5"	0	4:1	0	1:1	0	0		
	Riparian – Exit Holes Present							
> 1" and < 3"	1	4:1	4	2:1	8	12		
> 3" and < 5"	1	6:1	6	2:1	12	18		
> 5"	2	8:1	16	2:1	32	48		
Total	25	-	69	-	95	164		

#### Table 6: Summary of Required VELB Mitigation Plantings

## 5.6. Effects of Interrelated and Interdependent Actions/Conclusions and Determination

**Interrelated Actions** - actions that are part of a larger action and depend on the larger action for their justification [50 CFR §402.02] (i.e., this project would not occur "but for" a larger project). Interrelated actions are typically associated with the proposed action. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification.

**Interdependent Actions** - actions having no independent utility apart from the proposed action. [50 CFR §402.02]. Interdependent actions are those that have no independent utility apart from the action under consideration.

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The Proposed Action would not result in direct or indirect effects to Central Valley steelhead. Central Valley steelhead critical habitat, or VELB as a result of interrelated or interdependent actions as none are associated with the Proposed Action.

## 5.7. 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 biological assessment. Future Federal actions that are unrelated to the proposed action are not considered in this this section because they require separate consultation pursuant to Section 7 of the Act.

Effects to Central Valley steelhead, Central Valley steelhead critical habitat, and VELB in the general vicinity of the project likely will occur through habitat loss during public works projects similar in scope to the subject project. Direct and indirect effects to Central Valley steelhead, Central Valley steelhead critical habitat, and VELB would be similar to those described in Sections 5.4.1.1, 5.4.1.2, and 5.4.1.3, respectively. Other projects in the region with similar effects would also be required to minimize and/or mitigate those effects, with measures similar to those described in Section 5.5. Consequently, the Proposed Action would not substantially contribute to cumulative effects for Central Valley steelhead, Central Valley steelhead critical habitat, or VELB.

#### 5.8. Determination

#### 5.8.1. Species and Critical Habitat Determination

#### 5.8.1.1. **NO EFFECT**

A no effect determination was made for the following species. No consultation is required.

- California tiger salamander
- California red-legged frog
- Colusa grass
- Delta smelt
- Giant garter snake
- Greene's tructoria
- Hairy orcutt grass

- Hartweg's golden sunburst
- Hoover's spurge
- San Joaquin kit fox
- San Joaquin Valley orcutt grass
- Vernal pool fairy shrimp
- Vernal pool tadpole shrimp

#### MAY AFFECT-NOT LIKELY TO ADVERSELY AFFECT 5.8.1.2.

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

Central Valley steelhead

#### 5.8.1.3. MAY ADVERSELY MODIFY

A may adversely modify determination was made for the following species. Formal consultation is required.

• Central Valley Steelhead Critical Habitat

#### 5.8.1.4. MAY AFFECT-LIKELY TO ADVERSELY AFFECT

A may affect-likely to adversely affect determination was made for the following species. Formal consultation is required.

• Valley Elderberry Longhorn Beetle

#### 5.8.2. Discussion Supporting Determination

#### 5.8.2.1. NO EFFECT SPECIES

None of the species listed above under Section 5.8.1.1 occur in the Action Area. Therefore, the Proposed Action will have no effect to these species.

#### 5.8.2.2. CENTRAL VALLEY STEELHEAD

The Proposed Action would result in direct and indirect impacts to Central Valley steelhead during construction as a result of temporary changes to habitat conditions and following construction during the loss of suitable habitat. The conservation measures described in Sections 1.4.5 and 5.5 include measures that will avoid and minimize these effects during construction. In addition, the Proposed Action will result in a net increase of habitat for Central Valley steelhead. Based on this information, the Proposed Action may affect but is not likely to adversely affect Central Valley steelhead.

#### 5.8.2.3. CENTRAL VALLEY STEELHEAD CRITICAL HABITAT

The Proposed Action would result in direct impacts to Central Valley steelhead critical habitat during construction as a result of temporary changes to habitat conditions in the Tuolumne River and through vegetation removal. The conservation measures described in Sections 1.4.5 and 5.5 include measures that will avoid and minimize these effects during construction. In addition, the Proposed Action will result in a net increase of habitat for Central Valley steelhead. Based on this information, the Proposed Action may adversely modify Central Valley steelhead critical habitat.

#### 5.8.2.4. VALLEY ELDERBERRY LONGHORN BEETLE

The Proposed Action would result in direct and indirect impacts to VELB through removal of 8 elderberry shrubs during construction. The conservation measures described in Sections 1.4.5 and 5.5 include measures that will avoid and minimize these effects during construction. The measures also include compensation that will offset these effects through transplanting and purchasing credits at an approved mitigation bank. Based on this information, the Proposed Action may affect and is likely to adversely affect VELB.

## **Chapter 6.** Magnuson Stevens Fishery Conservation and Management Act of 1976 (as amended)

This act 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 anadromous species, Continental Shelf fishery resources and fishery resources in the special areas.

#### 6.1. Essential Fish Habitat

#### 6.1.1. 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 Magnuson-Stevens Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (NOAA FISHERIES 1999). 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 would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH. The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NOAA FISHERIES is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. 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 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 ESA Section 7 consultation, as represented by this BA.

## 6.2. Managed Fisheries 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 covered under the Pacific Salmon Fishery Management Plan (FMP).

Fall-run chinook salmon, managed under the MSFCMA, may potentially be present in the Action Area. Chinook salmon are managed under the Pacific Coast Salmon FMP.

## 6.3. Potential Adverse Effects of Proposed Project on EFH

Potential effects to fall-run chinook salmon EFH evaluated include those related 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.

#### 6.3.1. Adverse Effects on Essential Fish Habitat for Pacific Salmonids

Construction related disturbance could result in temporary increases in turbidity and/or temperature within the live channel of the Tuolumne River. In-water work, consisting of placement of a water diversion, could result in temporary alteration of the channel and a temporary increase in flow velocity. These temporary changes could adversely affect EFH.

Vegetation removal near the live channel could decrease shade cover, thereby increasing water temperature and adversely affecting EFH. However, as discussed previously, the Proposed Action will result in an overall net increase of 0.022 ac to EFH.

#### 6.4. Essential Fish Habitat Conservation Measures

#### 6.4.1. Describe the Conservation Measures That Have Been Incorporated Into the Project That Will Minimize the Potential Adverse Effects to EFH

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

- All in-water work associated with the proposed project shall be conducted between June 1 and October 31, which is within the seasonal work window recommended by NOAA FISHERIES to minimize effects to steelhead.
- 2. Brightly colored ESA fencing shall be placed along the limits of work to prevent unnecessary encroachment into the Tuolumne River. Fencing shall be maintained in good condition for the duration of construction activities.
- 3. Prior to any work in the live river channel, a water diversion shall be installed in the Tuolumne River in order to enclose the construction area and reduce sedimentation during work in the channel. The water diversion will consist of corrugated metal pipe culverts, sheet pile cofferdam, K-rail with visquine, or an equivalent method. Dewatering the work area will minimize the potential water quality impacts (e.g., siltation) and ensure that no salmonids are directly affected by project construction activities (i.e., no work will be conducted in flowing water).
- 4. During removal of any part of the existing bridge, a tarp or other approved method shall be used below the bridge to prevent debris from falling into the Tuolumne River. The tarp (or equivalent) will be left in place until removal is complete.
- 5. All construction shall be conducted during daylight hours to allow for an extended period of inactivity (i.e., night time) for salmonids, if present, to migrate undisturbed through the Action Area.

- 6. Measures consistent with the current Caltrans' Construction Site BMPs Manual (including the SWPPP and WPCP Manuals) shall be implemented to minimize effects to steelhead during construction.
- 7. A SWPPP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction Activities (on file with the Central Valley RWQCB). The SWPPP will contain a Spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials. Implementation of the SWPPP will minimize effects to salmonids and their habitat from potential spills associated with construction activities.
- 8. Any emergent or submergent aquatic vegetation shall be retained. Other vegetation shall be retained as practical within the constraints of the proposed project. Where vegetation removal is necessary, rapidly sprouting plants, such as willows, shall be cut off at the ground line and the root systems left intact.

## 6.5. Conclusions

Caltrans has determined that the proposed action may adversely modify EFH for Central Valley fall-run chinook salmon. The Proposed Action would result in direct impacts to EFH during construction as a result of temporary changes to habitat conditions in the Tuolumne River and through vegetation removal. In addition, the Proposed Action will result in a net increase of EFH. The conservation measures described in Sections 1.4.5 and 5.5 include measures that will avoid and minimize these effects during construction. Based on this information, the Proposed Action may adversely modify Central Valley steelhead critical habitat.

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U.S. Fish and Wildlife Service. 2017. Online Threatened and Endangered Species Lists. Sacramento Fish and Wildlife Office. Records search executed January 3, 2017.



## **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 PHONE: (916)414-6600 FAX: (916)414-6713



Consultation Code: 08ESMF00-2017-SLI-0738 Event Code: 08ESMF00-2017-E-01524 Project Name: Hickman Road Bridge Replacement Project January 03, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/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, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) 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 Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected\_species/species\_list/species\_lists.html

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

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan

(http://www.fws.gov/windenergy/eagle\_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and

http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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 Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

#### Attachment



Project name: Hickman Road Bridge Replacement Project

## **Official Species List**

#### **Provided by:**

Sacramento Fish and Wildlife Office FEDERAL BUILDING 2800 COTTAGE WAY, ROOM W-2605 SACRAMENTO, CA 95825 (916) 414-6600

Consultation Code: 08ESMF00-2017-SLI-0738 Event Code: 08ESMF00-2017-E-01524

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

**Project Name:** Hickman Road Bridge Replacement Project **Project Description:** DHG1401

**Please Note:** The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



Project name: Hickman Road Bridge Replacement Project

#### **Project Location Map:**



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Stanislaus, CA



Project name: Hickman Road Bridge Replacement Project

## **Endangered Species Act Species List**

There are a total of 13 threatened or endangered species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
California red-legged frog ( <i>Rana</i> <i>draytonii</i> ) Population: Wherever found	Threatened	Final designated	
California tiger Salamander ( <i>Ambystoma californiense</i> ) Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Crustaceans			
Conservancy fairy shrimp ( <i>Branchinecta conservatio</i> ) Population: Wherever found	Endangered	Final designated	
Vernal Pool fairy shrimp ( <i>Branchinecta lynchi</i> ) Population: Wherever found	Threatened	Final designated	
Vernal Pool tadpole shrimp ( <i>Lepidurus packardi</i> ) Population: Wherever found	Endangered	Final designated	
Fishes			
Delta smelt (Hypomesus	Threatened	Final designated	



Project name: Hickman Road Bridge Replacement Project

<i>transpacificus)</i> Population: Wherever found			
steelhead ( <i>Oncorhynchus</i> (=salmo) mykiss) Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
Colusa grass ( <i>Neostapfia colusana</i> ) Population: Wherever found	Threatened	Final designated	
Greene's tuctoria ( <i>Tuctoria greenei</i> ) Population: Wherever found	Endangered	Final designated	
San Joaquin Orcutt grass ( <i>Orcuttia</i> <i>inaequalis</i> ) Population: Wherever found	Threatened	Final designated	
Insects			
Valley Elderberry Longhorn beetle ( <i>Desmocerus californicus dimorphus</i> ) Population: Wherever found	Threatened	Final designated	
Mammals			
San Joaquin Kit fox (Vulpes macrotis mutica) Population: wherever found	Endangered		
Reptiles			
Giant Garter snake ( <i>Thamnophis</i> gigas) Population: Wherever found	Threatened		



Project name: Hickman Road Bridge Replacement Project

## Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Fishes	Critical Habitat Type
steelhead (Oncorhynchus (=salmo) mykiss)	Final designated
Population: Northern California DPS	

#### NMFS KMZ Tool Species Search

Quad Name Waterford Quad Number 37120-F7

#### 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) -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 -SC Steelhead Critical Habitat -CCV Steelhead Critical Habitat -Eulachon 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 -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 -

Records Searched: 01/03/2017

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CALL BEFORE YOU DIG	OF	x	SHEET
HICKMAN ROAD BRIDGE - STANISLAUS CO\400 PROJECT DESIGN FILES\420 ROADWAY & CIVIL\SUB	MITTAL 3	30%\PLANS\	HR-R-T.DWG

ER SHEETS

1



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1060 White Rock Road, S Rancho Cordova, CA 9567	e hag	an	No	ROFESSION CHARTER &	
HICKMAN ROAD BRIDGE Br No. 38-COO4	MATCH LINE (SEE SHEET 8)	230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70	Stand James Stand Stan	DEPARTMENT OF PUBLIC WORKS CLIMMY 1716 MORCAN ROAD - MODESTO, CA 95358 Soling to be the best	R CONSTRUCTION
		60 50 40 30 20	PROFILE	HICKMAN ROAD BRIDGE REPLACEMENT OVER TUOLUMNE RIVER WATERFORD, CALIFORNIA	<u> 30% PLANS - 12/23/15 - NOT FOR</u>
22 23	CALL BEFOR	E YOU DIG	CK BY SURVEY CONST. SCALE	######       00/00/00       S. Morales	30

I



	the cordeva, CA 956	ehaglan Suite 200 70	No No SAL	OFESSION CALE	
		230 230 220 210 200 190 180 170 160	JS COUNTY NO DESCRIPTIONS DATE APPROVED	PUBLIC WORKS PERATIONS DIVISION - MODESTO, CA 95358	
	Image         Image <th< td=""><td>150 140 130 120 110 100 90 80 70</td><td>Standard STANISLAUS COUNTY</td><td>DEPARTMENT OF PUBLIC WORKS DEPARTMENT OF PUBLIC WORKS ENGINEERING AND OPERATIONS DIVSION 37mmg to be the best</td><td>R CONSTRUCTION</td></th<>	150 140 130 120 110 100 90 80 70	Standard STANISLAUS COUNTY	DEPARTMENT OF PUBLIC WORKS DEPARTMENT OF PUBLIC WORKS ENGINEERING AND OPERATIONS DIVSION 37mmg to be the best	R CONSTRUCTION
Image: section of the sectio	Image         Image <th< th=""><th>60 50 40 30 20 </th><th>PROFILE</th><th>IMPROVEMENT PLANS FOR: HICKMAN ROAD BRIDGE REPLACEMENT OVER TUOLUMNE RIVER WATERFORD, CALIFORNIA</th><th>30% PLANS - 12/23/15 - NOT FOR</th></th<>	60 50 40 30 20 	PROFILE	IMPROVEMENT PLANS FOR: HICKMAN ROAD BRIDGE REPLACEMENT OVER TUOLUMNE RIVER WATERFORD, CALIFORNIA	30% PLANS - 12/23/15 - NOT FOR
32	33	CALL BEFORE YOU DIG	CK BY SURVEY CONST. SCALE	SHEET IUMBER	30%

















S AND ROAD

ENGINEERING

Paint "Hickman Road Bridge". Paint "Bridge No. 38C-004" and year completed. Structure Approach Type N (30S) Water Surface Elevation = 90.00' (100 Year Flood)

- Indicates Direction of Water Flow Indicates Direction of Traffic Indicates Existing Bridge
- Indicates New Structure



# CONSTRUCTION FOR NOT 15 23/ 12 PLANS 80% 90%

MAPROVEMENT PLANS FOR: HICKMAN ROAD BRIDGE REPLACEMENT OVER TUOLUMNE RIVER

JOB NO ###### DATE 12/16/15 DR BY K. Dresbach CK BY SURVEY CONST. SCALE <u>As Shown</u>

SHEET NUMBER 13

X SHEETS

**GENERAL PLAN** 



### **TYPICAL SECTION - BENTS 2 & 5** 1"=10'



CALL BEFORE YOU DIG

X SHEETS

# LEGEND:

- — — Indicates Existing Bridge
  - Indicates New Structure

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Project/Site: Hickman Road Bridge		City/County: Waterford Stariskussan	npling Date: 12/8/2015
Applicant/Owner: Stanislaus County Dep.	of Public	Works State: <u>CA</u> San	npling Point:
Investigator(s): Mike Truebland, Stefan	de Barra	Section, Township, Range: <u>5.33</u> , <u>T35</u>	RILE
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:		NWI classification	·
Are climatic / hydrologic conditions on the site typical for	r this time of y	ear? Yes <u>///</u> No (If no, explain in Remar	ks.)
Are Vegetation $N_{\mathfrak{d}}$ , Soil $N_{\mathfrak{d}}$ , or Hydrology $N_{\mathfrak{d}}$	significantly	v disturbed? Are "Normal Circumstances" prese	nt? Yes <u> </u>
Are Vegetation No., Soil Ye.S. or Hydrology No			
SUMMARY OF FINDINGS - Attach site ma	ap showing	g sampling point locations, transects, im	portant features, etc.
Hydrophytic Vegetation Present? Yes	_ No	Is the Sampled Area /	
Hydric Soil Present? Yes	_ No	within a Wetland? Yes	No
Wetland Hydrology Present? Yes	No		
Remarks:			Alexandroper
a design of the second s			

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	% Cover	Species?	Status	Number of Dominant Species	
1. Salix lasidedis	5	N	FACW	That Are OBL, FACW, or FAC:	(A)
2. Cephalanthus occidentalis	5	N	OBL		. ,
3				Total Number of Dominant Species Across All Strata: 2	(B)
A.					(0)
	10	= Total Co	ver	Percent of Dominant Species That Are OBL, FACW, or FAC:	(A/B)
Sapling/Shrub Stratum (Plot size:)		1	Turn		()
1. Kubus armeniarus	5	<u> </u>	FACU	Prevalence Index worksheet:	
2	- 26			Total % Cover of: Multiply by:	
3				OBL species x 1 =	19
4				FACW species x 2 =	1.82
5	_	1. 24		FAC species x 3 =	
	5	= Total Co	ver	FACU species x 4 =	
Herb Stratum (Plot size:)				UPL species x 5 =	
1. Eichhornia crassipes	5	N	OBL	Column Totals: (A)	-
2. Polygonum sp.	20	Ŷ	OBL		_ (0)
3. Cynodon dactulon	30	$\overline{\varphi}$	FAC	Prevalence Index = B/A =	
4. Verbena lasostachus		N	FAC	Hydrophytic Vegetation Indicators:	
5. Lemma minor J	1	N	OBL	Dominance Test is >50%	
6. Ludwiaia peptoides	2	N	GBL	Prevalence Index is ≤3.0 <sup>1</sup>	
7. 9 11				Morphological Adaptations <sup>1</sup> (Provide support	ing
8	•		111	data in Remarks or on a separate sheet)	
0	63	= Total Co	Vor	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain	ר)
Woody Vine Stratum (Plot size:)			VCI	A Second S	10
1. Western and the second s	1			<sup>1</sup> Indicators of hydric soil and wetland hydrology m	ust
2				be present, unless disturbed or problematic.	
	1.1	= Total Co	ver	Hydrophytic	1216
the second se				Vegetation	1.1
% Bare Ground in Herb Stratum % Cover	of Biotic Ci	rust		Present? Yes V No	:11
Remarks:					

Sampling Point:

	Redox Features		
nches) Color (moist) %	Color (moist) % Type	Loc <sup>2</sup> Texture	e Remarks
-6 104B 2/1 100			Coarse sand
			(River rock)
	······································		CLINE OLD
	strate and server a sufficiency of		
ype: C=Concentration, D=Depletion, RM	Reduced Matrix, CS=Covered or Coa		<sup>2</sup> Location: PL=Pore Lining, M=Matrix.
ydric Soil Indicators: (Applicable to all	LRRs, unless otherwise noted.)	Indica	tors for Problematic Hydric Soils <sup>3</sup> :
_ Histosol (A1)	Sandy Redox (S5)	1 0	cm Muck (A9) (LRR C)
_ Histic Epipedon (A2)	Stripped Matrix (S6)	2 0	cm Muck (A10) (LRR B)
_ Black Histic (A3)	Loamy Mucky Mineral (F1)	Re	duced Vertic (F18)
_ Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Re	ed Parent Material (TF2)
_ Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Ot	her (Explain in Remarks)
_ 1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)		
_ Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)		
_ Thick Dark Surface (A12)	Redox Depressions (F8)		tors of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools (F9)		and hydrology must be present,
_ Sandy Gleyed Matrix (S4)		unle	ss disturbed or problematic.
estrictive Layer (if present):		and the second se	
Туре:			
Depth (inches):		Hydric	Soil Present? Yes No
emarks:	N W I I I I	A A	1 1 1
River Roc	ilc/cubble/coarses	avd. No so	cil colon avoilable
a. dra	Nor not used,		
Thaile	ATOT ACT USED I		
DROLOGY			

all that apply)	Secondary Indicators (2 or more required)
Salt Crust (B11)	Water Marks (B1) (Riverine)
Biotic Crust (B12)	Sediment Deposits (B2) (Riverine)
Aquatic Invertebrates (B13)	Drift Deposits (B3) (Riverine)
Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Oxidized Rhizospheres along Livir	ng Roots (C3) Dry-Season Water Table (C2)
Presence of Reduced Iron (C4)	Crayfish Burrows (C8)
Recent Iron Reduction in Tilled Sc	bils (C6) Saturation Visible on Aerial Imagery (C9)
Thin Muck Surface (C7)	Shallow Aquitard (D3)
Other (Explain in Remarks)	FAC-Neutral Test (D5)
_ Depth (inches):	
Depth (inches):	/
_ Depth (inches):	Wetland Hydrology Present? Yes No
well, aerial photos, previous inspec	tions), if available:
	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livir Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Sc Thin Muck Surface (C7) Other (Explain in Remarks) Depth (inches): Depth (inches):

. 0

Project/Site: Hickman Rd. Bridge	City/County: Waterford Starislas Sampling Date: 12/8/2015
Applicant/Owner: Stanislaus Cauty Dep of Publi	iz Works State: CA Sampling Point: 1a
	Section, Township, Range: <u>533, T35, RIIE</u>
Landform (hillslope, terrace, etc.):	Local relief (concave, convex, none): Slope (%):
Subregion (LRR): Lat:	Long: Datum:
Soil Map Unit Name:	NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of y Are Vegetation $N_{,}$ , Soil $N_{,}$ , or Hydrology $N_{,}$ significantly Are Vegetation $N_{,}$ , Soil $N_{,}$ , or Hydrology $N_{,}$ naturally pr	year? Yes No (If no, explain in Remarks.) y disturbed? Are "Normal Circumstances" present? Yes No
Hydrophytic Vegetation Present?       Yes No         Hydric Soil Present?       Yes No         Wetland Hydrology Present?       Yes No         Remarko:       Yes No	Is the Sampled Area within a Wetland? Yes No
Remarks: VEGETATION – Use scientific names of plants.	

	Absolute	Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)		Species? Status	Number of Dominant Species
1. Quercus lobata	5	N FACU	That Are OBL, FACW, or FAC: (A)
2. Cephalanthus occidentalis	<u> </u>	N OBL	Total Number of Dominant
3. Sambucus mana Caprules		N UPL	Species Across All Strata: (B)
4			
	7	= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
Sapling/Shrub Stratum (Plot size:)			
1			Prevalence Index worksheet:
2			Total % Cover of: Multiply by:
3			OBL species x 1 =
4			FACW species x 2 =
5		1.00	FAC species x 3 =
		= Total Cover	FACU species x 4 =
Herb Stratum (Plot size:)			UPL species x 5 =
1. Bromus diandrus	95	Y UPL	Column Totals: (A) (B)
2. Verbena lasiostachus	1	N FAC	
3. Circium vulgare ~	1	N FACU	Prevalence Index = B/A =
4			Hydrophytic Vegetation Indicators:
5			Dominance Test is >50%
6			Prevalence Index is ≤3.0 <sup>1</sup>
7			Morphological Adaptations <sup>1</sup> (Provide supporting
8			data in Remarks or on a separate sheet)
<u>.</u>	97	= Total Cover	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)			
1			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
2			be present, unless disturbed or problematic.
		= Total Cover	Hydrophytic /
$\wedge$			Vegetation
% Bare Ground in Herb Stratum % Cover	r of Biotic Ci	rust	Present? Yes No V
Remarks:			· · · · · · · · · · · · · · · · · · ·

Sampling Point:

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Profile Desc	ription: (Describe	to the depth	needed to document the indic	ator or confirm	n the absence of in	dicators.)
Depth	Matrix		Redox Features	-		
(inches)	Color (moist)		Color (moist) % Ty	rpe <sup>1</sup> Loc <sup>2</sup>	Texture	Remarks
0-13	104R 4/6	50			Sandy-Silt	Matrix is equal
0-13	1048 4/3	50			Sandy-Silt	parts of each color
1-					. 2	
			educed Matrix, CS=Covered or ( Rs, unless otherwise noted.)	Coated Sand Gr		: PL=Pore Lining, M=Matrix. problematic Hydric Soils <sup>3</sup> :
Histosol			Sandy Redox (S5)			(A9) (LRR C)
	oipedon (A2)		Stripped Matrix (S6)			(A10) (LRR B)
	stic (A3)		Loamy Mucky Mineral (F1	)	Reduced Ve	
	on Sulfide (A4)		Loamy Gleyed Matrix (F2)			Material (TF2)
	Layers (A5) (LRR C	;)	Depleted Matrix (F3)			ain in Remarks)
	ick (A9) (LRR D)		Redox Dark Surface (F6)			-/
	Below Dark Surface	(A11)	Depleted Dark Surface (F7	7)		
Thick Da	ark Surface (A12)		Redox Depressions (F8)		<sup>3</sup> Indicators of hy	drophytic vegetation and
Sandy M	lucky Mineral (S1)		Vernal Pools (F9)		wetland hydro	logy must be present,
Sandy G	eleyed Matrix (S4)				unless disturb	ed or problematic.
<b>Restrictive</b> L	_ayer (if present):					
Туре:						1
Depth (inc	ches):				Hydric Soil Pres	ent? Yes No
IYDROLO	GY	102 million 1011				
	drology indicators:					
	ators (minimum of or	<u>ne required; c</u>		_		Indicators (2 or more required)
	Water (A1)		Salt Crust (B11)			Marks (B1) ( <b>Riverine</b> )
High Wa	ter Table (A2)		Biotic Crust (B12)			ent Deposits (B2) ( <b>Riverine</b> )
Saturatio			Aquatic Invertebrates (B1			eposits (B3) (Riverine)
	arks (B1) (Nonriveri		Hydrogen Sulfide Odor (0			ge Patterns (B10)
	t Deposits (B2) (Non		Oxidized Rhizospheres a			ason Water Table (C2)
	oosits (B3) (Nonriver	ine)	Presence of Reduced Iro			h Burrows (C8)
	Soil Cracks (B6)	a	Recent Iron Reduction in	Tilled Soils (C6		tion Visible on Aerial Imagery (C9)
Inundatio	on Visible on Aerial Ir	nagery (B7)	Thin Muck Surface (C7)			v Aquitard (D3)
	tained Leaves (B9)	11 I A 2-	Other (Explain in Remark	(\$)	FAC-N	eutral Test (D5)
Field Observ			1 -			
Surface Wate	er Present? Ye	s No				
Water Table	Present? Ye	es No	Depth (inches):3			1
Saturation Pr (includes cap	illary fringe)	es No			and Hydrology Pre	sent? Yes No _/
Describe Kec	wided Data (Stream)	yauye, monit	oring well, aerial photos, previou	ia mapecuons),	n avandule.	
Remarks:						

Project/Site: Hickman Rd	Bridge City/County	Waterford/Starislav	s Sampling Date: 12/8/2015
Applicant/Owner: Stanislaus C	outy Dep of Public Work	s State: CA	Sampling Point:
Investigator(s): Mike Trueblood	Stefan de Barros Section, To	wnship, Range: <u>533, T3</u>	35, RIIE
Landform (hillslope, terrace, etc.):	Local relief	(concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:		NWI clas	sification:
Are Vegetation $\underline{N}$ , Soil $\underline{Y}$ , or	Hydrology <u>N</u> significantly disturbed? Hydrology <u>N</u> naturally problematic? <b>ttach site map showing samplin</b>	(If needed, explain any an	swers in Remarks.)
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks:	Yes No	e Sampled Area In a Wetland? Yes _	<u> </u>

<u>Tree Stratum</u> (Plot size:) 1. <u>Salix exious</u> 2. <u>Salix laevianta</u> 3	<u>% Cover</u> 2 2	Species?	Indicator Status OBL FACW	Dominance Test worksheet:         Number of Dominant Species         That Are OBL, FACW, or FAC:         2         (A)         Total Number of Dominant         Species Across All Strata:
4	<u> </u>	= Total Co	ver	Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
1 2 3				Prevalence Index worksheet:
4 5		= Total Co	ver	FACW species         x 2 =           FAC species         x 3 =           FACU species         x 4 =
Herb Stratum (Plot size:) 1. <u>Cyperus eragrostis</u> 2. <u>Montha pusutis</u> 3. Verbeng lasiostachus	5 5	N	FACW OBL FAC	UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =
4. Paspalum dilatation 5. Eichhornia crassipes 6. Lemna minor	<u>30</u> 20	γ γ Ν	FAC OBL OBL	Hydrophytic Vegetation Indicators: ✓ Dominance Test is >50% ✓ Prevalence Index is ≤3.0 <sup>1</sup>
7 8 <u>Woody Vine Stratum</u> (Plot size:)		= Total Co		<ul> <li>Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</li> <li>Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</li> </ul>
1				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic
% Bare Ground in Herb Stratum <u>25</u> % Cover Remarks:	of Biotic Cr	= Total Co ust		Vegetation Present? Yes No No

Sampling Point:

2

(inches) _	Matrix			x Features					
	Color (moist)	<u>%</u> C	olor (moist)	_%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks
ivrEace	S 1 2			_				River	Rock
<u> </u>									
				N				II	
		<u></u>							
	1 -3-141-12			_			Street Street	a start and the	
-								1.0	
					1				
		tion DM-Ded	and Matrix 00				21 -		- Lining Manhatria
	centration, D=Deple licators: (Applica					a Sana Gra			e Lining, M=Matrix. tic Hydric Soils <sup>3</sup> :
					M.)				Contraction in the second s
_/ Histosol (A Histic Epip			Sandy Redo Stripped Ma					Muck (A9) (L <b>R</b> F Muck (A10) ( <b>LR</b>	
Black Histi		2	Loamy Muck		(E1)			ced Vertic (F18)	
	Sulfide (A4)	-	Loamy Gley	-				arent Material (	
	ayers (A5) (LRR C	, –	_ Depleted Ma		(/			(Explain in Ren	
_	(A9) ( <b>LRR D</b> )		Redox Dark		F6)			<b>、</b> — <b>F</b>	
	elow Dark Surface	(A11) _	Depleted Da	rk Surface	ə (F7)				
_ Thick Dark	Surface (A12)	_	Redox Depr	essions (F	-8)		<sup>3</sup> Indicators	of hydrophytic	vegetation and
_ Sandy Mu	ky Mineral (S1)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_ Vernal Pools	s (F9)			wetland	hydrology mus	t be present,
_ Sandy Gle	yed Matrix (S4)		10 C 10 C				unless c	listurbed or pro	blematic.
Restrictive La	yer (if present):	n na <sup>1</sup> 2 main	100			=			
	yer (if present):	10.50 BU							19 J. 18
Туре:	the second se						Hydric Soi	Present? Y	es No
Туре:	əs):								
Type: Depth (inche	əs):	r Rock	1 cubble		No	soil			
Type: Depth (inche	əs):		/ cubble						
Type: Depth (inche	əs):		1 cubble						
Type: Depth (incho emarks:	эs): R:ц								
Type: Depth (inche emarks: /DROLOG	эs): R:ц								
Type: Depth (incho emarks: /DROLOG /etland Hydro	es): R:u Y Diogy Indicators:	In	idi.cator	hct			color (	ava.labL	8
Type: Depth (incho temarks: //DROLOG //orthand Hydro /rimary Indicat	es):	In	ck all that apply	n hct			color ( Seco	ava, labL	و a (2 or more required)
Type: Depth (inche temarks: /DROLOG /etland Hydre rimary Indicat Surface W	es): Y Diogy Indicators: ors (minimum of on ater (A1)	In	ck all that apply Salt Crust (	) (B11)			Color ( <u>Seco</u>	ndary Indicators Vater Marks (B	( s (2 or more required) I) (Riverine)
Type: Depth (inche temarks: /DROLOG /etland Hydro rimary Indicat Surface W High Wate	Y Plogy Indicators: ors (minimum of on ater (A1) r Table (A2)	In	ck all that apply Salt Crust ( Biotic Crus	(B11) t (B12)	used		(clicr ( <u>Seco</u> V S	ndary Indicators Vater Marks (B' Sediment Depos	( <u>s (2 or more required)</u> I) ( <b>Riverine</b> ) sits (B2) ( <b>Riverine</b> )
Type: Depth (incho kernarks: //DROLOG //etiand Hydro rimary Indicat Surface W High Wate Saturation	Y Diogy Indicators: ors (minimum of on ater (A1) r Table (A2) (A3)	In e required; che	ck all that apply Salt Crust ( Biotic Crus Aquatic Inv	(B11) t (B12) ertebrates	used s (B13)		(clicr ( <u>Seco</u> V S	ndary Indicators Vater Marks (B Sediment Depos Drift Deposits (B	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine)
Type: Depth (incho ternarks: //DROLOG //etland Hydro rimary Indicat Surface W High Wate Saturation Water Mar	Y Diogy Indicators: ors (minimum of on ater (A1) r Table (A2) (A3) ks (B1) (Nonriverir	In The required; che	cd:.catc ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S	(B11) t (B12) rertebrates Sulfide Od	used s (B13) lor (C1)		Color ( 	ndary Indicators Vater Marks (B Sediment Depos Drift Deposits (B Drainage Pattern	( <u>s (2 or more required)</u> I) (Riverine) its (B2) (Riverine) 3) (Riverine) ns (B10)
Type: Depth (inche ternarks: //DROLOG /etland Hydro rimary Indicat Surface W High Wate Saturation Water Mart Sediment I	Y Dogy Indicators: ors (minimum of on ater (A1) r Table (A2) (A3) ks (B1) (Nonriverir Deposits (B2) (Non	Ine) riverine)	ck all that apply ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R	(B11) t (B12) rertebrates Sulfide Od hizospher	s (B13) for (C1) res along I	_iving Root	Color ( <u>Seco</u> V S C s (C3)C	ndary Indicators Vater Marks (B Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (B10) ter Table (C2)
Type: Depth (inche ternarks: TDROLOG Vetland Hydre 'rimary Indicat 'rimary Indicat Surface W High Wate Saturation Water Mari Sediment I Drift Depos	PS): PS): PS): PS): PS): PS: PS: PS: PS: PS: PS: PS: PS	Ine) riverine)	ck all that apply Salt Crust ( Biotic Crust Aquatic Inv Hydrogen S Oxidized R Presence c	(B11) t (B12) rertebrates Sulfide Od hizospher	s (B13) for (C1) res along I d Iron (C4	_iving Root	<u>Seco</u> <u>Seco</u> <u>V</u> <u>S</u> <u>S</u> (C3) <u>C</u>	ndary Indicators Vater Marks (B Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow	s (2 or more required) I) (Riverine) Sits (B2) (Riverine) 3) (Riverine) ns (B10) ter Table (C2) s (C8)
Type: Depth (inche temarks: /DROLOG /etland Hydro rimary Indicat / Surface W Surface W High Wate Saturation Water Mar Sediment I Drift Depos Surface So	PS): PS):	Ine) riverine) ne)	ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror	(B11) t (B12) ertebrates Sulfide Od hizospher of Reduced n Reductio	s (B13) lor (C1) es along I d Iron (C4 on in Tilleo	_iving Root	<u>Seco</u> <u>V</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>S</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>Seco</u> <u>S</u> <u>Seco</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u>	ndary Indicators Vater Marks (B <sup>2</sup> Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrows Saturation Visibl	e (2 or more required) (Riverine) sits (B2) (Riverine) (Riverine) (Riverine) ns (B10) ter Table (C2) s (C8) e on Aerial Imagery (C9
Type: Depth (inche emarks: <b>DROLOG</b> <b>fetland Hydro</b> <b>fetland Hydro</b> <u>fimary Indicat</u> Surface W Saturation Water Mart Sediment I Drift Depos Surface So Inundation	Ass): Ass): Association Asso	Ine) riverine) ne)	ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Thin Muck	(B11) t (B12) ertebrates Sulfide Od hizospher of Reduced n Reductio Surface ((	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7)	_iving Root	<u>Seco</u> <u></u>	ava. 1964 ndary Indicators Vater Marks (Br Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visibl Shallow Aquitare	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (B10) ter Table (C2) (C8) e on Aerial Imagery (C9 d (D3)
Type: Depth (inche emarks: //DROLOG /etland Hydro rimary Indicat Surface W High Wate Saturation Water Mart Sediment I Drift Depos Surface So Inundation Water-Stai	Ass): Ass): Association Asso	Ine) riverine) ne)	ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror	(B11) t (B12) ertebrates Sulfide Od hizospher of Reduced n Reductio Surface ((	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7)	_iving Root	<u>Seco</u> <u></u>	ndary Indicators Vater Marks (B <sup>2</sup> Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrows Saturation Visibl	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (B10) ter Table (C2) (C8) e on Aerial Imagery (C9 d (D3)
Type: Depth (incher emarks: //DROLOG /etland Hydre rimary Indicat Surface W High Wate Saturation Water Mart Sediment I Drift Depos Surface So Inundation Water-Stai ield Observation	Arrow Content of the second se	Le required; che ne) riverine) ne) nagery (B7)	ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Thin Muck Other (Exp	(B11) t (B12) rertebrates Sulfide Od hizospher of Reduced n Reductic Surface (( lain in Rer	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7)	_iving Root	<u>Seco</u> <u></u>	ava. 1964 ndary Indicators Vater Marks (Br Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visibl Shallow Aquitare	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (B10) ter Table (C2) (C8) e on Aerial Imagery (C9 d (D3)
Type: Depth (incher temarks: TDROLOG Vetland Hydro rimary Indicat Surface W High Wate Saturation Water Mari Sediment I Drift Depos Surface So Inundation Water-Stai ield Observat urface Water	Arrow Constraints of the second state of the s	te required; che ne) riverine) ne) nagery (B7)	cd:.catc ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Thin Muck Other (Exp Depth (inc	() (B11) t (B12) ertebrates Sulfide Od hizospher of Reduced n Reductio Surface (( lain in Rer	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7)	_iving Root	<u>Seco</u> <u></u>	ava. 1964 ndary Indicators Vater Marks (Br Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visibl Shallow Aquitare	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (B10) ter Table (C2) (C8) e on Aerial Imagery (C9 d (D3)
Type: Depth (incher Remarks: YDROLOG Vetland Hydro Primary Indicat Control High Wate Saurface W High Water Saturation Water Mare Sediment I Drift Depose Surface So Inundation Water-Stai Vetler Table Pr Vater Table Pr	Ass): Ass): Ass): Association Associatio	te required; che ne) riverine) ne) nagery (B7) s No	ck all that apply         Salt Crust (         Biotic Crust         Aquatic Inv         Hydrogen S         Oxidized R         Presence c         Recent Iror         Thin Muck         Other (Exp         Depth (inc         Depth (inc	(B11) t (B12) rertebrates Sulfide Od hizospher of Reduced n Reductio Surface (( lain in Rer ches):	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7)	Living Root ) I Soils (C6)	(clicr ( 	ava.lab ndary Indicators Vater Marks (B Sediment Depos Drift Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visible Shallow Aquitaro FAC-Neutral Test	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (C2) (C3) (C3) (C3) (D3) (D5)
Type: Depth (inche Remarks: YDROLOG Yetland Hydro Primary Indicat Carter Mare Saturation Water Mare Saturation Water Mare Sediment I Sediment I Drift Depos Surface So Inundation Water-Stai Field Observator Vater Table Pres	Ass): Ass): Ass): Association Associatio	te required; che ne) riverine) ne) nagery (B7) s No	cd:.catc ck all that apply Salt Crust ( Biotic Crus Aquatic Inv Hydrogen S Oxidized R Presence c Recent Iror Thin Muck Other (Exp Depth (inc	(B11) t (B12) rertebrates Sulfide Od hizospher of Reduced n Reductio Surface (( lain in Rer ches):	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7)	Living Root ) I Soils (C6)	<u>Seco</u> <u></u>	ava.lab ndary Indicators Vater Marks (B Sediment Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visible Shallow Aquitaro FAC-Neutral Test	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (B10) ter Table (C2) (C8) e on Aerial Imagery (C9 d (D3)
Type: Depth (incher temarks: TDROLOG Vetland Hydro rimary Indicat Surface W High Wate Saturation Water Mare Sediment I Drift Depos Surface So Inundation Water-Stai ield Observat vater Table Pr aturation Pres ncludes capilla	Ass): Ass): Association Asso	te required; che ne) riverine) ne) nagery (B7) s No s No	ck all that apply         Salt Crust (         Biotic Crus         Aquatic Inv         Hydrogen S         Oxidized R         Presence c         Recent Iror         Thin Muck         Other (Exp         Depth (inc         Depth (inc         Depth (inc	() (B11) t (B12) ertebrates Sulfide Od hizospher of Reduced n Reductio Surface (( lain in Rer ches): thes):	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7) marks) 3	Living Root ) I Soils (C6)	Color ( <u>Seco</u> <u>V</u> <u>S</u> <u>C</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u>	ava.lab ndary Indicators Vater Marks (B Sediment Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visible Shallow Aquitaro FAC-Neutral Test	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (C2) (C3) (C3) (C3) (D3) (D5)
Type: Depth (inche emarks: //DROLOG /etland Hydro rimary Indicat // Surface W High Wate Saturation Water Mari Sediment I Drift Depos Surface So Inundation Water-Stai ield Observat wurface Water /ater Table Pr aturation Pres	Ass): Ass): Ass): Association Associatio	te required; che ne) riverine) ne) nagery (B7) s No s No	ck all that apply         Salt Crust (         Biotic Crus         Aquatic Inv         Hydrogen S         Oxidized R         Presence c         Recent Iror         Thin Muck         Other (Exp         Depth (inc         Depth (inc         Depth (inc	() (B11) t (B12) ertebrates Sulfide Od hizospher of Reduced n Reductio Surface (( lain in Rer ches): thes):	s (B13) lor (C1) res along I d Iron (C4 on in Tilleo C7) marks) 3	Living Root ) I Soils (C6)	Color ( <u>Seco</u> <u>V</u> <u>S</u> <u>C</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u> <u>S</u>	ava.lab ndary Indicators Vater Marks (B Sediment Deposits (B Drainage Pattern Dry-Season Wat Crayfish Burrow Saturation Visible Shallow Aquitaro FAC-Neutral Test	( (2 or more required) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (Riverine) (C2) (C3) (C3) (C3) (D3) (D5)

Project/Site: Hickman Rd Bridge Applicant/Owner: Stanislaus County			<u>anistaus</u> Sampling Date: <u>12/8/2015</u> _CASampling Point: Za
Investigator(s): Mike Trueblood & Stetan			
Landform (hillslope, terrace, etc.):			): Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:		N	IWI classification:
Are climatic / hydrologic conditions on the site typic Are Vegetation, Soil, or Hydrology Are Vegetation, Soil, or Hydrology SUMMARY OF FINDINGS – Attach sit	significantly dist naturally problem	matic? (If needed, explain	explain in Remarks.) mstances" present? Yes No any answers in Remarks.) ransects, important features, etc.
Hydrophytic Vegetation Present?       Yes         Hydric Soil Present?       Yes         Wetland Hydrology Present?       Yes	No No No	Is the Sampled Area within a Wetland?	Yes No
Remarks:			

	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1. <u>Salix exiqua</u>	10	<u> </u>	OBL	That Are OBL, FACW, or FAC: (A)
2. Salix laevidata	5	N	FACW	Total Number of Dominant
3. Salix lesistabis	2	N	FACW	Species Across All Strata:(B)
4.				
	17	= Total Co	ver	Percent of Dominant Species That Are OBL, FACW, or FAC:
Sapling/Shrub Stratum (Plot size:)				
1. Rubis armeniacus	25	<u>မ</u>	FACU	Prevalence Index worksheet:
2	-			Total % Cover of: Multiply by:
3				OBL species x 1 =
4				FACW species x 2 =
5.				FAC species x 3 =
and canfer of Francisco and a second	25	= Total Co	ver	FACU species x 4 =
Herb Stratum (Plot size:)				UPL species x 5 =
1. Brassica nigra		N	UPL	Column Totals: (A) (B)
2. Avena fatiza	30	<u> </u>	UPL	
3	- 1900 T			Prevalence Index = B/A =
4				Hydrophytic Vegetation Indicators:
5				Dominance Test is >50%
6				Prevalence Index is ≤3.0 <sup>1</sup>
7				Morphological Adaptations <sup>1</sup> (Provide supporting
8				data in Remarks or on a separate sheet)
	32	= Total Co	ver	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)				
1. Vitis californica	_5_	N	FAC	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
2				be present, unless disturbed or problematic.
	_5	= Total Co	ver	Hydrophytic
% Bare Ground in Herb Stratum <u>43</u> % Cover	of Biotic Cr	ust		Vegetation Present? Yes No No
Remarks:				L

SOIL	M = 1.1 + 0.1		NO NORTH	7	al diala a	Sampling Point: 2a
Profile Description: (Descri	be to the depth nee	eded to document the	he indicator	or confirm	the absence	of indicators.)
Depth <u>Matrix</u> (inches) Color (moist)		Redox Feat	ures Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-12		and the second			- X.	River rock and coarse
				1 8		
						Sand
						The second se
	10.01					
			and the second	Alter and and		
		1				en Marine de la la company
				- L.		
<sup>1</sup> Type: C=Concentration, D=D	Depletion, RM=Redu	ced Matrix, CS=Cove	ered or Coate	d Sand Gra	ins. <sup>2</sup> Loc	ation: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: (App				1.1.1.1		for Problematic Hydric Solls <sup>3</sup> :
Histosol (A1)		Sandy Redox (S5)	+		1 cm M	luck (A9) (LRR C)
Histic Epipedon (A2)		Stripped Matrix (S	6)		2 cm M	luck (A10) (LRR B)
Black Histic (A3)	addition in the line	_ Loamy Mucky Min	eral (F1)		Reduce	ed Vertic (F18)
Hydrogen Sulfide (A4)	_	Loamy Gleyed Ma	trix (F2)			arent Material (TF2)
Stratified Layers (A5) (LR	.RC) _	_ Depleted Matrix (F			Other (	Explain in Remarks)
1 cm Muck (A9) (LRR D)	-	_ Redox Dark Surfa				
Depleted Below Dark Sur		_ Depleted Dark Su			3	
Thick Dark Surface (A12)		_ Redox Depression	is (F8)			of hydrophytic vegetation and
Sandy Mucky Mineral (S1		Vernal Pools (F9)				hydrology must be present,
Sandy Gleyed Matrix (S4) Restrictive Layer (if present)					uniess di	sturbed or problematic.
10 11 11 11						
Туре:						
Depth (inches):					Hydric Soil	Present? Yes No
Remarks:	. 0.			$\sim$		
Area is in h	igh Ylow w	ash below	OHWM	1. 'Voe	is not s	upport wetlands
	2			River	Rock/co	bble corse Sand.
Area only in	undated d	uring rain.	events.	NO S	ail color	r available
HYDROLOGY		Z	T	indicati	er het b	upport wetlands bble/ccarse Sand. r available used
Wetland Hydrology Indicato	rs:					
Primary Indicators (minimum c	of one required; chec	ck all that apply)			Secon	dary Indicators (2 or more required)
Surface Water (A1)		Salt Crust (B11)			W	ater Marks (B1) (Riverine)
High Water Table (A2)		Biotic Crust (B12	)		Se	ediment Deposits (B2) (Riverine)
Saturation (A3)		Aquatic Invertebr	ates (B13)			rift Deposits (B3) ( <b>Riverine</b> )
Water Marks (B1) (Nonriv	verine)	Hydrogen Sulfide	Odor (C1)		Dr	rainage Patterns (B10)
Sediment Deposits (B2) (I	Nonriverine)	Oxidized Rhizosp	oheres along l	Living Root	s (C3) Dr	ry-Season Water Table (C2)
Drift Deposits (B3) (Nonri	verine)	Presence of Red	uced Iron (C4	•)	Cr	rayfish Burrows (C8)
Surface Soil Cracks (B6)		Recent Iron Redu			Sa	aturation Visible on Aerial Imagery (C9)
Inundation Visible on Aeria	al Imagery (B7)	Thin Muck Surfac	æ (C7)		Sł	nallow Aquitard (D3)
Water-Stained Leaves (BS		Other (Explain in				AC-Neutral Test (D5)
Field Observations:	-					
Surface Water Present?	Yes No	Depth (inches):				
Water Table Present?	Yes No No	/	>12			,
Saturation Present?	Yes No v		>\2	Wetla	nd Hydrology	Present? Yes V
(includes capillary fringe)				_		
Describe Recorded Data (strea	am gauge, monitorin	ig well, aerial photos,	, previous ins	pections), if	available:	
		18.		i ali		
Remarks:						and the second s
	/	A A A				
Le only in	nundated	saturated	durin	q rai	n events	<b>Ş</b> .
	- /			7		
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Project/Site: Hickman Rd Bridge		City/County	Water	ford/Stanislaus Samp	ling Date: 12/8/201
Applicant/Owner: Stanislaus County Dep of	Public	Works		State: CA Samp	ling Point: 2b
Investigator(s): Mike Truebland, Station de					
Landform (hillslope, terrace, etc.):					
Subregion (LRR):					
Soil Map Unit Name:					
Are climatic / hydrologic conditions on the site typical for th			/		
Are Vegetation $N_{\rm eff}$ , Soil $N_{\rm eff}$ , or Hydrology $N_{\rm eff}$	-			"Normal Circumstances" present	
Are Vegetation, Soil, or Hydrology Are Vegetation, SoilN, or Hydrology				-	
				eeded, explain any answers in R	
SUMMARY OF FINDINGS – Attach site map	showing	samplin	g point l	ocations, transects, imp	ortant features, etc.
Hydric Soil Present? Yes I	No No No	10	e Sampled in a Wetlar		No
VEGETATION – Use scientific names of pla	nts.				,
	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)		Species?	_	Number of Dominant Species	2
1. Populus fremontii		<u>N</u>	FACW	That Are OBL, FACW, or FAC	: (A)
2. Salix laevigata	10	<u> </u>	FACW	Total Number of Dominant	2
37				Species Across All Strata:	(B)
4	11	_= Total Co	ver	Percent of Dominant Species That Are OBL, FACW, or FAC	: <u>100</u> (A/B)
1				Prevalence Index worksheet	-
2				Total % Cover of:	Multiply by:
3				OBL species	x 1 =
4		·		FACW species	
5				FAC species	
Herb Stratum (Plot size:)		_ = Total Co	ver		x 4 =
1. Eichbornia crassipes	20	$\varphi$	OBL	UPL species	
2. Eleocharis Sp.	60	Y	OBL	Column Totals:	(A) (B)
3. (voerus eragrostis	5	N	FACW	Prevalence Index = B/A	
4. Ludwigia peptoides	2	M	OBL	Hydrophytic Vegetation Indi	cators:
5. Paspalum dilatatum	5	N	FAC	Dominance Test is >50%	
6. Polygonum Sp	15	N	FACW	Prevalence Index is ≤3.0 <sup>1</sup>	
7		n – =-		Morphological Adaptation	
8		_		data in Remarks or on	
	107	= Total Co	ver	Problematic Hydrophytic	/egetation (Explain)
Woody Vine Stratum (Plot size:)					otlond budgeters
1				<sup>1</sup> Indicators of hydric soil and w be present, unless disturbed o	
2	_	- T-1-10		Hydrophytic	
		_ = Total Co		Vegetation	
% Bare Ground in Herb Stratum % Cove	er of Biotic C	rust		Present? Yes	No
Remarks:					

Sampling Point: <u>2</u>b

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8.2

Depth <u>Matrix</u>	Redox Features	
(inches) Color (moist) %	Color (moist) % Type <sup>1</sup> Loc <sup>2</sup>	Texture Remarks
0-8 104R 4/1 90	54R 5/8 10 C M	River Rock & Course Sand
	Reduced Matrix, CS=Covered or Coated Sand Gra	
Hydric Soil Indicators: (Applicable to all	LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)	V Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	3
Thick Dark Surface (A12)	Redox Depressions (F8)	<sup>3</sup> Indicators of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	wetland hydrology must be present,
Sandy Gleyed Matrix (S4)		unless disturbed or problematic.
Restrictive Layer (if present):	-Second - Land	
Туре:		
Depth (inches):		Hydric Soil Present? Yes No
Wetland Hydrology Indicators:		
Wetland Hydrology Indicators:	d; check all that apply)	Secondary Indicators (2 or more required)
Wetland Hydrology Indicators:	Salt Crust (B11)	Water Marks (B1) (Riverine)
Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one requirec</u> Surface Water (A1) High Water Table (A2)		
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1)	Salt Crust (B11)	Water Marks (B1) (Riverine)
Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one requirec</u> Surface Water (A1) High Water Table (A2)	Salt Crust (B11) Biotic Crust (B12)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required</u> Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	Water Marks (B1) ( <b>Riverine</b> ) Sediment Deposits (B2) ( <b>Riverine</b> ) Drift Deposits (B3) ( <b>Riverine</b> ) Drainage Patterns (B10)
Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one required</u> Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Water Marks (B1) ( <b>Riverine</b> ) Sediment Deposits (B2) ( <b>Riverine</b> ) Drift Deposits (B3) ( <b>Riverine</b> ) Drainage Patterns (B10)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) s (C3) Dry-Season Water Table (C2)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) s (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) s (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Water-Stained Leaves (B9)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> <li>Thin Muck Surface (C7)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> <li>Thin Muck Surface (C7)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required         Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?         Yes         Yes	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) No Depth (inches):	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Roots</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Wetland	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required         Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?         Yes         Saturation Present?         Yes         Yes	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Roots Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) No Depth (inches):	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7 Water-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge, mo		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Primary Indicators (minimum of one required         Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?         Yes         Saturation Present?         Yes         Saturation Present?         Yes         Saturation Present?         Yes         Saturation Present?		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soil Cracks (B6) Vater-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge, mo		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soil Cracks (B6) Vater-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge, mo		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Surface Soil Cracks (B6) Vater-Stained Leaves (B9) Field Observations: Surface Water Present? Yes Saturation Present? Yes (includes capillary fringe) Describe Recorded Data (stream gauge, mo		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) S (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)

Project/Site: Hickman Rd Bridge			
Applicant/Owner: Stanislaus County Der	of Public Work	S State: CA	Sampling Point: <u>2.c.</u>
Investigator(s): Mike Trueblood i Stefa	de BarrSection, Tow	nship, Range: <u>533, T3</u>	S. RIIE
Landform (hillslope, terrace, etc.):	Local relief (	concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:		NWI classific	cation:
Are climatic / hydrologic conditions on the site typical for Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$ Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$	_ significantly disturbed? _ naturally problematic?	Are "Normal Circumstances"   (If needed, explain any answe	present? Yes No ers in Remarks.)
SUMMARY OF FINDINGS – Attach site ma         Hydrophytic Vegetation Present?       Yes         Hydric Soil Present?       Yes         Wetland Hydrology Present?       Yes         Remarks:       Yes	No Is the within	Sampled Area	

	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?	,	Number of Dominant Species
1. Salex Laevingata	30	$\underline{\varphi}$	FACW	That Are OBL, FACW, or FAC: (A)
2.				
3.				Total Number of Dominant 3 (B)
A.				
**.	30			Percent of Dominant Species
Sapling/Shrub Stratum (Plot size:)	30	= Total Co	ver	That Are OBL, FACW, or FAC: (A/B)
1. Robes armeniacus	40	$\varphi$	FACU	Prevalence Index worksheet:
			174.00	
2				Total % Cover of: Multiply by:
3				OBL species x 1 =
4				FACW species x 2 =
5.				FAC species x 3 =
	40	= Total Co	vər	FACU species x 4 =
Herb Stratum (Plot size:)				UPL species x 5 =
1. Lincium vulgare	1	N	UPL	Column Totals: (A) (B)
2. Conium machterum	1	N	FACW	
3. Bromus diandrus	3	$\overline{\gamma}$	UPL	Prevalence Index = B/A =
4				Hydrophytic Vegetation Indicators:
5			- 1719 - C -	Dominance Test is >50%
6				Prevalence Index is ≤3.0 <sup>1</sup>
7				Morphological Adaptations <sup>1</sup> (Provide supporting
				data in Remarks or on a separate sheet)
8	~	= Total Co		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)	<u> </u>		ver	
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
1	·			be present, unless disturbed or problematic.
2				
		= Total Co	ver	Hydrophytic Vegetation
% Bare Ground in Herb Stratum % Cover	of Biotic C	ust		Present? Yes No V
Remarks:				

Sampling Point: \_\_\_\_\_

 $^{2}$ 

		and the second second second	to the dep				or comm	n the absence of indicators.)
*Type:       Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.       *Location: PL=Pore Lining, M=M         *Histos (A1)       Sandy Redox (S5)       Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydris Said         Histos (A1)       Sandy Redox (S5)       I om Muck (A9) (LRR B)         Black Histic (A3)       Learny Gieyed Matrix (S3)       2 om Muck (A10) (LRR B)         Histos (A1)       Depleted Matrix (F3)       C om Muck (A9) (LRR C)         I om Muck (A9) (LRR C)       Depleted Matrix (F3)       Other (Explain in Remarks)         I om Muck (A9) (LRR C)       Depleted Matrix (F3)       Other (Explain in Remarks)         I om Muck (A9) (LRR C)       Redox Dark Startise (F7)       Thick Dark Startise (A11)       Depleted Matrix (F3)         Sandy Gleyed Matrix (S4)       Vernal Pools (F9)       wetland hydrology must be present.       unless disturbed or problematic.         Startictive Layer (If present):       Type:			%				Loc <sup>2</sup>	Texture Remarks
Type: C-Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.       *Location: PL=Pore Lining, M=M         Type: C-Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.       *Location: PL=Pore Lining, M=M         Type: C-Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.       *Location: PL=Pore Lining, M=M         Histos G(A1)       Stripped Matrix (S5)       1 cm Muck (A9) (LRR B)         Black Histic (A3)       _Loamy Usived Matrix (F2)       Red Dear Matrix (F1)         Histos G(A)       _Loamy Gieyed Matrix (F2)       Red Dear Matrix (F2)         Stripped Matrix (S4)       _Loamy Mucky Mineral (F1)       Red Dear Surface (F1)         Depleted Balow Dark Surface (A1)       Depleted Dark Surface (F7)       Other (Explein in Remarks)         Sandy Mucky Mineral (S1)       _Venal Pools (F9)       unless disturbed or problematic.         Sandy Glewy Matrix (S4)       _unless disturbed or problematic.       wetland hydrology must be present, unless disturbed or problematic.         Type:	A		97	54R 4/6	3	C	M	
hydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soll         Histic Epideon (A2)       Stripped Metrix (S8)	<u> </u>							
bydrc Soll Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soll         Histo Epideon (A2)       Stripped Matrix (S6)					-			
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soil         Histic Epideon (A2)       Striped Matrix (S6)					·			
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soil         Histic Epideon (A2)       Striped Matrix (S6)								
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soil         Histic Epideon (A2)       Striped Matrix (S6)			_					
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soil         Histic Epideon (A2)       Striped Matrix (S6)								
Hydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soll         Histic Epideon (A2)       Stripod Matrix (S8)								
Hydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soll         Histic Epigedon (A2)       Stripped Matrix (S8)								
tydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators for Problematic Hydric Soil         Histic Epigedon (A2)       Stripped Matrix (S6)					_			
							d Sand Gr	
Histic Epipedon (A2)       Stripped Matrix (S6)       2 cm Muck (A10) (LRR B)         Black Histic (A3)       Loamy Mucky Mineral (F1)       Reduced Vortic (F18)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Reduced Vortic (F18)         1 cm Muck (A9) (LRR C)       Depieled Matrix (F2)       Red Parent Material (TF2)         Stratified Layers (A5) (LRR C)       Depieled Dark Surface (F6)       Other (Explain in Remarks)         1 cm Muck (A9) (LRR D)       Redox Dark Surface (F7)       Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Sandy Mucky Mineral (S1)       Vernal Pools (F9)       wetland hydrology must be present, unless disturbed or problematic.         Sandy Gleyed Matrix (S4)       unless disturbed or problematic.       networks (B1) (Moriverine)         Type:			adie to all			ea.}		
Black Histic (A3)       Loamy Mucky Mineral (F1)       Reduced Vertic (F16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Red Parent Matarial (TF2)         Stratified Layers (A5) (LRR C)       Depleted Matrix (F2)       Red Parent Matarial (TF2)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F6)       Period Matrix (F2)       Red ox Depressions (F6)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Sandy Gleyed Matrix (S4)       unless disturbed or problematic.         Sandy Gleyed Matrix (S4)       unless disturbed or problematic.         Saterictive Layer (If present):       Type:         Type:								
						(61)		
Stratified Layers (A5) (LRR C)       Depleted Matrix (F3)       Other (Explain in Remarks)         1 cm Muck (A9) (LRR D)       Redox Dark Surface (F6)         Depleted Bolw Dark Surface (A12)       Redox Dark Surface (F7)         Thick Dark Surface (A12)       Redox Dark Surface (F7)         Sandy Mucky Mineral (S1)       Vernal Pools (F9)         sandy Gleyed Matrix (S4)       unless disturbed or problematic.         Type:					-			
	_ / /		C)			(12)		
□ Depleted Below Dark Surface (A11)       □ Depleted Dark Surface (F7)         Trick Dark Surface (A12)			-,			(F6)		<u> </u>
			ə (A11)			• •		
Sandy Gleyed Matrix (54) unless disturbed or problematic.           Restrictive Layer (If present):           Type:           Depth (inches):           Matrix (S4)           Wotland Hydrology Indicators:           Primarks:             YDROLLOGY             Wetland Hydrology Indicators:             Primary indicators (minimum of one required; check all that apply)   Secondary Indicators (2 or more reguired; check all that apply)              Surface Water (A1)         Salt Crust (B11)             Surface Water (A1)         Salt Crust (B12)   Secondary Indicators (2 or more reguired; check all that apply)              Surface Water (A1)         Salt Crust (B11)                Surface Water (A1)         Salt Crust (B12)   Secondary Indicators (2 or more reguired; check all that apply)              Surface Water (A2)         Biotic Crust (B12)               Saturation (A3)         Aquatic Invertebrates (B13)           Water Marks (B1) (Nonriverine)         Presence of Reduced Iron (C4)         Crayfish Burrows (C8)           Sediment Deposits (B2) (Nonriverine)         Oxidized Rhizospheres along Living Roots (C6)         Saturation Visible on Aerial Imagery (B7)           Thin Muck Surface (C7)         Shallow Aquitard (D3)         Water-Stained Leaves (B9)         Other (Explain In R			. ,					<sup>3</sup> Indicators of hydrophytic vegetation and
Restrictive Layer (If present):       Type:	Sandy M	ucky Mineral (S1)		Vernal Pool	s (F9)			wetland hydrology must be present,
Type:	Sandy G	leyed Matrix (S4)						unless disturbed or problematic.
Depth (inches):       Hydric Soil Present? Yes       N         Remarks:       Remarks:       Remarks:       Remarks:       Remarks:         YDROLOGY       Secondary Indicators:       Secondary Indicators (innimum of one required; check all that apply)       Secondary Indicators (2 or more regulated)	Restrictive L	ayer (if present):		A 11 - 1				
Remarks:         YDROLOGY         Wetland Hydrology Indicators:         2rimary Indicators (minimum of one required; check all that apply)       Secondary Indicators (2 or more re-         Surface Water (A1)       Salt Crust (B11)       Water Marks (B1) (Riverine)         High Water Table (A2)       Biotic Crust (B12)       Sediment Deposits (B2) (Riverine)         Water Marks (B1) (Nonriverine)       Hydrogen Sulfide Odor (C1)       Drift Deposits (B3) (Riverine)         Water Marks (B1) (Nonriverine)       Oxidized Rhizospheres along Living Roots (C3)       Dry-Season Water Table (C2)         Drift Deposits (B3) (Nonriverine)       Oxidized Rhizospheres along Living Roots (C3)       Dry-Season Water Table (C2)         Drift Deposits (B3) (Nonriverine)       Presence of Reduced Iron (C4)       Crayfish Burrows (C8)         Surface Soil Cracks (B6)       Recent Iron Reducitori in Tilled Solis (C6)       Saturation Visible on Aerial Imagery (B7)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Shallow Aquitard (D3)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       FAC-Neutral Test (D5)         "Field Observations:       Depth (inches):       District C2)       No         Saturation Present?       Yes       No       Depth (inches):       District C2)         Saturation Present?       Yes       N	Туре:							1
YDROLOGY         Wetland Hydrology Indicators:         ?rimary Indicators (minimum of one required; check all that apply)       Secondary Indicators (2 or more re- generation (A1)         High Water Table (A2)       Biotic Crust (B11)       Water Marks (B1) (Riverine)         Water Marks (B1) (Nonriverine)       Aquatic Invertebrates (B13)       Drift Deposits (B2) (Riverine)         Water Marks (B1) (Nonriverine)       Hydrogen Sulfide Odor (C1)       Drainage Patterns (B10)         Sediment Deposits (B2) (Nonriverine)       Oxidized Rhizospheres along Living Roots (C3)       Dry-Season Water Table (C2)         Drift Deposits (B3) (Nonriverine)       Presence of Reduced Iron (C4)       Crayfish Burrows (C8)         Surface Soil Cracks (B6)       Recent Iron Reduction in Tilled Soils (C6)       Saturation Visible on Aerial Imagery (B7)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Shallow Aquitard (D3)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       FAC-Neutral Test (D5)         Field Observations:       Depth (inches):       Saturation Present?       Yes       No         Saturation Present?       Yes       No       Depth (inches):       Yes       Yes       No         Depth (inches):       Saturation Present?       Yes       No       Depth (inches):       Yes       Yes       Yes	Depth (inc	hes):						Hydric Soil Present? Yes No
Wetland Hydrology Indicators:       Secondary Indicators:         Primary Indicators (minimum of one required; check all that apply)       Secondary Indicators (2 or more regiment of the secondar	Remarks:							
Wetland Hydrology Indicators:       Secondary Indicators:         Primary Indicators (minimum of one required; check all that apply)       Secondary Indicators (2 or more regiment of the secondar		27						
Primary Indicators (minimum of one required; check all that apply)       Secondary Indicators (2 or more re-				3				
				, abook all that apply				Secondary Indicators (2 or more required)
High Water Table (A2)       Biotic Crust (B12)       Sediment Deposits (B2) (Riverine)         Saturation (A3)       Aquatic Invertebrates (B13)       Drift Deposits (B3) (Riverine)         Water Marks (B1) (Nonriverine)       Hydrogen Sulfide Odor (C1)       Drainage Patterns (B10)         Sediment Deposits (B2) (Nonriverine)       Oxidized Rhizospheres along Living Roots (C3)       Dry-Season Water Table (C2)         Drift Deposits (B3) (Nonriverine)       Presence of Reduced Iron (C4)       Crayfish Burrows (C8)         Surface Soil Cracks (B6)       Recent Iron Reduction in Tilled Soils (C6)       Saturation Visible on Aerial Imagery (B7)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Shallow Aquitard (D3)         Water Table Present?       Yes       No       Depth (inches):         Surface Water Present?       Yes       No       Depth (inches):         Saturation Present?       Yes       No       Depth (inches):       Yes         Saturation Present?       Yes       No       Depth (inches):       Yes       No         Depth (inches):       >15       Wetland Hydrology Present?       Yes       No         Depth Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:       Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: </td <td></td> <td></td> <td>ne required</td> <td></td> <td></td> <td></td> <td></td> <td></td>			ne required					
Water Marks (B1) (Nonriverine)      Hydrogen Sulfide Odor (C1)      Drainage Patterns (B10)        Sediment Deposits (B2) (Nonriverine)      Oxidized Rhizospheres along Living Roots (C3)      Dry-Season Water Table (C2)        Drift Deposits (B3) (Nonriverine)      Presence of Reduced Iron (C4)      Crayfish Burrows (C8)        Surface Soil Cracks (B6)      Recent Iron Reduction in Tilled Soils (C6)      Saturation Visible on Aerial Imagery (B7)        Inundation Visible on Aerial Imagery (B7)      Thin Muck Surface (C7)      Shallow Aquitard (D3)        Water-Stained Leaves (B9)      Other (Explain in Remarks)      FAC-Neutral Test (D5)         Surface Water Present?       Yes      No      Depth (inches):						(240)		
		• •						
Drift Deposits (B3) (Nonriverine)        Presence of Reduced Iron (C4)        Crayfish Burrows (C8)          Surface Soil Cracks (B6)        Recent Iron Reduction in Tilled Soils (C6)        Saturation Visible on Aerial Imagery (B7)          Inundation Visible on Aerial Imagery (B7)        Thin Muck Surface (C7)        Shallow Aquitard (D3)          Water-Stained Leaves (B9)        Other (Explain in Remarks)        FAC-Neutral Test (D5)         Field Observations:							Li da e De e	
Surface Soil Cracks (B6)       Recent Iron Reduction in Tilled Soils (C6)       Saturation Visible on Aerial Imagery (B7)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Shallow Aquitard (D3)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       FAC-Neutral Test (D5)         Field Observations:       Depth (inches):						-		
Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       Shallow Aquitard (D3)         Water-Stained Leaves (B9)       Other (Explain in Remarks)       FAC-Neutral Test (D5)         Field Observations:       Surface Water Present?       Yes       No       Depth (inches):			rine)				•	
							d Soils (C6	
Field Observations:         Surface Water Present?       Yes No Depth (inches):         Water Table Present?       Yes No Depth (inches):         Saturation Present?       Yes No         Depth (inches):       >         Saturation Present?       Yes         Depth (inches):       >			magery (B/					
Surface Water Present?       Yes No Depth (inches):         Water Table Present?       Yes No Depth (inches):         Saturation Present?       Yes No Depth (inches):         Saturation Present?       Yes No Depth (inches):         Includes capillary fringe)       Wetland Hydrology Present? Yes No         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				Other (Exp	plain in Re	marks)		FAC-Neutral Test (D5)
Water Table Present?       Yes No Depth (inches):15       Wetland Hydrology Present? Yes No Depth (inches):15         Saturation Present?       Yes No Depth (inches):15       Wetland Hydrology Present? Yes No Person Present? Yes No Person Present? Yes No Depth (inches): Depth (inches): Person Present? Yes No Person Present? Yes Person Present?				1		_		
Saturation Present? Yes No Depth (inches): Wetland Hydrology Present? Yes Mo Depth (inches): Wetland Hydrology Present? Yes Mo Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Surface Wate	r Present? Y	'es N					
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	Water Table F	Present? Y	'es N			215	_	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			'es N	lo Depth (inc	ches):	>15	Wetla	and Hydrology Present? Yes No
			dauge, mo	nitoring well, aerial r	ohotos, pr	evious ins	pections), i	if available:
Remarks:						•••••	,,,	
	Romarks:							
	Compilianto.							

Project/Site: Hickman Rd Brida	ie City/Co	unty: Waterford/S	tanislaus Samp	ling Date: 12/8/2015
Applicant/Owner: Stanslaus County DE	Pot Public Wor	Ks Sta	te: <u>CA</u> Sampl	ling Point: <u>3</u>
Investigator(s): Mike Trueblood : Stefe	an de Barros Section	, Township, Range: <u>53</u>	3, T35, R	IIE.
Landform (hillslope, terrace, etc.):	Local n	elief (concave, convex, no	ne):	Slope (%):
Subregion (LRR):	Lat:	Long:		Datum:
Soil Map Unit Name:			NWI classification: _	
Are climatic / hydrologic conditions on the site typica	I for this time of year? Yes	s No (If n	io, explain in Remarks	s.)
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology	N significantly disturbe	ed? Are "Normal Cir	cumstances" present	? Yes No
Are Vegetation, Soil, or Hydrology	<u>N</u> naturally problemati	c? (If needed, expl	ain any answers in Re	əmarks.)
SUMMARY OF FINDINGS – Attach site	map showing samp	ling point locations	, transects, imp	ortant features, etc.
Hydrophytic Vegetation Present? Yes	No	is the Sampled Area	and the second	
Hydric Soil Present? Yes	No	within a Wetland?	Yes N	ło
Wetland Hydrology Present? Yes 🗸	No			
Remarks:				

**VEGETATION – Use scientific names of plants.** 

	Absolute	Dominant	Indicator	Dominance Test worksh	eet:	
<u>Tree Stratum</u> (Plot size:) 1	<u>% Cover</u>			Number of Dominant Spec That Are OBL, FACW, or F		(A)
2 3				Total Number of Dominant Species Across All Strata:		(B)
				Species Across All Strata.		(D)
4 Sapling/Shrub Stratum (Plot size:)		= Total Co	over	Percent of Dominant Spec That Are OBL, FACW, or F		(A/B)
1				Prevalence Index works	neet:	
2				Total % Cover of:	Multiply by:	
3				OBL species	x1=	
4				FACW species	x 2 =	- 10 m
5.				FAC species	x 3 =	- 11
		= Total Co	over	FACU species	x 4 =	
Herb Stratum (Plot size:)				UPL species	x 5 =	
	100	4	OBL	Column Totals:		2.4
2				Prevalence Index =	B/A =	
3				Hydrophytic Vegetation		_
4				Dominance Test is >5		
56				Prevalence Index is ≤		
7				Morphological Adapta		ting
8		4		Problematic Hydrophy		- \
Weeds Vine Statum (Distaire)	100	= Total Co	over		nic vegetation (Explai	n)
Woody Vine Stratum (Plot size:)				<sup>1</sup> Indicators of hydric soil ar	nd wetland hydrology r	nust
1				be present, unless disturbe		
2		= Total Co		Hydrophytic		
% Bare Ground in Herb Stratum % C	over of Biotic Ci			Vegetation Present? Yes _	No	
Remarks:						

Sampling Point:

(inches)	Color (moist)	<u>%</u> Co	olor (moist) %	Type <sup>1</sup> Loc <sup>2</sup>	Texture	Remarks
	1.44				4.8	
			Contract in the local division of			The second second second second
	an1		had a	_		
	······································					
		and the second second	- in the second second			and in some
	<u> </u>					ومحاصبا والمرجمة ومقرمه ألح
Type: C=Con	centration, D=Deple	tion, RM=Redu	iced Matrix, CS=Covered	d or Coated Sand G	Grains. <sup>2</sup> Location	on: PL=Pore Lining, M=Matrix.
lydric Soil In	dicators: (Applical	bie to all LRRs	, unless otherwise not	ed.)	indicators for	Problematic Hydric Solis <sup>3</sup> :
_ Histosol (/		-	_ Sandy Redox (S5)			k (A9) (L <b>RR C</b> )
	edon (A2)	_	_ Stripped Matrix (S6)			k (A10) (LRR B)
_ Black Hist		-	_ Loamy Mucky Minera	· · · ·		Vertic (F18)
	Sulfide (A4)		Loamy Gleyed Matrix Depleted Matrix (E2)	(F2)		nt Material (TF2)
	ayers (A5) (LRR C) (A9) (LRR D)		_ Depleted Matrix (F3) _ Redox Dark Surface (	(F6)		plain in Remarks)
	Below Dark Surface	(A11)	_ Depleted Dark Surface			
	Surface (A12)		_ Redox Depressions (		<sup>3</sup> Indicators of h	ydrophytic vegetation and
	cky Mineral (S1)		Vernal Pools (F9)			rology must be present,
Sandy Gle	yed Matrix (S4)				unless distu	rbed or problematic.
Restrictive La	yer (if present):	والمراجع المراجع				/
Туре:	v					
Depth (inch	es):				Hydric Soil Pre	sent? Yes 🗸 No
Remarks:		efore, no	o pit duq. Fr	onded area		wash depression
Remarks: Inu	ndated, then	efore, no	o pit duq. F	onded area		
Remarks: Inur YDROLOG	ndated, then	efore, n	o pit duq. F	orded area		
Remarks: Inco YDROLOG Vetland Hydr	Y			onded area	a in river	wash depression
Remarks: Troom YDROLOG Vetland Hydr Primary Indica	Y ology Indicators:		ck all that apply)	onded area	a in river i	wash depression y Indicators (2 or more required)
Remarks: Troop YDROLOG Vetland Hydr Primary Indicat Surface W	Y ology Indicators: tors (minimum of one tater (A1)		ck all that apply) Salt Crust (B11)	orded area	a in river i <u>Secondar</u> Wate	wash depression y Indicators (2 or more required) r Marks (B1) (Riverine)
YDROLOG YDROLOG Vetland Hydr Primary Indica Surface W High Wate	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2)		ck all that apply) Salt Crust (B11) Biotic Crust (B12)		a in river of <u>Secondan</u> Wate Sedin	wash depression <u>y Indicators (2 or more required)</u> r Marks (B1) (Riverine) ment Deposits (B2) (Riverine)
Primary Indica Surface W High Wate Saturation	Y ology Indicators: tors (minimum of one tater (A1) r Table (A2) (A3)	e required; cher - -	<u>ck all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrate	s (B13)	Secondar Wate Sedin Drift	wash depression <u>y Indicators (2 or more required)</u> r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine)
Primary Indicat YDROLOG Vetland Hydr Primary Indicat Surface W High Wate Saturation Water Mar	Y ology Indicators: tors (minimum of one tater (A1) r Table (A2) (A3) ks (B1) (Nonriverin	e required; cher - - - e)	<u>ck all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrate Hydrogen Sulfide Od	s (B13) dor (C1)	Secondar Secondar Wate Sedin Drift Drain	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10)
Remarks: Troug YDROLOG Vetland Hydr Primary Indicat Surface W High Wate Saturation Water Man Sediment	Y ology Indicators: tors (minimum of one fater (A1) r Table (A2) (A3) ks (B1) (Nonriverin Deposits (B2) (Nonr	e required; cher - - - e) - iverine)	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrate Hydrogen Sulfide Od Oxidized Rhizosphe	s (B13) dor (C1) res along Living Ro	<u>Secondar</u> <u>Secondar</u> <u>Wate</u> <u>Sedir</u> Drift <u>Drair</u> pots (C3) <u>Dry-</u>	wash Jepression y Indicators (2 or more required) or Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2)
Remarks: Thus YDROLOG Wetland Hydr Primary Indica V Surface W High Wate Saturation Water Mar Sediment Drift Depo	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverin Deposits (B2) (Nonriverin sits (B3) (Nonriverin	e required; cher - - - e) - iverine)	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrate Hydrogen Sulfide Od Oxidized Rhizosphe Presence of Reduce	s (B13) dor (C1) res along Living Ro od Iron (C4)	Secondar <u>Secondar</u> <u>Wate</u> <u>Sedin</u> Drift <u>Drift</u> Drots (C3) <u>Dry-S</u> <u>Cray</u>	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) lage Patterns (B10) Season Water Table (C2) fish Burrows (C8)
Remarks: Thom YDROLOG Wetland Hydr Primary Indicas Surface W High Wate Saturation Water Mar Sediment Drift Depo Surface Se	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverin Deposits (B2) (Nonriverin sits (B3) (Nonriverin bil Cracks (B6)	e required; cher - - - - - - - - - - - - - - - - - - -	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrate Hydrogen Sulfide Oc Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti	s (B13) dor (C1) res along Living Ro od Iron (C4) on in Tilled Soils (C	Secondar <u>Secondar</u> Wate <u>Secondar</u> Wate <u>Drift</u> Drift Drift Cray Secondar Cray Secondar	wash Jepression y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9
Remarks: Thus YDROLOG Vetland Hydr Primary Indican Surface W High Wate Saturation Water Man Sediment Drift Depo Surface So Inundation	Y blogy Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverin Deposits (B2) (Nonriverin sits (B3) (Nonriverin bil Cracks (B6) Visible on Aerial Im-	e required; cher - - - - - - - - - - - - - - - - - - -	ck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrate Hydrogen Sulfide Od Oxidized Rhizosphe Presence of Reduce Recent Iron Reduction Thin Muck Surface (	s (B13) dor (C1) res along Living Ro d Iron (C4) on in Tilled Soils (C C7)	Secondar <u>Secondar</u> <u>Wate</u> <u>Sedin</u> <u>Drift</u> <u>Drift</u> <u>Drift</u> <u>Cray</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Secondar</u> <u>Sec</u>	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3)
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Remarks: Thom YDROLOG Wetland Hydr Primary Indican Varface Water Saturation Water Mare Sediment Drift Depo Surface Saturation Water-Sta Field Observa Surface Water Water Table Primer	Y blogy Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverine Deposits (B2) (Nonriverine bil Cracks (B6) Visible on Aerial Im- ined Leaves (B9) tions: Present? Yes	e required; cher	ck all that apply)         Salt Crust (B11)         Biotic Crust (B12)         Aquatic Invertebrate         Hydrogen Sulfide Od         Oxidized Rhizosphe         Presence of Reduce         Recent Iron Reduction         Thin Muck Surface (         Other (Explain in Reduction):         Depth (inches):         2         Depth (inches):	s (B13) dor (C1) res along Living Ro d Iron (C4) on in Tilled Soils (C C7) marks) <u>4-36</u>	Secondar Secondar Wate Sedir Drift Drain Droin Droin Cray Secondar Shall FAC-	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3) Neutral Test (D5)
Remarks: The second status of the second status of	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverine Deposits (B2) (Nonriverine bil Cracks (B6) Visible on Aerial Im- ined Leaves (B9) tions: Present? Yes sent? Yes ary fringe)	e) iverine) agery (B7) No No No No	ck all that apply)	s (B13) dor (C1) res along Living Ro od Iron (C4) on in Tilled Soils (C C7) marks) <u>4-36</u> <u>O</u> Wet	Secondar Vate Vate Sedin Drift Drain Drots (C3) Dry-5 Cray 26) Satur Shall FAC- tland Hydrology Pro- terms of the second seco	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3) Neutral Test (D5)
Remarks: The second status of the second status of	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverine Deposits (B2) (Nonriverine bil Cracks (B6) Visible on Aerial Im- ined Leaves (B9) tions: Present? Yes sent? Yes ary fringe)	e) iverine) agery (B7) No No No No	ck all that apply)         Salt Crust (B11)         Biotic Crust (B12)         Aquatic Invertebrate         Hydrogen Sulfide Od         Oxidized Rhizosphe         Presence of Reduce         Recent Iron Reduction         Thin Muck Surface (         Other (Explain in Reduction):         Depth (inches):         2         Depth (inches):	s (B13) dor (C1) res along Living Ro od Iron (C4) on in Tilled Soils (C C7) marks) <u>4-36</u> <u>O</u> Wet	Secondar Vate Vate Sedin Drift Drain Drots (C3) Dry-5 Cray 26) Satur Shall FAC- tland Hydrology Pro- terms of the second seco	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3) Neutral Test (D5)
Remarks: Town YDROLOG Yetland Hydr Primary Indicat Surface W High Water Saturation Water Mail Sediment Drift Depo Surface Si Inundation Water-Sta Surface Water Vater Table Pre- Saturation Pre- includes capill Describe Reco	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverine Deposits (B2) (Nonriverine bil Cracks (B6) Visible on Aerial Im- ined Leaves (B9) tions: Present? Yes sent? Yes ary fringe)	e) iverine) agery (B7) No No No No	ck all that apply)	s (B13) dor (C1) res along Living Ro od Iron (C4) on in Tilled Soils (C C7) marks) <u>4-36</u> <u>O</u> Wet	Secondar Vate Vate Sedin Drift Drain Drots (C3) Dry-5 Cray 26) Satur Shall FAC- tland Hydrology Pro- terms of the second seco	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3) Neutral Test (D5)
Remarks: The second state of the second state	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverine Deposits (B2) (Nonriverine bil Cracks (B6) Visible on Aerial Im- ined Leaves (B9) tions: Present? Yes sent? Yes ary fringe)	e) iverine) agery (B7) No No No No	ck all that apply)	s (B13) dor (C1) res along Living Ro od Iron (C4) on in Tilled Soils (C C7) marks) <u>4-36</u> <u>O</u> Wet	Secondar Vate Vate Sedin Drift Drain Drots (C3) Dry-5 Cray 26) Satur Shall FAC- tland Hydrology Pro- terms of the second seco	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3) Neutral Test (D5)
Remarks: Town YDROLOG Yetland Hydr Primary Indicat Surface W High Water Saturation Water Mail Sediment Drift Depo Surface Si Inundation Water-Sta Surface Water Vater Table Pre- Saturation Pre- includes capill Describe Reco	Y ology Indicators: tors (minimum of one ater (A1) r Table (A2) (A3) ks (B1) (Nonriverine Deposits (B2) (Nonriverine bil Cracks (B6) Visible on Aerial Im- ined Leaves (B9) tions: Present? Yes sent? Yes ary fringe)	e) iverine) agery (B7) No No No No	ck all that apply)	s (B13) dor (C1) res along Living Ro od Iron (C4) on in Tilled Soils (C C7) marks) <u>4-36</u> <u>O</u> Wet	Secondar Vate Vate Sedin Drift Drain Drots (C3) Dry-5 Cray 26) Satur Shall FAC- tland Hydrology Pro- terms of the second seco	y Indicators (2 or more required) r Marks (B1) (Riverine) ment Deposits (B2) (Riverine) Deposits (B3) (Riverine) mage Patterns (B10) Season Water Table (C2) fish Burrows (C8) ration Visible on Aerial Imagery (C9 ow Aquitard (D3) Neutral Test (D5)

Project/Site: Hickman Rd Bridg	e City	/County: Waterford/St	tanislaus	Sampling Date: 12/8/2015
Applicant/Owner: Stanislaus County DE				
Investigator(s): <u>Mike Truebland</u> , Station	de Barros So	tion, Township, Range: <u>52</u>	33, T3:	3, RIIE
Landform (hillslope, terrace, etc.):	Lo	cal relief (concave, convex, no	ne):	Slope (%):
Subregion (LRR):	Lat:	Long:		Datum:
Soil Map Unit Name:			_ NWI classific	cation:
Are climatic / hydrologic conditions on the site typical Are Vegetation $\underline{N}_{}$ , Soil $\underline{N}_{}$ , or Hydrology $\underline{J}_{}$ Are Vegetation $\underline{N}_{}$ , Soil $\underline{Y}_{}$ , or Hydrology $\underline{J}_{}$ SUMMARY OF FINDINGS – Attach site	N significantly dist	turbed? Are "Normal Cir matic? (If needed, expl	rcumstances" p lain any answe	present? Yes <u> </u>
Wetland Hydrology Present? Yes	No No No	is the Sampled Area within a Wetland?	Yes	No
Remarks:				(Pa)

	Absolute	Dominant India	
Tree Stratum (Plot size:)		Species? Sta	
1. Nicotiana glauca	1	N FA	C That Are OBL, FACW, or FAC: (A)
2			Total Number of Dominant 2
-3			Species Across All Strata: (B)
4			
	1	= Total Cover	Percent of Dominant Species That Are OBL, FACW, or FAC:
Sapling/Shrub Stratum (Plot size:)		.)	
1. Rubus armeniacus	20	<u> </u>	CV Prevalence Index worksheet:
2			Total % Cover of: Multiply by:
3			OBL species x 1 =
4			FACW species x 2 =
5.			FAC species x 3 =
	20	= Total Cover	FACU species x 4 =
Herb Stratum (Plot size:)			UPL species x 5 =
1. Verbena lasiostachys	10	P F	AC Column Totals: (A) (B)
2. Brassica nigra V	20	9 UF	
3			Prevalence Index = B/A =
4		1000	Hydrophytic Vegetation Indicators:
5			Dominance Test is >50%
6		2	Prevalence Index is ≤3.0 <sup>1</sup>
7			Morphological Adaptations <sup>1</sup> (Provide supporting
8			data in Remarks or on a separate sheet)
	34	= Total Cover	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)			250 LEADER STOLEN ALTERNIE STOLEN
1			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
2			be present, unless disturbed or problematic.
		= Total Cover	Hydrophytic
50			Vegetation
% Bare Ground in Herb Stratum 50 % Cover	r of Biotic Cr	ust	_ Present? Yes No
Remarks:			

Sampling Point: <u>3a</u>

Darath hand	Destant President	
Depth <u>Matrix</u> (inches) Color (moist) %	Redox Features Color (moist) % Type <sup>1</sup> Loc	2 Texture Remarks
0-12		River Back & Coarse Sond
Card and the second		
Type: C=Concentration, D=Depletion, RM=R		d Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: (Applicable to all LF	RRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
_ Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	
Thick Dark Surface (A12)	Redox Depressions (F8)	<sup>3</sup> Indicators of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	wetland hydrology must be present,
Sandy Gleyed Matrix (S4)		unless disturbed or problematic.
lestrictive Layer (if present):		
Туре:		
Depth (inches):		Hydric Soil Present? Yes No
emarks:		River Reck/ cobble/ course
A i i i tol d	ining rain prests, NO	sal alor available
		support wetlands. scil culor available,
YDROLOGY		scil culor available, nationator not used.
YDROLOGY Vetland Hydrology Indicators:	T,	naticator not used.
YDROLOGY Vetland Hydrology Indicators:	T,	
PROLOGY	T,	natication not used.
IDROLOGY Vetland Hydrology Indicators: Inimary Indicators (minimum of one required; c	check all that apply)	Secondary Indicators (2 or more required)
YDROLOGY Vetland Hydrology Indicators: Inimary Indicators (minimum of one required; of Surface Water (A1)	Check all that apply) Salt Crust (B11)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; c Surface Water (A1) High Water Table (A2)	Check all that apply) Salt Crust (B11) Biotic Crust (B12)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
YDROLOGY Vetiand Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	<u>Check all that apply)</u> <u></u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Vetland Hydrology Indicators: rimary Indicators (minimum of one required; of 	Check all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2)
Vetland Hydrology Indicators: Irimary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine)	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)         Salt Crust (B11)         Biotic Crust (B12)         Aquatic Invertebrates (B13)         Hydrogen Sulfide Odor (C1)         Oxidized Rhizospheres along Living         Presence of Reduced Iron (C4)         Recent Iron Reduction in Tilled Soils	Secondary Indicators (2 or more required)
YDROLOGY         Vetland Hydrology Indicators:         Immary Indicators (minimum of one required; c	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils Thin Muck Surface (C7)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) s (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
YDROLOGY         Vetiand Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)         Salt Crust (B11)         Biotic Crust (B12)         Aquatic Invertebrates (B13)         Hydrogen Sulfide Odor (C1)         Oxidized Rhizospheres along Living         Presence of Reduced Iron (C4)         Recent Iron Reduction in Tilled Soils	Secondary Indicators (2 or more required)
YDROLOGY         Vetland Hydrology Indicators:         trimary Indicators (minimum of one required; c	<u>check all that apply)</u> <u></u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) s (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; c	<u>check all that apply)</u> <u>Salt Crust (B11)</u> <u>Biotic Crust (B12)</u> <u>Aquatic Invertebrates (B13)</u> <u>Hydrogen Sulfide Odor (C1)</u> <u>Oxidized Rhizospheres along Living</u> <u>Presence of Reduced Iron (C4)</u> <u>Recent Iron Reduction in Tilled Soils</u> <u>Thin Muck Surface (C7)</u> <u>Other (Explain in Remarks)</u> <u>Depth (inches):</u>	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) s (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)	Secondary Indicators (2 or more required)
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) s (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; of the second s	check all that apply)	Maticator not Used
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; of the second s	check all that apply)	Maticator not Used.
YDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)	Maticator not Used
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required; of a surface Water (A1)	check all that apply)	Secondary Indicators (2 or more required)
YDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one required; of a surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?       Yes No         Saturation Present?       Yes	check all that apply)	Secondary Indicators (2 or more required)
YDROLOGY         Vetland Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)	Secondary Indicators (2 or more required)
Vetland Hydrology Indicators:         rimary Indicators (minimum of one required; of the second sec	check all that apply)	Secondary Indicators (2 or more required)
YDROLOGY         Vetiand Hydrology Indicators:         Primary Indicators (minimum of one required; c	check all that apply)	Secondary Indicators (2 or more required)

Project/Site: Hickman Rd. Bridge		City/County: Waterford/Stariel	aus_ Sampling Date: 12/8/2015
Applicant/Owner: Stanislaus County De	o of Pob	lic Works State: C	A Sampling Point:
Investigator(s): Mike Trueblood, Station d	e Barros	Section, Township, Range: <u>533</u> , T	35, RILE
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:			lassification:
Are climatic / hydrologic conditions on the site typical for Are Vegetation $\underline{N}_{}$ , Soil $\underline{N}_{}$ , or Hydrology $\underline{N}_{}$ Are Vegetation $\underline{N}_{}$ , Soil $\underline{Y}_{}$ , or Hydrology $\underline{N}_{}$	or this time of yo significantly naturally pr	ear? Yes       No       (if no, explain of the second seco	
SUMMARY OF FINDINGS - Attach site m	ap showing	sampling point locations, trans	sects, important features, etc.
	No ;_ No _ No	Is the Sampled Area within a Wetland? Yes	в No
Remarks:		in the second second second	

Tree Stratum (Plot size:)	Absolute	Dominant Species?		Dominance Test worksheet:
	30		OBL	Number of Dominant Species (A)
1. <u>Salix exiana</u> 2.			UNL	
				Total Number of Dominant 3 Species Across All Strata: (B)
3				Species Across All Strata: (B)
4				Percent of Dominant Species
Sapling/Shrub Stratum (Plot size:)	30	= Total Co	vər	That Are OBL, FACW, or FAC: <u>00</u> (A/B)
1	ser Milian			Prevalence Index worksheet:
2				Total % Cover of: Multiply by:
3			bux	OBL species x 1 =
4				FACW species x 2 =
5		-	L n E	FAC species x 3 =
		= Total Co	ver	FACU species x 4 =
Herb Stratum (Plot size:)				UPL species x 5 =
1. Conex sp.	2	N	FACW	Column Totals: (A) (B)
2. Lyperus eragrastis	5	N	FACW	
3. Eizhhornia Crassipes	10	N	OBL	Prevalence Index = B/A =
4. Eleocharis sp.	20	4	OBL	Hydrophytic Vegetation Indicators:
5. Mentha pulequium	3	N	OBL.	✓ Dominance Test is >50%
6. Ludwigia peptoides		N	OBL	Prevalence Index is ≤3.0 <sup>1</sup>
7. Cunath dactular	10	N	FACU	Morphological Adaptations <sup>1</sup> (Provide supporting
8. Verbena lasiostachys	30	4	FAC	data in Remarks or on a separate sheet)
Z	85	= Total Co	ver	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)				
1	_			<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2				be present, unless disturbed of problematic.
		= Total Co	ver	Hydrophytic
% Bare Ground in Herb Stratum % Cove	er of Biotic Ci	rust		Vegetation Present? Yes No No
Remarks:				

Sampling Point:

	needed to document the indicator or co	
Depth <u>Matrix</u>	Redox Features	
(inches) Color (moist) %	Color (moist) % Type <sup>1</sup> Lo	pc <sup>2</sup> Texture Remarks
0-5		Biver Rock : Coarse Sand
	1	
Type: C=Concentration, D=Depletion, RM=R	educed Matrix, CS=Covered or Coated Sa	and Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.
lydric Soil Indicators: (Applicable to all LR	Rs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	
Thick Dark Surface (A12)	Redox Depressions (F8)	<sup>3</sup> Indicators of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	wetland hydrology must be present,
Sandy Gleyed Matrix (S4)		unless disturbed or problematic.
Restrictive Layer (if present):		
toouloulo aujor (il procent).		
Туре:		j.
Type: Depth (inches):	course sand scil colo	Hydric Soll Present? Yes No r not availably
Type: Depth (inches): Remarks: River Rock/cobble/	Indicatornat used	
Type: Depth (inches): Remarks: River Rock/cobble/		
Type: Depth (inches): Remarks: River Rock/cobble/		
Type: Depth (inches): Remarks: River Rock/cobble/ YDROLOGY Wetland Hydrology Indicators:	Indicatornot used	
Type: Depth (inches): Remarks: R:ver Rock/cobble/ YDROLOGY YDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; c	Indicatornot used	r not available
Type: Depth (inches): Remarks: River Rock/cobble/ YDROLOGY YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; c	Indicator not used	secondary Indicators (2 or more required)
Type: Depth (inches): Remarks: R:ver Rock/cobble/ YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1)	Indicator not used	r net ava. )aby <u>Secondary Indicators (2 or more required)</u> Water Marks (B1) ( <b>Riverine</b> )
Type: Depth (inches): Remarks: R:ver Rock/cobble/ YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2)	Indicatornot used theck all that apply) Salt Crust (B11) Biotic Crust (B12)	secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Type: Depth (inches): Remarks: River Rock/cobble/ YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Y Saturation (A3)	Indicatornot used check all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drianage Patterns (B10)
Type: Depth (inches): Remarks: River Rock/cobble/ YDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Endicatornot used	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drianage Patterns (B10)
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Type: Depth (inches): Remarks: River Rock/cobble/ YDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine)	Endicator not used theck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livin Presence of Reduced Iron (C4)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) g Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Type: Depth (inches): Remarks: R:ver Rick/cobble/ YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	Endicatornot used Eneck all that apply) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livin Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soi	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) g Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) ils (C6) Saturation Visible on Aerial Imagery (C9)
Type: Depth (Inches): Remarks: <i>River Rack/cobble/</i> <b>YDROLOGY</b> <b>Yetiand Hydrology Indicators:</b> Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) 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)	Endicatornot used	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drift Deposits (B3) (Riverine) Drinage Patterns (B10) g Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) ils (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
Type: Depth (inches): Remarks: // Cobble/ / // Cobble/ / / // Cobble/ / / // Cobble/ / / // Cobble/ / / / // Cobble/ / / / / / / / / / / / / / / / / / /	Endicatornat used	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drift Deposits (B3) (Riverine) Drinage Patterns (B10) g Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) ils (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3)
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Type:	Image: Select all that apply)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drift Deposits (B3) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) g Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) ils (C6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Type:	Image: Select all that apply)	Secondary Indicators (2 or more required)
Type:	Image: Select all that apply)	Secondary Indicators (2 or more required)
Type:	Image: Select all that apply)	Secondary Indicators (2 or more required)

Project/Site: Hickman Rd Bridge	City/County: Waterford/ Stanisla	S Sampling Date: 12/8/2015
Applicant/Owner: Stanislas County Dep of		
investigator(s): Mike Trueblood : Statan de B	Section, Township, Range: 533	T35, RILE
Landform (hillslope, terrace, etc.):	,	-
Subregion (LRR): L	at: Long:	Datum:
Soil Map Unit Name:	NWI clas	sification:
Are climatic / hydrologic conditions on the site typical for this time Are Vegetation $N$ , Soil $N$ , or Hydrology $N$ signified Are Vegetation $N$ , Soil $Y$ , or Hydrology $N$ nature SUMMARY OF FINDINGS – Attach site map sho	ficantly disturbed? Are "Normal Circumstance rally problematic? (If needed, explain any an	es" present? Yes No swers in Remarks.)
Hydrophytic Vegetation Present?       Yes No         Hydric Soil Present?       Yes No         Wetland Hydrology Present?       Yes No         Remarks:       No No	is the Sampled Area	No

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)	<u>% Cover</u>	Species?	Status	Number of Dominant Species
1. Nicotina alaura	1	N	FAC.	That Are OBL, FACW, or FAC: (A)
2	-			
3				Total Number of Dominant     3       Species Across All Strata:     3
4.				
	1	= Total Co	ver	Percent of Dominant Species That Are OBL, FACW, or FAC: 3? (A/B)
Sapling/Shrub Stratum (Plot size:)	-			
1. Kobus armeniacus	20	4	FACU	Prevalence Index worksheet:
2		= = =		Total % Cover of: Multiply by:
3				OBL species x 1 =
4				FACW species x 2 =
5.				FAC species x 3 =
a second a fill of the second second	20	= Total Co	ver	FACU species x 4 =
Herb Stratum (Plot size:)			-	UPL species x 5 =
1. Verbena lasiostachys	10	Ŷ	FAC	Column Totals: (A) (B)
2. Brassica Nigra V	20	4	UPL	
3		-		Prevalence Index = B/A =
4				Hydrophytic Vegetation Indicators:
5				Dominance Test is >50%
6				Prevalence Index is ≤3.0 <sup>1</sup>
7				Morphological Adaptations <sup>1</sup> (Provide supporting
8				data in Remarks or on a separate sheet)
	30	= Total Co	ver	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)				
1				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
2		-		be present, unless disturbed or problematic.
		= Total Co	ver	Hydrophytic
% Bare Ground in Herb Stratum 50 % Cover	r of Biotic Cr	ust		Vegetation Present? Yes No V
Remarks:				

Sampling Point: 4 a

		nent the indicato				
Depth <u>Matrix</u>	Redo	x Features	1.2		R	
(inches) Color (moist) %	Color (moist)	<u>%</u> Type <sup>1</sup>		<u>l exture</u>	Remarks	
0-12					River Rock ? Coarse Sand	
	-					
<sup>1</sup> Type: C=Concentration, D=Depletion, RM			ed Sand Gra		ation: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators: (Applicable to all	LRRs, unless other	wise noted.)		Indicators	for Problematic Hydric Solls <sup>3</sup> :	
Histosol (A1)	Sandy Redo	ox (S5)		1 cm M	fuck (A9) ( <b>LRR C</b> )	
Histic Epipedon (A2)	Stripped Ma	atrix (S6)		2 cm N	fluck (A10) (LRR B)	
Black Histic (A3)	Loamy Muc	ky Mineral (F1)			ed Vertic (F18)	
Hydrogen Sulfide (A4)	Loamy Gley	ed Matrix (F2)			arent Material (TF2)	
Stratified Layers (A5) (LRR C)	Depleted Ma			Other	(Explain in Remarks)	
1 cm Muck (A9) (LRR D)		Surface (F6)				
Depleted Below Dark Surface (A11)		ark Surface (F7)		•		
Thick Dark Surface (A12)		ressions (F8)		<sup>3</sup> Indicators of hydrophytic vegetation and		
Sandy Mucky Mineral (S1)	Vernal Pool	s (F9)			hydrology must be present,	
Sandy Gleyed Matrix (S4)	and the second se			uniess a	isturbed or problematic.	
Restrictive Layer (if present):			1	10 C		
Туре:			-			
Depth (inches):				Hydric Soil	Present? Yes No	
Bomarka:						
Pomerke:	below OHWM.	-Inon	dated a			
Pomorko:	belan OHWM. Noscil a	-Inun cler Avail	dated a			
Remarks: Area is in high flow wash Does not support wetland	below OHWM. Noscil a	-Inun eler Avail	dated a			
Remarks: Area is in high flow wash Does not support wetland	belau OHWM. Noscil a	-Inun cler Avail	lated a			
Remarks: Area is in high flow wash Does not support wetland HYDROLOGY Wetland Hydrology Indicators:			dated a	during Enclicat	hugh flood event. or not used.	
Remarks: Area is in high flow wash Does not support welland IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required	d; check all that apply	v)	dated a	Locical Secon	hugh flood event. or not used. Indary Indicators (2 or more required)	
Remarks: Area is in high flow wash Does not support wetland HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1)	d; check all that apply	γ) (B11)	dated a	Lactical	hugh flood event. or not used. Idary Indicators (2 or more required) Vater Marks (B1) (Riverine)	
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Remarks: Area is in high flow wash Does not support wetland HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3)	d; check all that apply Salt Crust Biotic Crus Aquatic Inv	v) (B11) it (B12) vertebrates (B13)	dated a	Locical <hr/> Locical <hr/> Secon <hr/> Se	hugh flood event. or not used. dary Indicators (2 or more required) /ater Marks (B1) (Riverine) ediment Deposits (B2) (Riverine) rift Deposits (B3) (Riverine)	
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Project/Site: Hickman Rd. Bridge	City/Co	unty: Waterford Staris	Sampling Date: 12/8/2015
Applicant/Owner: Stanislaus County D.	ep of Public Work	State:	A Sampling Point: 5
Investigator(s): Mike Truchlood i Sta	tan de Barras Section	i, Township, Range: <u>533</u>	T35, RIE
Landform (hillslope, terrace, etc.):	Local r	elief (concave, convex, none): _	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:			I classification:
Are climatic / hydrologic conditions on the site typi Are Vegetation <u>N</u> , Soil <u>N</u> , or Hydrology Are Vegetation <u>N</u> , Soil <u>N</u> , or Hydrology SUMMARY OF FINDINGS – Attach sit	N significantly disturbe naturally problemati	ed? Are "Normal Circums c? (If needed, explain ar	stances" present? Yes No ny answers in Remarks.)
Hydrophytic Vegetation Present?       Yes         Hydric Soil Present?       Yes         Wetland Hydrology Present?       Yes	No.	is the Sampled Area within a Wetland?	/es No
Remarks:		al ann an tao	

	Absolute		t Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	% Cover	Species?		Number of Dominant Species	
1. Populus Fremontii	2	N	FACW	That Are OBL, FACW, or FAC: (A)	)
2. Solix exigua	15	<u>୍</u> ୟ	OBL	Total Number of Dominant	
3.				Species Across All Strata:	1
4					<b>`</b>
	17	= Total Co	over	Percent of Dominant Species That Are OBL_FACW_or FAC: 100 (A	
Sapling/Shrub Stratum (Plot size:)				That Are OBL, FACW, or FAC: 100 (A	/D)
1. Rubus armeniacass	3	N	FACU	Prevalence Index worksheet:	
2				Total % Cover of:Multiply by:	
3				OBL species x 1 =	
4				FACW species x 2 =	
5				FAC species x 3 =	
••	3	= Total Co	over	FACU species x 4 =	
Herb Stratum (Plot size:)	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			UPL species x 5 =	11
1. Polyaphum sp.	10	N	OBL	Column Totals: (A) (B	8)
2. Electraris sp.	20	မှ	OBL		-,
3. Lyperus eragrostis	5	N	FACW	Prevalence Index = B/A =	
4. Lemna sp. V	60	9	OBL	Hydrophytic Vegetation Indicators:	
5.				✓ Dominance Test is >50%	
6		·		Prevalence Index is ≤3.0 <sup>1</sup>	
7				Morphological Adaptations <sup>1</sup> (Provide supporting	
8				data in Remarks or on a separate sheet)	
	95	= Total Co	OVER	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Woody Vine Stratum (Plot size:)					
1 <sup>1</sup> MC				<sup>1</sup> Indicators of hydric soil and wetland hydrology must	t
2				be present, unless disturbed or problematic.	
	2	= Total Co	over	Hydrophytic	
W Base Cround in Linth Stratum 9/ Co	une of Diotio Co			Vegetation Present? Yes No	
% Bare Ground in Herb Stratum % Cor		นอเ			
Remarks:					
					1

Sampling Point: \_

L

91 <sub>12</sub>

Depth Matrix		confirm the absence of indicators.)
	Redox Features	
(inches) Color (moist) %	Color (moist) % Type <sup>1</sup>	Loc <sup>2</sup> Texture Remarks
	and and and the second second	
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Red		Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators: (Applicable to all LRF	ts, unless otherwise noted.)	Indicators for Problematic Hydric Solls <sup>3</sup> :
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	
	Depleted Dark Surface (F7)	
Depleted Below Dark Surface (A11) Thick Dark Surface (A12)	Redox Depressions (F8)	<sup>3</sup> Indicators of hydrophytic vegetation and
	Vernal Pools (F9)	
Sandy Mucky Mineral (S1)		wetland hydrology must be present,
Sandy Gleyed Matrix (S4)		unless disturbed or problematic.
Restrictive Layer (if present):		
Туре:	and the second second second	
Depth (inches):		Hydric Soil Present? Yes 📈 No
Remarks:		
T		
Inundated pond. N	lo soil pit duq.	
	0 7	
HYDROLOGY		
Wetland Hydrology Indicators:		
	eck all that apply)	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; ch		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; ch	Salt Crust (B11)	Water Marks (B1) (Riverine)
Primary Indicators (minimum of one required; ch		
Primary Indicators (minimum of one required; ch	Salt Crust (B11)	Water Marks (B1) (Riverine)
Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B11) Biotic Crust (B12)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> </ul>	Water Marks (B1) ( <b>Riverine</b> ) Sediment Deposits (B2) ( <b>Riverine</b> ) Drift Deposits (B3) ( <b>Riverine</b> ) Drainage Patterns (B10)
Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Live</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ring Roots (C3) Dry-Season Water Table (C2)
Primary Indicators (minimum of one required; ch         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1) (Nonriverine)         Sediment Deposits (B2) (Nonriverine)         Drift Deposits (B3) (Nonriverine)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Liv</li> <li>Presence of Reduced Iron (C4)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ring Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Primary Indicators (minimum of one required; ch         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1) (Nonriverine)         Sediment Deposits (B2) (Nonriverine)         Drift Deposits (B3) (Nonriverine)         Surface Soil Cracks (B6)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lix</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> </ul>	Water Marks (B1) (Riverine)         Sediment Deposits (B2) (Riverine)         Drift Deposits (B3) (Riverine)         Drainage Patterns (B10)         ring Roots (C3)         Dry-Season Water Table (C2)         Crayfish Burrows (C8)         Soils (C6)
Primary Indicators (minimum of one required; ch         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1) (Nonriverine)         Sediment Deposits (B2) (Nonriverine)         Drift Deposits (B3) (Nonriverine)         Surface Soil Cracks (B6)         Inundation Visible on Aerial Imagery (B7)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lix</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> <li>Thin Muck Surface (C7)</li> </ul>	Water Marks (B1) (Riverine)         Sediment Deposits (B2) (Riverine)         Drift Deposits (B3) (Riverine)         Drainage Patterns (B10)         ring Roots (C3)         Dry-Season Water Table (C2)         Crayfish Burrows (C8)         Soils (C6)         Shallow Aquitard (D3)
Primary Indicators (minimum of one required; ch         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1) (Nonriverine)         Sediment Deposits (B2) (Nonriverine)         Drift Deposits (B3) (Nonriverine)         Surface Soil Cracks (B6)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lix</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> </ul>	Water Marks (B1) (Riverine)         Sediment Deposits (B2) (Riverine)         Drift Deposits (B3) (Riverine)         Drainage Patterns (B10)         ring Roots (C3)         Dry-Season Water Table (C2)         Crayfish Burrows (C8)         Soils (C6)
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Primary Indicators (minimum of one required; ch         Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?       Yes         Yes       No	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lin</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Water Marks (B1) (Riverine)        Sediment Deposits (B2) (Riverine)        Drift Deposits (B3) (Riverine)        Drift Deposits (B3) (Riverine)        Drift Deposits (B10)         ring Roots (C3)      Dry-Season Water Table (C2)        Crayfish Burrows (C8)         Soils (C6)      Saturation Visible on Aerial Imagery (C9)        Shallow Aquitard (D3)        FAC-Neutral Test (D5)
Primary Indicators (minimum of one required; ch         Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?       Yes         No         Saturation Present?       Yes         No	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lix</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Water Marks (B1) (Riverine)         Sediment Deposits (B2) (Riverine)         Drift Deposits (B3) (Riverine)         Drainage Patterns (B10)         ring Roots (C3)         Dry-Season Water Table (C2)         Crayfish Burrows (C8)         Soils (C6)         Shallow Aquitard (D3)
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Primary Indicators (minimum of one required; ch         ✓ Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?       Yes         No         Saturation Present?       Yes         No	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lin</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> Depth (inches): <u>6 - 12</u> Depth (inches): <u>0</u> Depth (inches): <u>0</u>	Water Marks (B1) (Riverine)     Sediment Deposits (B2) (Riverine)     Drift Deposits (B3) (Riverine)     Drinage Patterns (B10)     Dry-Season Water Table (C2)     Crayfish Burrows (C8) Soils (C6)     Saturation Visible on Aerial Imagery (C9)     Shallow Aquitard (D3)     FAC-Neutral Test (D5)
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Primary Indicators (minimum of one required; ch         ✓ Surface Water (A1)         High Water Table (A2)         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)         Field Observations:         Surface Water Present?       Yes         Vater Table Present?       Yes         Yes       No         Saturation Present?       Yes         Yes       No	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lin</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> Depth (inches): <u>6 - 12</u> Depth (inches): <u>0</u> Depth (inches): <u>0</u>	Water Marks (B1) (Riverine)     Sediment Deposits (B2) (Riverine)     Drift Deposits (B3) (Riverine)     Drinage Patterns (B10)     Dry-Season Water Table (C2)     Crayfish Burrows (C8) Soils (C6)     Saturation Visible on Aerial Imagery (C9)     Shallow Aquitard (D3)     FAC-Neutral Test (D5)
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Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) 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) Field Observations: Surface Water Present? Yes No Water Table Present? Yes No Saturation Present? Yes No Saturation Present? Yes No Saturation Present? Yes No Saturation Present? Yes No	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Lin</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled S</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> Depth (inches): <u>6 - 12</u> Depth (inches): <u>0</u> Depth (inches): <u>0</u>	Water Marks (B1) (Riverine)        Sediment Deposits (B2) (Riverine)        Drift Deposits (B3) (Riverine)        Drift Deposits (B10)        Drift Deposits (B2)        Crayfish Burrows (C8)        Crayfish Burrows (C8)        Sould C6)        Staturation Visible on Aerial Imagery (C9)        Shallow Aquitard (D3)        FAC-Neutral Test (D5)         Wetland Hydrology Present? Yes No

Project/Site: Hickman Rd. Bridge	City/Cou	inty: Waterford Stanislas	s Sampling Date: 12/8/2015
Applicant/Owner: Stanislaus County	Dep of Public Wor	Ks State: CA	_ Sampling Point: <u>5a</u>
Investigator(s): Mike Trueblood, Ste	fon de Barros Section,	, Township, Range: <u>533, T3</u>	S, RUE
Landform (hillslope, terrace, etc.):	Local re	elief (concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:	0 0 Đ	NWI classifi	cation:
Are climatic / hydrologic conditions on the site ty Are Vegetation $\underline{N}_{}$ , Soil $\underline{N}_{}$ , or Hydrolog Are Vegetation $\underline{N}_{}$ , Soil $\underline{Y}_{}$ , or Hydrolog SUMMARY OF FINDINGS – Attach s	gy <u>N</u> significantly disturbe gy <u>N</u> naturally problemation	d? Are "Normal Circumstances" c? (If needed, explain any answe	present? Yes No ers in Remarks.)
	No v	s the Sampled Area vithin a Wetland? Yes	No
Remarks:			

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1. Salix exigua	10	$\overline{\gamma}$	OBL	That Are OBL, FACW, or FAC: (A)
2. Sambucus n gra Gerufea		Ň	UPL	
<b>U</b>				Total Number of Dominant
3				Species Across All Strata: (B)
4			<u> </u>	Percent of Dominant Species
	15	= Total Co	ver	That Are OBL, FACW, or FAC:
Sapling/Shrub Stratum (Plot size:)				
1. Kubus armeniacus	5	<u>N</u>	FACU	Prevalence Index worksheet:
2		_		Total % Cover of: Multiply by:
3				OBL species 10 x 1 = 10
4				FACW species x 2 =
				FAC species x 3 =
5		= Total Co		FACU species 5 x4 = 30
Herb Stratum (Plot size:)		= Iotal Co	ver	UPL species $35 \times 5 = 195$
1. Bromus diandrus	30	Ŷ	UPL	
				Column Totals: <u>50</u> (A) <u>205</u> (B)
23				Prevalence Index = B/A = 4, 1
				Hydrophytic Vegetation Indicators:
4				Dominance Test is >50%
5				Prevalence Index is $\leq 3.0^{1}$
6				
7				Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
8				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
	30	= Total Cov	ver	
Woody Vine Stratum (Plot size:)				1 adjusters of budging of the adjuster of budgets as second
1				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2				
		= Total Cov	ver	Hydrophytic
% Bare Ground in Herb Stratum 60 % Cover	Vegetation Present? Yes No			
Remarks:				

Sampling Point: 5a

Profile Description: (Describe to the depth Depth Matrix	Redox Features	
(inches) Color (moist) %		c <sup>2</sup> TextureRemarks
0-12		River Rack & Course Sone
		Hard Roots Clause gave
	<i>12</i>	
Type: C=Concentration, D=Depletion, RM=R	Reduced Matrix, CS=Covered or Coated Sar	nd Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.
lydric Soil Indicators: (Applicable to all L		Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histosof (A1) Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	,
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	
Thick Dark Surface (A12)	Redox Depressions (F8)	<sup>3</sup> Indicators of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	wetland hydrology must be present,
Sandy Gleyed Matrix (S4)		unless disturbed or problematic.
estrictive Layer (if present):		
Туре:		
Depth (inches):		Hydric Soil Present? Yes No
Depth (inches):	below OHWM. Does not	Hydric Soil Present? Yes <u>No</u> Support wetland. i) color Available. Indicator at US
emarks: Area in high flow wish t Area only inundated dui	below OHWM. Does not ring rain events. No sto	
emarks: Area in high flow wish t Area only inundated dui 'DROLOGY	below OHWM. Does not ring rain events. No sto	Hydric Soil Present? Yes <u>No</u> <u>No</u> support wetland. il color Ana. lable. Indirator not US
emarks: Area in high flow wish to Area only inundated dui (DROLOGY Vetland Hydrology Indicators:	n Hoo	support wetland. il color Ana.lable. Indirator not us
Area in high flow wish to Area only inundated due (DROLOGY Vetland Hydrology Indicators:	n Hoo	
emarks: Area in high flow with the Area only inundated dur "DROLOGY Vetland Hydrology Indicators:	check all that apply) Salt Crust (B11)	support wetland. il color Ana.lable. Indirator not us
emarks: Area in high flow with the Area only inundated dur DROLOGY Vetland Hydrology Indicators: imary Indicators (minimum of one required;	check all that apply)	support wetland. il color Ana. lable. Indicator not US <u>Secondary Indicators (2 or more required)</u>
emarks: Area in high flow worsh to Area only inundated due "DROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one required; _ Surface Water (A1)	check all that apply) Salt Crust (B11)	Support wetland. il color Ana.lable. Indicator not US <u>Secondary Indicators (2 or more required)</u> Water Marks (B1) (Riverine)
emarks: Area in high flow with the Area only inundated dur <b>DROLOGY</b> <b>(etiand Hydrology Indicators:</b> rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2)	check all that apply) Salt Crust (B11) Biotic Crust (B12)	Secondary Indicators (2 or more required) — Water Marks (B1) (Riverine) — Sediment Deposits (B2) (Riverine)
emarks: Area in high flow with the Area only inundated dur <b>DROLOGY</b> <b>retand Hydrology Indicators:</b> rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) Saturation (A3)	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	Secondary Indicators (2 or more required) 
emarks: Area in high flow with the Area only inundated dur <b>'DROLOGY</b> <b>retiand Hydrology Indicators:</b> rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	<u>check all that apply)</u> <u>Salt Crust (B11)</u> <u>Biotic Crust (B12)</u> <u>Aquatic Invertebrates (B13)</u> <u>Hydrogen Sulfide Odor (C1)</u>	Secondary Indicators (2 or more required) 
emarks: Area in high flow with the Area only inundated dur <b>DROLOGY</b> <b>/etiand Hydrology Indicators:</b> rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine)	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)
Area in high flow with Area only inundated dur (DROLOGY (etland Hydrology Indicators: rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Solit	Secondary Indicators (2 or more required) 
emarks: Area in high flow with Area only inundated dui (DROLOGY (etiand Hydrology Indicators: rimary Indicators (minimum of one required; 	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Roots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8)
emarks: Area in high flow with Area only inundated dur <b>DROLOGY</b> <b>retiand Hydrology Indicators:</b> <u>rimary Indicators (minimum of one required;</u> Surface Water (A1) High Water Table (A2) 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)	<u>check all that apply)</u> Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils Thin Muck Surface (C7)	Secondary Indicators (2 or more required) 
emarks: Area in high flow with Area only inundated dur (DROLOGY (etland Hydrology Indicators: rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) 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) teld Observations:	check all that apply)	Secondary Indicators (2 or more required) 
Area in high flow with Area in high flow with Area only invided due Area only invided Area only invided due Area only invided Area Area Area Area Area Area Area Area	check all that apply)	Secondary Indicators (2 or more required) 
emarks: Area in high flow with Area only invided dui (DROLOGY (etland Hydrology Indicators: rimary Indicators (minimum of one required; 	check all that apply)	Secondary Indicators (2 or more required) 
Area in high flow with Area only invided due (DROLOGY (etiand Hydrology Indicators: rimary Indicators (minimum of one required; 	check all that apply)	Secondary Indicators (2 or more required) 
Area in high flow with Area in high flow with Area only invided dui (DROLOGY (etiand Hydrology Indicators: rimary Indicators (minimum of one required; 	check all that apply)	Secondary Indicators (2 or more required)
Remarks:         Area in high flow with         Area only invidated dui         /DROLOGY         //etiand Hydrology Indicators:         trimary Indicators (minimum of one required;	check all that apply)	Secondary Indicators (2 or more required)
Remarks:         Area on high flow with Area only invinded during the second duri	check all that apply)	Secondary Indicators (2 or more required) 
Remarks: Area in high flow with Area any invinded dur YDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) 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) Field Observations: Surface Water Present? Yes No Water Table Present? Yes No	check all that apply)	Secondary Indicators (2 or more required) 
Remarks:         Area in high flow with Area any invidated dur         YDROLOGY         Vetland Hydrology Indicators:         Immary Indicators (minimum of one required;	check all that apply)	Support wetland. I color Auciable. Indicator at US 
emarks: Area in high flow with Area only invided due (DROLOGY (etiand Hydrology Indicators: rimary Indicators (minimum of one required; 	check all that apply)	Support wetland. I color Auciable. Indicator at US 
Remarks:         Area in high flow with Area any invidated dur         YDROLOGY         Vetland Hydrology Indicators:         Immary Indicators (minimum of one required;	check all that apply)	Support wetland. I color Auclable. Indicator at VS 

Project/Site: Hockman Rd. B	rida City/Coun	1. Waterford /Stanislau	S Sampling Date: 12/8/201
Applicant/Owner: Stanislaus (			_ Sampling Point:
Investigator(s): Mike Tase blood	Stern de Parros Section, T	Township, Range: 533, Ta	S, RIIE
_andform (hillslope, terrace, etc.):	Local reli	ef (concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:	~~~~	NWI classi	fication:
Are Vegetation <u>N</u> , Soil <u>N</u> , or H Are Vegetation <u>N</u> , Soil <u>N</u> , or H SUMMARY OF FINDINGS – At	lydrology <u>N</u> naturally problematic?	(If needed, explain any answ	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes No	the Sampled Area thin a Wetland? Yes	No
Remarks: VEGETATION – Use scientific			

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	<u>% Cover</u>	Species?		Number of Dominant Species	
1. Salix acvigata	20	Y	FACW	That Are OBL, FACW, or FAC: (A)	)
. 4					
				Total Number of Dominant	
3				Species Across All Strata: (B)	)
4				Percent of Dominant Species	
	20	= Total Co	ver	That Are OBL, FACW, or FAC: (A/	<b>(B)</b>
Sapling/Shrub Stratum (Plot size:)			T		
1. Robus armeniacus	5	Ee -	FACU	Prevalence Index worksheet:	
2		_		Total % Cover of: Multiply by:	
3				OBL species x 1 =	
4			1	FACW species x 2 =	
				FAC species x 3 =	
5					
Light Strature (Distring)	5	= Total Co	VƏr	FACU species x 4 =	
Herb Stratum (Plot size:)	0-	$\mathbf{O}$	-01	UPL species x 5 =	
	30		OBL	Column Totals: (A) (E	3)
2. Verbena lasiostachys	20	$-\Psi$	FAC		
3. Paspalum dilatatum	5	<u>N</u>	FAC	Prevalence Index = B/A =	
4. Xanthium stremarium	1	N	FAC	Hydrophytic Vegetation Indicators:	
5. Faulsetum so	1	N	FAC	✓ Dominance Test is >50%	
6. Cynodon dactylon	30	$\overline{\mathbf{v}}$	FACU	Prevalence Index is ≤3.0 <sup>1</sup>	
2 There are the the		T I G I I I		Morphological Adaptations <sup>1</sup> (Provide supporting	
7. <u> </u>				data in Remarks or on a separate sheet)	
8	17	= Total Co		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Meady Vine Statum (Distaine)	37	= Total Co	ver		
Woody Vine Stratum (Plot size:)				<sup>1</sup> Indicators of hydric soil and wetland hydrology must	
1				be present, unless disturbed or problematic.	
2				· · · · · · · · · · · · · · · · · · ·	
		= Total Co	ver	Hydrophytic Vegetation	
% Bare Ground in Herb Stratum % Cove	t in Herb Stratum % Cover of Biotic Crust				
Remarks:				Present? Yes <u>No</u>	

. . . . . . 2 . .

- -

	subnet (Beeenine	to the dep	tn needed				or contirn	n the absenc	e of indicators.)
Depth	Matrix				x Features		1 2	Tauduum	Remedia
nches)	<u>Color (moist)</u>	_%	Color (		<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
<u> </u>	564 5/1	80	5YR	4/6	20	6	M	Sand	8 2 4
>-7					_				River Rock
				-	A				
				_				_	
				and the second		_			
			Deduced	Mahilu Of				21	ention: Di -Dere Lining, Mahlehir
	oncentration, D=Depl Indicators: (Application)						d Sand G		ocation: PL=Pore Lining, M=Matrix. s for Problematic Hydric Soils <sup>3</sup> :
						····			
Histosol	pipedon (A2)			andy Rede tripped Ma					Muck (A9) (LRR C) Muck (A10) (LRR B)
	istic (A3)				ky Mineral	(E1)			Iced Vertic (F18)
	an Sulfide (A4)			-	/ed Matrix				Parent Material (TF2)
	d Layers (A5) (LRR C	<b>;</b> )		epieted M		(• =)			r (Explain in Remarks)
	uck (A9) (LRR D)			-	Surface (	F6)			, ,
_ Deplete	d Below Dark Surface	ə (A11)	D(	epleted Da	ark Surface	€ (F7)			
Thick Da	ark Surface (A12)		R	edox Dep	ressions (F	8)		<sup>3</sup> Indicator	s of hydrophytic vegetation and
_Sandy N	lucky Mineral (S1)		V	ernal Pool	s (F9)				d hydrology must be present,
Sandy G	Gleyed Matrix (S4)	_				- 1 J		unless	disturbed or problematic.
	101								
estrictive	Layer (if present):								
estrictive   Type:	Layer (if present):							18	1
			_					Hydric So	il Present? Yes <u> </u>
Type: Depth (in								Hydric So	il Present? Yes <u>No</u> No
Type: Depth (in			_					Hydric So	il Present? Yes <u>No</u> No
Type: Depth (in					iniqui e			Hydric So	il Present? Yes <u>V</u> No
Type: Depth (in					inagʻi a			Hydric So	il Present? Yes <u>V</u> No
Type: Depth (in marks:	ches):				inaro(11 m			Hydric So	il Present? Yes <u>No</u>
Type: Depth (in marks:	ches):				inata il d			Hydric So	il Present? Yes <u>No</u>
Type: Depth (in marks: DROLO	ches):							Hydric So	il Present? Yes <u>No</u>
Type: Depth (in marks: DROLO stland Hy	ches):	ne required	t; check all	that appl	v)				il Present? Yes No No ondary Indicators (2 or more required)
Type: Depth (in marks: DROLO atland Hy imary India	ches): GY drology Indicators:	ne required		that appl Salt Crust				<u>Sec</u>	
Type: Depth (in marks: DROLO otland Hy mary India _ Surface	ches): GY drology Indicators: cators (minimum of or	ne required	_ 5		(B11)			<u>Sec</u>	ondary Indicators (2 or more required)
Type: Depth (in marks: DROLO ottand Hy mary India Surface	Ches): GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2)	ne required	\$ E	Salt Crust Biotic Crus	(B11)	e (B13)		<u>Sec</u>	ondary Indicators (2 or more required) Water Marks (B1) ( <b>Riverine</b> )
Type: Depth (in marks: DROLO etland Hy mary India Surface High Wa Saturatio	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3)		 	Salt Crust Biotic Crus Aquatic Inv	(B11) st (B12)			Sec:	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Type: Depth (in marks: DROLO atland Hy mary India Surface High Wa Saturatia Water M	Ches): GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2)	ne)		Salt Crust Biotic Crus Aquatic Inv Hydrogen	(B11) st (B12) vertebrates	or (C1)	Living Roc	Seca 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Type: Depth (in marks: DROLO etland Hy mary India Surface High Wa Saturatia Water M Sedimen	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri	ne) nriverine)		Salt Crust Biotic Crus Aquatic Inv Hydrogen Dxidized F	(B11) st (B12) vertebrates Sulfide Od	or (C1) es along		<u>Sec</u> 	ondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Type: Depth (in marks: DROLO otland Hy mary India Surface High Wa Saturatio Water M Sedimer Drift Dep	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri nt Deposits (B2) (Nor	ne) nriverine)		Salt Crust Biotic Crus Aquatic Inv Hydrogen Dxidized F Presence	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced	or (C1) es along d Iron (C4	4) ()	<u>Sec</u> 	ondary 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)
Type: Depth (in marks: DROLO otland Hy mary India Surface High Wa Saturatio Vater M Sedimer Drift Dep Surface	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri nt Deposits (B2) (Nor posits (B3) (Nonriver	ne) 1riverine) ine)		Salt Crust Biotic Crus Aquatic Im Hydrogen Dxidized F Presence o Recent Iro	(B11) st (B12) vertebrates Sulfide Od Rhizospher	or (C1) es along d Iron (C4 in in Tilleo	4) ()	<u>Sec</u>     	ondary 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)
Type: Depth (in- marks: DROLO etland Hyd mary India Surface High Wa Saturatia Vater M Sedimer Drift Dep Surface Inundati	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri nt Deposits (B2) (Nor posits (B3) (Nonriver Soil Cracks (B6)	ne) 1riverine) ine)		Salt Crust Biotic Crus Aquatic Im Hydrogen Dxidized F Presence Recent Iro Fhin Muck	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced n Reductio	or (C1) es along d Iron (C4 on in Tilleo C7)	4) ()	<u>Sec</u>     	ondary Indicators (2 or more required) Water Marks (B1) ( <b>Riverine</b> ) Sediment Deposits (B2) ( <b>Riverine</b> ) Drift Deposits (B3) ( <b>Riverine</b> ) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C
Type: Depth (in emarks: DROLO etland Hy imary India Surface High Wa Saturatia Saturatia Unift Dep Surface Inundatia Water S	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri nt Deposits (B2) (Nor posits (B3) (Nonriver Soil Cracks (B6) on Visible on Aerial In tained Leaves (B9)	ne) 1riverine) ine)		Salt Crust Biotic Crus Aquatic Im Hydrogen Dxidized F Presence Recent Iro Fhin Muck	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced n Reductio Surface ((	or (C1) es along d Iron (C4 on in Tilleo C7)	4) ()	<u>Sec</u>     	ondary 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 (C3 Shallow Aquitard (D3)
Type: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Emarks: Depth (in emarks: Depth (in emarks: Emarks: Depth (in emarks: Depth (in emarks: Emarks: Depth (in emarks: Depth (in ema	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri nt Deposits (B2) (Nor posits (B3) (Nonriver Soil Cracks (B6) on Visible on Aerial In tained Leaves (B9) vations:	ne) nriverine) ine) magery (Bi		Salt Crust Biotic Crus Aquatic Inv Hydrogen Dxidized F Presence Recent Iro Fhin Muck Dther (Exp	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduce n Reductio Surface (( blain in Rei	or (C1) es along d Iron (C4 on in Tilleo C7)	4) ()	<u>Sec</u>     	ondary 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 (C3 Shallow Aquitard (D3)
Type: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Selimer Surface Saturatio Saturatio Saturatio Saturatio Saturatio Saturatio Surface Inundatii Water-S eld Obser	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) tarks (B1) (Nonriveri nt Deposits (B2) (Nor posits (B3) (Nonriver Soil Cracks (B6) on Visible on Aerial In tained Leaves (B9) vations: er Present? Ye	ne) nriverine) ine) magery (Bi es		Salt Crust Biotic Crus Aquatic Inv Hydrogen Dxidized F Presence of Recent Iro Fhin Muck Dther (Exp Depth (inv	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced n Reductic Surface (C blain in Ref ches):	or (C1) es along d Iron (C4 on in Tilleo C7)	4) ()	<u>Sec</u>     	ondary 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 (C3 Shallow Aquitard (D3)
Type: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Depth (in emarks: Emarks: Depth (in emarks: Depth (in emarks: Emarks: Depth (in emarks: Depth (in emarks: Emarks: Depth (in emarks: Depth (in ema	GY drology Indicators: cators (minimum of or Water (A1) ater Table (A2) on (A3) larks (B1) (Nonriveri nt Deposits (B2) (Nor posits (B3) (Nonriver Soil Cracks (B6) on Visible on Aerial In tained Leaves (B9) vations: er Present? Ye	ne) nriverine) ine) magery (Bi es   es		Salt Crust Biotic Crus Aquatic Inv Hydrogen Dxidized F Presence Recent Iro Fhin Muck Dther (Exp	(B11) st (B12) vertebrates Sulfide Od Rhizospher of Reduced n Reductio Surface (C plain in Ren ches): ches):	or (C1) es along d Iron (C4 on in Tilleo C7)	) d Soils (C6	<u>Sec</u>     	ondary 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 (CS Shallow Aquitard (D3) FAC-Neutral Test (D5)

Remarks:

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# WETLAND DETERMINATION DATA FORM – Arid West Region

			s Sampling Date: 12/8/201
Applicant/Owner: Stanislaus County	Dep of Public Works	State: CA	_ Sampling Point: 6a
Investigator(s): Mike Truchland 151	afan de Barrossection, Tou	wnship, Range: <u>533, T3</u>	S. RIIE
Landform (hillslope, terrace, etc.):	Local relief	(concave, convex, none):	Slope (%):
Subregion (LRR):	Lat:	Long:	Datum:
Soil Map Unit Name:		NWI classi	fication:
Are Vegetation $N_{-}$ , Soil $N_{-}$ , or Hydrolog			" present? Yes No
Are Vegetation <u>N</u> , Soil <u>N</u> , or Hydrolog SUMMARY OF FINDINGS – Attach s			

**VEGETATION – Use scientific names of plants.** 

	Absolute	Dominant Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)		Species? Status	Number of Dominant Species
1. Solix Laevigata	80	Y FACW	That Are OBL, FACW, or FAC: (A)
2			
3			Total Number of Dominant Species Across All Strata: 2 (B)
4			Percent of Dominant Species
Sapling/Shrub Stratum (Plot size:)	_80_	= Total Cover	That Are OBL, FACW, or FAC: (A/B)
	5	N FACU	Prevalence Index worksheet:
1. Kubus armeniacus			
2			Total % Cover of: Multiply by:
3			OBL species x 1 =
4			FACW species $\underline{x0}$ $x2 = \underline{160}$
5			FAC species x 3 =
	5	= Total Cover	FACU species <u>S</u> x4 = 20
Herb Stratum (Plot size:)			UPL species $80 \times 5 = 400$
1. Bromus diandrus	80	9 UPL	Column Totals: 165 (A) 570 (B)
2			
3			Prevalence index = B/A = 3.5
4.			Hydrophytic Vegetation Indicators:
5			Dominance Test is >50%
6			Prevalence Index is ≤3.0 <sup>1</sup>
7			Morphological Adaptations <sup>1</sup> (Provide supporting
			data in Remarks or on a separate sheet)
8			Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)	20	= Total Cover	
			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
1			be present, unless disturbed or problematic.
2			
		= Total Cover	Hydrophytic
% Bare Ground in Herb Stratum % Cove	r of Biotic Ci	rust	Vegetation Present? Yes No
Remarks:			I

# SOIL

Sampling Point: 6a

Depth Matrix	th needed to document the indicator or confir Redox Features	
(inches) Color (moist) %	Color (moist) % Type <sup>1</sup> Loc <sup>2</sup>	Texture Remarks
0-8 107R 3/6 100		River Rack : Course Son
		•
Type: C=Concentration D=Depletion RM=	=Reduced Matrix, CS=Covered or Coated Sand G	arains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.
lydric Soil Indicators: (Applicable to all		Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
_ Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
	Depleted Matrix (F3) Redox Dark Surface (F6)	
1 cm Muck (A9) (LRR D) Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	
Thick Dark Surface (A12)	Depleted Dark Surface (F7) Redox Depressions (F8)	<sup>3</sup> Indicators of hydrophytic vegetation and
Sandy Mucky Mineral (S1)	Redox Depressions (Fo)	wetland hydrology must be present,
Sandy Mucky Millerar (ST) Sandy Gleyed Matrix (S4)		unless disturbed or problematic.
Restrictive Layer (if present):		
	•	
Туре:		
Depth (inches):		Hydric Soil Present? Yes No
		ng poditý normála z měst narek Renarda narek n Renarda narek n
		na codili numedo o ne o macel Senaro e vecero de contra d
Vetland Hydrology Indicators:		
Vetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1)	Salt Crust (B11)	Water Marks (B1) (Riverine)
Vetland Hydrology Indicators: Primary Indicators (minimum of one required		
Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1)	Salt Crust (B11)	Water Marks (B1) (Riverine)
Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2)	Salt Crust (B11) Biotic Crust (B12)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> </ul>
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required         Surface Water (A1)         High Water Table (A2)         Saturation (A3)         Water Marks (B1) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> </ul>
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Ots (C3)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> </ul>
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C0)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> </ul>
Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C47)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Shallow Aquitard (D3)</li> </ul>
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required         Surface Water (A1)         High Water Table (A2)         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)	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C0)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> </ul>
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C47)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Shallow Aquitard (D3)</li> </ul>
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C4)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Shallow Aquitard (D3)</li> </ul>
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C4)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C4)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	<ul> <li>Water Marks (B1) (Riverine)</li> <li>Sediment Deposits (B2) (Riverine)</li> <li>Drift Deposits (B3) (Riverine)</li> <li>Drainage Patterns (B10)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Shallow Aquitard (D3)</li> </ul>
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C4)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
<ul> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1) (Nonriverine)</li> <li>Sediment Deposits (B2) (Nonriverine)</li> <li>Drift Deposits (B3) (Nonriverine)</li> <li>Surface Soil Cracks (B6)</li> <li>Inundation Visible on Aerial Imagery (B7</li> <li>Water-Stained Leaves (B9)</li> <li>Field Observations:</li> <li>Surface Water Present? Yes Nater Table Present? Yes</li></ul>	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) 6) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5) No
Wetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
Vetland Hydrology Indicators:         Primary Indicators (minimum of one required	<ul> <li>Salt Crust (B11)</li> <li>Biotic Crust (B12)</li> <li>Aquatic Invertebrates (B13)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres along Living Rod</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (Cd</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul> No Depth (inches): No Depth (inches): Weth	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) ots (C3) Dry-Season Water Table (C2) Crayfish Burrows (C8) 6) Saturation Visible on Aerial Imagery (C3) Shallow Aquitard (D3) FAC-Neutral Test (D5) Iand Hydrology Present? Yes Ves No

	TA FORM – Arid West Region
pject/Site: Hickman Rd. Bridge City/Country Dep of Public We	nty: Water Ford / Stanislaws Sampling Date: 12/8/2 cksState: CASampling Point:6b
estigator(s): Mike Trucklood : Stefan de Barras Section,	
ndform (hillslope, terrace, etc.): Local rel	
oregion (LRR): Lat:	
I Map Unit Name:	
climatic / hydrologic conditions on the site typical for this time of year? Yes	
Vegetation N, Soil N, or Hydrology N significantly disturbed	
Vegetation <u>N</u> , Soil <u>N</u> , or Hydrology <u>N</u> naturally problematic	? (If needed, explain any answers in Remarks.)
IMMARY OF FINDINGS – Attach site map showing sampl	The second statement of the se
	the Sampled Area
Vetland Hydrology Present? Yes No	ithin a Wetland? Yes No
emarks: (23) He deneral beat (152)	Hydrogan Sulfide (A-4) Loanty Sleved Ma
	Stratilian Layers (A5) (LRB-C) Depicted Matrix (F
	1 an Mude (AS) (LAR D) Reday Carls Surfa
	Depleted Beinw Darty Surface (A11) Tanksted Dark Sur Trick Dark Surface (A12) Redox Depression
Absolute Domina	nt Indicator Dominance Test worksheet:
ree Stratum (Plot size:) <u>% Cover</u> Species	I NUMBER OF DOMINANT SORCES
Salix lasiolepis <u>5</u> N	_ FACW That Are OBL, FACW, or FAC: (A)
hydric Soll Present? Yes ho	Total Number of Dominant
	Species Across All Strata: (B)
apling/Shrub Stratum (Plot size:)	Cover Percent of Dominant Species (A/B)
	Prevalence Index worksheet:
	OBL species x 1 =
	FACW species 5 x 2 = 10
Secondan judicators (2 or more redulted)	FAC species 5 x 3 = 15
= Total C	**************************************
erb Stratum (Plot size:)	UPL species 100 x5= 500
Ecodium sp. <u>40</u> Y	_ <u>OPL</u> Column Totals: <u>110</u> (A) <u>525</u> (B)
Nerbena Kisiostachys <u>5</u> N	- FAC
Bromus diandrus 7 20 4	UPL Prevalence Index = B/A = <u>4.77</u>
	Hydrophytic Vegetation Indicators:
trat of an	Dominance Test is >50%
Company of the second s	Prevalence Index is ≤3.0 <sup>1</sup>
	Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
105	Backland the back and a first of the first o
body Vine Stratum (Plot size:)	Nate: Table Present?
Nettand Hydrology Present? Yes No.	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
e previous instructions. If available	he present unlose disturbed as are blow stic
= Total C	over Hydrophytic
	Vegetation
Bare Ground in Herb Stratum % Cover of Biotic Crust	Present? Yes No

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SOIL

DOIDER SENV DOA - NROE ATAO NOITANIMRETED QUALTEN Sampling Point: 66

Depth (inches)	Color (moist)	%	Color (		x Features %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks	- Announce and
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	And the second second	· ····································			1	- state in the state	and the second s		No. 1992		
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	oncentration, D=Dep Indicators: (Applic						d Sand Gr			_=Pore Lining, lematic Hydri	
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and share and the second state of the second s	pipedon (A2)	294		ripped Ma	and the second se	-	сИ.		Muck (A9) Muck (A10	(LRR B)	Ino Soil Press
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A CONTRACTOR OF A DESCRIPTION OF A DESCRIPANTE A DESCRIPANTE A DESCRIPANTE A DESCRIPTION OF A DESCRIPTION OF	en Sulfide (A4)				ed Matrix		-de l'arte de	and the second sec		erial (TF2)	anishes.
	d Layers (A5) (LRR	<b>C</b> )		epleted Ma						n Remarks)	
and the second second	uck (A9) (LRR D)				Surface (						
a second a second second second	d Below Dark Surfac	æ (A11)			ark Surface		1				
The second second	ark Surface (A12)				ressions (F	-8)	ants.	Contraction of the second second second	the second s	hytic vegetatio	
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Type:	Layer (il present).	BIL FACW	Q @1#16(1	FILLER STOR	11 1 9		- A	-		the president of	A SALANCE
	abaa):	imol lo te	Cotal Mumi	-		H		Illustria Oal	Dresent	Yes	No
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era) YDROLO Vetland Hyd	cencer content content content drology indicators:	BL PACW http://work blockstol coss	Porces and Percent of That Are O Prevalance 181 streng TACW spec		1 0	oT =		L	42	e 10f7) <u>muter</u>	18 dunt Sionik
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No.	Tree Species	DBH	Height/ Canopy	Associated Vegetation	Health/Notes	Retain?
1	Prunus sp.	10, 6, 9	20/25	Centaurea solstitialis, Bromus diandrus	Healthy	Yes
2	Prunus sp.	8, 6, 6,	20/20	Bromus diandrus, Avena fatua	Healthy	Yes
3	Prunus sp.	8, 8	10/20	Bromus diandrus, Avena fatua, Festuca perennis	Healthy	No
4	Prunus sp.	18	15/20	Bromus diandrus, Bromus hordeaceus	Healthy	No
5	Prunus sp.	13, 8	20/12	Vitis californica, Bromus diandrus, Centaurea solstitalis	Healthy, bird holes in the tree, burrows	Yes
6	Quercus lobata	7	25/10	Bromus diandrus	Healthy	No
7	Prunus sp.	7	15/12	Centaurea solstitialis, Bromus diandrus	Healthy	No
8	Prunus sp.	14	18/15	Centaurea solstitialis, Bromus diandrus	Healthy	No
9	Prunus sp.	9	12/12	Centaurea solstitialis, Bromus diandrus, Festuca perennis	Healthy	No
10	Prunus sp.	6	8/15	Bromus diandrus	Healthy	No
11	Prunus sp.	7	15/10	Centaurea solstitialis, Bromus diandrus	Healthy	No
12	Quercus lobata	16	25/15	Silybum marianum, Bromus diandrus	Healthy	No
13	Prunus sp.	16	20/18	Bromus diandrus	Healthy	No
14	Prunus sp.	6	15/15	Bromus diandrus	Healthy	No
15	Quercus lobata	35	30/25	Bromus diandrus	Healthy	Yes
16	Prunus sp.	11, 6, 16	25/20	Bromus diandrus	Healthy, burrows around tree	No
17	Quercus lobata	23	30/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
18	Quercus lobata	10	20/12	Hordeum murinum, Bromus diandrus	Healthy	Yes
19	Quercus lobata	5	10/6	Hordeum murinum, Bromus diandrus	Unhealthy	Yes
20	Prunus sp.	7,6	10/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
20	Quercus lobata	40	30/35	Hordeum murinum, Bromus diandrus	Healthy	Yes
22	Quercus lobata	11	25/12	Hordeum murinum, Bromus diandrus	Healthy, burrows around tree	Yes
23	Quercus lobata	8	15/6	Hordeum murinum, Bromus diandrus	Healthy, burrows around tree	Yes
23		7	13/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
24	Prunus sp. Quercus lobata	17	20/12	Hordeum murinum, Bromus diandrus	Healthy	Yes
25	Quercus lobata	6, 8	18/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
20	Quercus lobata	0, 8	20/12	Hordeum murinum, Bromus diandrus	Healthy	
	Quercus lobata	9				Yes
28			25/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
29	Quercus lobata	51	40/60	Hordeum murinum, Bromus diandrus	Healthy, bird holes in the tree	Yes
30	Quercus lobata	7	15/15	Hordeum murinum, Bromus diandrus	Unhealthy	Yes
31	Unknown species	6, 4, 8	10/20	Hordeum murinum, Bromus diandrus Hordeum murinum, Bromus diandrus, Silybum	Healthy	Yes
32	Quercus lobata	7	20/12	marianum Hordeum murinum, Bromus diandrus, Silybum	Healthy	Yes
33	Quercus lobata	5	12/12	marianum	Healthy	Yes
34	Quercus lobata	8	25/20	Hordeum murinum, Bromus diandrus	Healthy, burrows around tree	Yes

No.	Tree Species	DBH	Height/ Canopy	Associated Vegetation	Health/Notes	Retain?
35	Quercus lobata	34	35/30	Hordeum murinum, Bromus diandrus	Healthy	Yes
36	Quercus lobata	26	30/25	Hordeum murinum, Bromus diandrus	Healthy	Yes
37	Quercus lobata	11	25/20	Hordeum murinum, Bromus diandrus	Unhealthy	Yes
38	Quercus lobata	22	35/25	Hordeum murinum, Bromus diandrus	Healthy/Large nest in the tree	Yes
39	Quercus lobata	34, 7	40/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
40	Quercus lobata	18	35/25	Hordeum murinum, Bromus diandrus	Healthy	Yes
41	Quercus lobata	14, 9	20/20	Hordeum murinum, Bromus diandrus	Healthy, burrows around tree	No
42	Prunus dulcis	6	15/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
43	Prunus dulcis	9	15/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
44	Quercus lobata	37.5 (trifurcate; t1 -17, t2 - 15, t3 - 15.5)	60/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
45	Quercus lobata	25	60/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
46	Quercus lobata	10	30/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
47	Quercus lobata	13	30/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
48	Quercus lobata	Bifurcate @ 1.5'; t1 -13, t2- 10	30/30	Hordeum murinum, Bromus diandrus	Healthy	Yes
49	Locust	6.25"	20/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
50	Locust	Bifurcate @ 1'; t1 - 9, t2 - 7	15/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
51	Locust	9	15/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
52	Quercus lobata	36	60/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
53	Quercus lobata	7	20/25	Hordeum murinum, Bromus diandrus	Healthy	Yes
54	Quercus lobata	9.5	20/25	Hordeum murinum, Bromus diandrus	Healthy, burrows around trees	Yes
55	Salix gooddingii	8.5	15/30	Hordeum murinum, Bromus diandrus	Healthy	Yes
56	Salix gooddingii	8	25/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
57	Salix gooddingii	6	25/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
58	Salix gooddingii	8.5	25/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
59	Salix gooddingii	Bifork @ 1' ; t1 - 7.5, t2 - 7	20/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
60	Salix laevigata	4.5	25/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
61	Salix laevigata	4	20/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
62	Salix laevigata	6	20/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
63	Salix laevigata	4.5	20/8	Hordeum murinum, Bromus diandrus	Healthy	Yes
64	Salix laevigata	6	30/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
65	Salix laevigata	6	30/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
66	Salix gooddingii	5.75	30/30	Hordeum murinum, Bromus diandrus	Healthy	Yes
67	Salix laevigata	5.5	25/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
68	Salix laevigata	6	25/20	Hordeum murinum, Bromus diandrus	Healthy	Yes

Nie	Tree Species	DBII	Height/	Associated Wagstation	Hoolth/Nietos	Dotoin?
No.	Tree Species	DBH Trifurcate @3' ; t1 - 4.5,	Canopy	Associated Vegetation	Health/Notes	Retain?
69	Salix laevigata	t2 - 4.5, t3 - 6	25/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
70	Salix laevigata	5	30/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
71	Salix laevigata	5.5	30/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
72	Salix laevigata	7.25	30/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
73	Salix laevigata	5	30/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
74	Salix laevigata	6	30/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
75	Salix laevigata	5	20/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
76	Salix laevigata	5	20/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
77	Juglans hindsii	6	20/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
78	Quercus lobata	7.5	40/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
			40/20		Healthy	
79	Quercus lobata	8.5		Hordeum murinum, Bromus diandrus		Yes
80	Quercus lobata	35	60/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
81	Quercus lobata	7	30/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
82	Quercus lobata	23.5 Biforcate @ 6" ; t1 - 7, t2	45/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
83	Ficus carica	-7	15/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
84	Quercus lobata	28	45/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
85	Quercus lobata	15	45/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
86	Quercus lobata	24.5	45/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
87	Salix laevigata	5.75	50/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
88	Quercus lobata	30	60/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
89	Quercus lobata	40	70/30	Hordeum murinum, Bromus diandrus	Healthy	Yes
90	Quercus lobata	groundlevel ; t1 - 5.5, t2 - 8, t3 - 4, t4 - 4	20/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
91	Quercus lobata	Bifurcate @ 2'; t1 - 7.5, t2 - 7	25/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
92	Quercus lobata	51	65/60	Hordeum murinum, Bromus diandrus	Healthy	No
93	Fraxinus latifolia	13	50/25	Hordeum murinum, Bromus diandrus	Healthy	Yes
94	Quercus lobata	Bifurcate @ 2'; t1 - 32, t2 - 28	55/70	Hordeum murinum, Bromus diandrus	Healthy	Yes
		Bifurcate @ 2'; t1 - 30,				
95	Quercus lobata	t2 - 14	60/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
96	Quercus lobata	14.5	55/60	Hordeum murinum, Bromus diandrus	Healthy	Yes
97	Quercus lobata	12.75	30/20	Hordeum murinum, Bromus diandrus	Healthy	Yes
98	Quercus lobata	9	30/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
99	Quercus lobata	23	50/50	Hordeum murinum, Bromus diandrus	Healthy	Yes
100	Quercus lobata	16.5 Bifurcate @ 2.5' ; t1 - 22,	60/50	Hordeum murinum, Bromus diandrus	Healthy	Yes
101	Quercus lobata	t2 - 7.5	50/40	Hordeum murinum, Bromus diandrus	Healthy	No
102	Quercus lobata	6.5	30/12	Hordeum murinum, Bromus diandrus	Healthy	No

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No.	Tree Species	DBH	Canopy	Associated Vegetation	Health/Notes	Retain?
103	Oweners labots	6.5	30/15	Hordeum murinum, Bromus diandrus	TT14h	No
103	Quercus lobata	0.0	30/15	Hordeum murinum, Bromus diandrus	Healthy	NO
104	Quercus lobata 16.75		60/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
104	Quereus iobata	10.75	00/40	Horacum marman, Bromas dianaras	Ticatury	103
105	Prunus dulcis	6	20/30	Hordeum murinum, Bromus diandrus	Healthy	No
100	i runus duiens		20/20		Troubly	110
106	Prunus dulcis	6	20/30	Hordeum murinum, Bromus diandrus	Healthy	No
107	Quercus lobata	34	65/60	Hordeum murinum, Bromus diandrus	Healthy	No
		groundlevel; t1 - 6, t2 -			ž	
108	Salix gooddingii	6, t3 - 6, t4 - 9	25/15	Salix species, Rubus armeniacus	Healthy	Yes
		Bifurcate @ 5"; t1 -			-	
109	Salix gooddingii	11.5, t2 - 8	25/15	Salix species, Rubus armeniacus	Healthy	Yes
				Salix species, Rubus armeniacus, Cephalanthus		
110	Populus sp.	6	35/20	occidentalis	Healthy	Yes
				Salix species, Rubus armeniacus, Cephalanthus		
111	Populus sp.	6	35/20	occidentalis	Healthy	Yes
				Salix species, Rubus armeniacus, Cephalanthus		
112	Populus sp.	8.5	35/25	occidentalis	Healthy	Yes
		Quadfurcate @ 2'; t1 -		Salix species, Rubus armeniacus, Cephalanthus		
113	Salix gooddingii	15, t2 - 17, t3 -14, t4 - 12	25/45	occidentalis, Datura stramonium	Healthy	Yes
				Salix species, Rubus armeniacus, Cephalanthus		
114	Salix laevigata	6	30/15	occidentalis, Datura stramonium	Healthy	Yes
		Quadfurcate @ 2'; t1 -		Bromus Diandrus, Silybum marianum, Hordeum		
115	Quercus lobata	13, t2 - 14, t3 -12, t4 - 10	50/50	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
				Bromus Diandrus, Silybum marianum, Hordeum		
116	Quercus lobata	30	60/40	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
				Bromus Diandrus, Silybum marianum, Hordeum		
117	Quercus lobata	16	60/20	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
		Trifurcate @1.5'; t1 - 16,	10/10	Bromus Diandrus, Silybum marianum, Hordeum		
118	Quercus lobata	t2 - 16, t3 - 24	60/60	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
110		Trifurcate @1.5'; t1 -	50/40	Bromus Diandrus, Silybum marianum, Hordeum		
119	Quercus lobata	12.5, t2 - 9, t3 - 14	50/40	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
100	0	Bifurcate @ 1.5'; t1 -7,	20/20	Bromus Diandrus, Silybum marianum, Hordeum	II Mari	V
120	Quercus lobata	t2- 6.5	30/20	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
101	Oweners labots	Quadfurcate @ 1'; t1 -	50/40	Bromus Diandrus, Silybum marianum, Hordeum	TT - 14h	V
121	Quercus lobata	11, t2 - 6, t3 - 10.5, t4 - 6	50/40	murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
122	Denna dalais	0.5	20/20	Bromus Diandrus, Silybum marianum, Hordeum	Haalthy	Yes
122	Prunus dulcis	8.5	30/20	murinum	Healthy	res
123	Quaraus labata	12.5	40/20	Bromus Diandrus, Silybum marianum, Hordeum	Haalthy	Vas
125	Quercus lobata	13.5	40/30	murinum	Healthy	Yes

Hickman Road over the Tuolumne River Bridge Replacement Project BA

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					El	derberry/V	ELB Surve		rm	
	Riparian/	DGH	DGH	DOM	<b>T</b> ( <b>1</b> G)	Exit holes		Dripline		ci. I
Shrub ID	Non- Riparian	Stems <u>&gt;</u> 1''& ≤3''	Stems <u>&gt;</u> 3''& ≤ 5''	DGH Stems <u>&gt;</u> 5"	Total Stem Count	on Shrub Y/N	Height (feet)	Diameter (ft)	Associated Species	Shrub Location
1	Non	1 a <u>&lt;</u> 3 11	<u>3 a &lt;</u> 3	<u>stems 2</u> 3		1/IN	· · /	· · /	Bromus diandrus, Brassica nigra	20-100 ft
2	Non	11	-	0		N	-		Bromus diandrus, Brassica nigra	20-100 ft
3	Non	2	_	0		N	-		Avena fatua, Bromus diandrus, Festuca perennis	<20 ft
4	Non	0		1		N		-	Brommus diandrus	<20 ft
5	Non	2	-	1	4	N	= •	-	Brommus diandrus	<20 ft
6	Non	0		1	4	N			Brommus diandrus	<20 ft
7	Riparian	1		2	-	Y			Brommus diandrus	<20 ft
8	Riparian	8		0		N N			Hordeum murinum, Bromus diantrus, Centaurea solstitialis	<20 ft
9	Riparian	4		0	-	N			Bromus diandrus	<20 ft
10	Riparian	4		1	11	N			Bromus diandrus, Festuca perennis	<20 ft
10	Riparian	4	-	0		N			Bromus diandrus, Festuca perennis Bromus diandrus, Festuca perennis	<20 ft
11	Riparian	5		0	-	N			Bromus diandrus, Festuca perennis Bromus diandrus, Festuca perennis	<20 ft
12	Riparian	1		0	-	N	-		Quercus lobata, Bromus diandrus	20-100 ft
13	Riparian	1	2	0		N		-	Hordeum murinum, Prunus sp.	20-100 ft
14	Riparian	15		1	16	N	-		Hordeum murinum, Bromus diantrus, Centaurea solstitialis	<20 ft
15	- ·	5		1		N	-		Festuca perennis, Hordeum murinum, Quercus lobata	<20 ft
10	Riparian Riparian	2		1	-	N			Quercus lobata, Festuca perennis, Petroselinum sp.	<20 ft
17		6		1	-	N				<20 ft
18	Riparian Riparian	6		0	-	N	-		Quercus lobata, Festuca perennis, Petroselinum sp. Petroselimun sp., Bromus diandrus	<20 ft
20		10	-	0	-	N	-			<20 ft
20	Riparian	5	0	0		N			Petroselimun sp., Bromus diandrus Petroselimun sp., Bromus diandrus	<20 ft
21	Riparian	4	-	0	-	N			Petroselimun sp., Bromus diandrus	<20 ft
22	Riparian	4	0	0		N	-			<20 ft
23	Riparian	8	_	8		N	20		Festuca perennis, Hordeum murinum, Nicotiana glauca	<20 ft
24	Riparian Riparian	<del>ہ</del> 5		8 0		N			Brassica nigra, Bromus diandrus, Centaurea solstitalis	<20 ft 20-100 ft
25		5		1	8	N	-		Brassica nigra, Bromus diandrus, Silybum marianum	
-	Riparian	0			8	N			Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
27	Riparian	3		1		N N			Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
28 29	Riparian	3		0	-	N N			Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
29 30	Riparian	2		0		N N			Rubus armeniacus, Petroselinum sp.	20-100 ft
30 31	Riparian	0	_	0		N	12 0		Salix exigua, Rubus armeniacus	20-100 ft
-	Riparian	3		2	-	N	-		Shrub no longer present (removed)	20 100 8
32 33	Riparian	3		2	8	N N	-		Rubus armeniacus, Bromus diandrus	20-100 ft 20-100 ft
33	Riparian	1	-	0	-	N N	-		Rubus armeniacus, Bromus diandrus	
34	Riparian	1	-	0		N N	-	-	Rubus armeniacus, Bromus diandrus	20-100 ft
	Riparian	2		-			-		Rubus armeniacus, Bromus diandrus	20-100 ft
36	Riparian		2	0		N	-		Rubus armeniacus, Bromus diandrus	20-100 ft
37	Riparian	1	-	0		N			Rubus armeniacus, Bromus diandrus	20-100 ft
38	Riparian	12	2	0	14	N	13	10	Rubus armeniacus, Bromus diandrus	20-100

39	Riparian	2	0	0	2	N	7	5	Avena fatua	20-100 ft
40	Riparian	6	0	0	6	N	14	8	Salix exigua, Rubus armeniacus	<20 ft
41	Riparian	2	0	0	2	N	10	5	Salix exigua, Rubus armeniacus, Silybum marianum	20-100 ft
42	Riparian	3	0	0	3	N	10	6	Salix exigua, Rubus armeniacus	<20 ft
43	Riparian	9	1	0	10	N	18	10	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
44	Riparian	4	0	0	4	N	15	14	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
45	Riparian	1	0	0	1	Ν	12	4	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
46	Riparian	2	0	0	2	N	12	5	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
47	Riparian	4	0	0	4	N	15	6	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
48	Riparian	9	0	0	9	N	15	6	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
49	Riparian	3	0	0	3	N	8	4	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
50	Riparian	1	0	0	1	N	8	2	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
51	Riparian	0	1	0	1	N	16	4	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
52	Riparian	6	0	0	6	N	7	5	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
53	Riparian	3	1	0	4	N	9	6	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
54	Riparian	0	1	0	1	N	15	8	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
55	Riparian	4	0	0	4	N	7	4	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
56	Riparian	3	1	0	4	N	14	7	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
57	Riparian	5	2	0	7	N	15	10	Avena fatua, Silybum marianum	20-100 ft
58	Riparian	5	0	0	5	N	10	16	Avena fatua, Bromus diandrus	20-100 ft
59	Riparian	10	0	1	11	N	20	8	Avena fatua, Bromus diandrus	20-100 ft
60	Riparian	6	0	0	6	N	12	4	Avena fatua, Bromus diandrus	20-100 ft
61	Riparian	3	2	1	6	N	20	10	Bromus diandrus, Salix exigua	<20 ft
62	Riparian	9	0	1	10	N	18	10	Bromus diandrus, Salix exigua	<20 ft
63	Riparian	5	0	0	5	N	12	8	Rubus armeniacus, Silybum marianum, Salix exigua	<20 ft
64	Riparian	4	0	0	4	Y	8	8	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
65	Riparian	5	0	0	5	Y	10	8	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
66	Riparian	1	0	0	1	N	8	4	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
67	Riparian	1	0	0	1	N	10	5	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
68	Riparian	2	0	0	2	N	12	8	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
69	Riparian	5	0	0	5	Y	10	6	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
70	Riparian	6	0	0	6	N	12	10	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
71	Riparian	3	0	0	3	Y	12	10	Avena fatua, Bromus diandrus, Silybum marianum	20-100 ft
72	Riparian	3		0	3	N	12	10	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
73	Riparian	4	1	0	5	N	8	5	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
74	Riparian	2	0	0	2	N	10	6	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
75	Riparian	13	4	1	18	Y	12	8	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
76	Riparian	9		0	9	N	12	10	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
77	Riparian	4	0	0	4	N	10	12	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
78	Riparian	0		0	1	N	15	12	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft
79	Riparian	0	1	0	1	N	12	15	Avena fatua, Bromus diandrus, Silybum marianum	>100 ft

80	Riparian	4	0	0	4	Ν	10	5 Rubus armeniacus, Bromus diandrus	>100 ft
81	Riparian	3	0	0	3	Ν	15	7 Bromus diandrus, Quercus lobata	>100 ft
82	Riparian	2	1	0	3	N	20	12 Bromus diandrus, Quercus lobata	>100 ft
83	Riparian	6	0	0	6	Ν	12	12 Bromus diandrus, Quercus lobata	>100 ft



# Wildlife Research Associates

Greg Tatarian – Bat Specialist 1119 Burbank Ave. Santa Rosa, CA 95407 Ph: 707.544.6273 Fax: 707.544.6317 www.wildliferesearchassoc.com gregbat@wildliferesearchassoc.com trish@wildliferesearchassoc.com

12/16/2015

Jeff Bray, Principal LSA Associates, Inc. 4200 Rocklin Rd., Ste. 11B Rocklin, CA 95677 916-630-4600 Jeff.Bray@lsa-assoc.com

## RE: DAYTIME BAT HABITAT ASSESSMENT AND BRIDGE SURVEY – HICKMAN ROAD BRIDGE OVER TUOLUMNE RIVER, - HICKMAN, STANISLAUS COUNTY, CA

Dear Jeff,

The following report details my recent daytime habitat assessment and survey of the Hickman Road Bridge over the Tuolumne River, in Hickman, Stanislaus County, California. Recommendations for take avoidance and minimization of impacts to roosting bats, additional surveys, and replacement of existing roosting habitat are also included.

# INTRODUCTION

Stanislaus County is planning replacement of the Hickman Road Bridge over the Tuolumne River (Bray, personal communication). The County has designated the Hickman Road Bridge as 6<sup>th</sup> in priority for work <u>http://www.stancounty.com/publicworks/pdf/bridge-repair-projects.pdf</u>.

LSA Associates, Inc., working for Drake Haglan, bridge engineers for Stanislaus County, conducted an initial assessment of the bridge and observed evidence of bat roosting activity at certain portions of the bridge (Bray, Belt, personal communications). LSA Associates, Inc., then subcontracted Greg Tatarian, bat specialist, Wildlife Research Associates, to conduct a detailed, daytime bat habitat assessment of the bridge to determine if additional focused surveys would be needed, and to develop suitable mitigation recommendations to prevent direct mortality of roosting bats as a result of bridge demolition, and to replace lost roost habitat in the new bridge structure.

### SETTING

The Hickman Road Bridge is located approximately 0.15 mile south of State Route 132, in the town of Waterford, north of Hickman. The project location is represented on the southeastern portion of the Waterford USGS topographic quadrangle in Section 33. The bridge spans the Tuolumne River and associated riparian habitat, and is considered a major rural collector <u>http://uglybridges.com/1048856</u>. Built in 1964, the bridge connects the rural residential town of Waterford with agricultural lands to the south, at an approximate elevation of 73 ft.

The Hickman Road Bridge is a reinforced concrete enclosed box girder design with 7 spans on reinforced concrete solid pier walls and abutments supported by steel piles. The bridge is 33.5 ft. wide and 652.9 ft. long; height above the river channel is not listed, but I estimate a height of 60 ft. from the water level at the time of my survey. Caltrans has identified major deficiencies with the structure (http://www.stancounty.com/bos/agenda/2014/20140916/c02.pdf).

## **METHODS**

I conducted a daytime habitat assessment on November 5, 2015, from 1200 to 1430. The weather was clear and cool, and rain had occurred 1-2 days previously. I used 10 x 42 roof-prism binoculars and a 20-60 x 80mm spotting scope and tripod, along with a 500,000 candlepower spotlight to view the bridge from the ground below. I began at the southern end of the bridge, working from the abutment to the river's edge, then crossed the bridge and surveyed from the north abutment to the river's edge. Suitable potential roost features were noted and photographs are included in this report.

#### RESULTS

No live bats were present in the bridge at the time of my site visit. However, at least one dead bat was observed, and signs of extensive use by bats were observed in several locations on the Hickman Road Bridge. The habitat assessment and bridge survey were conducted after the 2015 bat maternity season, and after the first seasonal rains and reduction in nighttime temperatures; seasonal dispersal from the bridge had obviously occurred.

I observed bat fecal matter and areas of substantial urine staining on, below, and behind what appears to be electrical utility lines that run through vertically-stacked steel enclosed channels. Gaps between these channels also contained visible bat fecal matter in some locations. This series of stacked channels is attached to a solid metal back plate, which in this configuration, has formed a protected, ca. 24" high crevice roost for bats between the metal assembly and the concrete of the soffit exterior wall. The spatial capacity of the space behind the utility channel assembly available for roosting bats is very high, although it appears, based on urine staining on concrete below the channels, that about 50% of this area has been used by roosting bats.

In the gap behind the utility channel assembly, close to the south abutment, I observed one dead bat. Two other bats were located behind the utility channel assembly nearer to the center of the river channel. These two bats could possibly have been in torpor; however, it appeared that these bats were also dead. This would be consistent with the assumption that the population of bats using the Hickman Bridge had already seasonally dispersed for the winter following the recent rain and temperature drop in the area.

In addition to the day roost habitat available behind the utility channel assembly, substantial amounts of crevice day roost habitat is available in the two expansion joints that occur on the bridge. The expansion joints are open from below, but covered by road deck above. It was possible to completely survey the two expansion joints from the ground, as little to no packing material remained in place. Extensive urine staining and adhered fecal pellets inside the roost crevice, and on one of the adjacent bent pier surfaces, indicated

day-roost usage by bats throughout each entire expansion joint. Because of the recent rains, almost no fecal evidence was present below the bridge at either the expansion joints, or the utility channels.

In addition to the expansion joints and utility channel assembly, there are 78 drain holes in the bottom surface of the soffit. Almost all of them appeared to be used by birds, with bird fecal/urates on adjacent bents piers and the concrete surfaces around the drain holes. I was able to insert a camera into 3 holes at the southern abutment and 1 hole at the northern abutment, and no evidence of use by bats was present in those locations. It is not clear at this time whether bats are entering the interior of the box girders through the weep holes, but that potential exists.

Cliff swallow (*Petrochelidon pyrrhonota*) nests and signs of previous use by swallows were observed in many locations beneath the bridge pedestrian walkway soffit extensions, and at the tops of bent piers. No remaining nests were actively occupied by birds.

Some oak trees located within 50 feet from the bridge structure appeared to contain suitable potential bat roost features in the form of cavities, crevices, and exfoliating bark.

Evidence of human activity was observed beneath the bridge and at the abutments (e.g. homeless encampments, bedding, furniture, debris, graffiti, used syringes, etc.).

### DISCUSSION

The large amounts of available roost habitat in the utility channels and expansion joints alone (excluding the potential use of the bridge girder interior spaces), together with observed urine staining and adhered fecal pellets, suggests a large colony of bats may have established itself on this bridge. Based on lack of roosting bats during my site visit, it is possible that seasonal dispersal from the Hickman Road Bridge occurs at some time each winter, however that is not proven.

It also is not clear whether bats are also using the drain holes to enter the girder interior spaces. However, even if only the crevice roost habitat is being used, there is sufficient habitat area for 10,000-20,000 bats, based on previous experience. For example, each expansion joint could reasonably support 2-3,000 individual Brazilian free-tailed bats (*Tadarida brasiliensis*), the species most likely to be using the bridge in large numbers, or Yuma myotis (*Myotis yumanensis*), another species that forms large colonies in large roosts such as bridges. It is also likely that other bat species may also be using the bridge for day-roosting.

Because of the lack of protected larger spaces and cavities with the existing bridge design, night-roosting activity is limited to day-roost features.

Abandoned cliff swallow nests often provide day roost habitat for individual bats; these may require additional actions during removal to prevent take of bats, as detailed below.

#### RECOMMENDATIONS

#### Additional Surveys - Bridge

Although the current bat population and complete assemblage of bat species roosting in the bridge, it is possible to develop appropriate humane eviction methods without conducting additional, focused surveys, based on this habitat assessment and analysis of roost features present on the bridge. It is also possible to design replacement roost habitat to be incorporated into the replacement bridge design without conducting additional, focused surveys, simply by replicating the amount of roost habitat present in the existing bridge in the new bridge structure.

However, it is not possible to provide species and population data for that potential cavity roost area inside the bridge girders at this time, based on the habitat assessment alone. The size of the cavity roost areas in the girders is large, so if any are being used by bats, the population could be quite high in the Hickman Road Bridge.

Avoidance and minimization of direct mortality of bats potentially roosting in the girder interiors will require additional surveys of those locations. It would be possible to conduct a camera inspection of the bridge cavities at each weep hole (and possibly the other roost features) if appropriate lifting equipment or a snooper truck can be obtained. Such visual surveys of the bridge interior spaces could possibly occur outside bat activity seasons, if it was desired to get this information earlier, rather than later, and equipment access is possible.

However, if bats are using the girder interiors, data on bat species and population might be needed in order to develop sufficient mitigation measures for loss of roosting habitat. The most definitive method would entail night emergence surveys during seasonal periods of bat activity by a qualified bat biologist, using night vision equipment, infrared-sensitive cameras, and bioacoustic detectors, to observe any bats flying out from weep holes, expansion joints and behind the utility channel assembly. However, because bats cannot be expected to be actively flying during winter months in this area of California, night emergence surveys would be best conducted between late May to late July, the period when the largest number of bats would be expected to be occupying the bridge.

## Additional Surveys – Trees

A detailed habitat assessment of trees proposed for removal or within a distance of disturbance from construction activities should be conducted several months prior to tree removal to identify trees containing suitable potential colonial bat roost habitat in the form of cavities, crevices, or exfoliating bark. Those trees should be removed using a two-step process during seasonal periods of bat activity, as described below, or after night emergence surveys show no roosting by bats in habitat tree roost features.

## Take Avoidance and Minimization Measures - Bridge

Whether or not additional surveys are conducted to determine any potential use of the bridge girder interior spaces and to identify species and quantify population, direct mortality of roosting bats should be prevented through the implementation of **humane bat exclusion and eviction** from the expansion joints, behind the utility channels, and all weep holes. The following provides methods and seasonal constraints to prevent direct mortality:

- Seasonal Constraints: Prior to bridge demolition, humane exclusion and eviction of bats from expansion joints, behind the utility channels, and all weep holes will be needed to prevent direct mortality of bats. *Humane exclusion and eviction of bats must occur only during seasonal periods of bat activity when no non-volant young or overwinter bats are present so that no bats are trapped inside the roost features.* In this region, the first annual appropriate season to conduct humane eviction are between approximately March 1 (or after evening temperatures rise above 45F, and less than ½" rainfall in 24 hours occurs) and April 15 (after which time females begin giving birth to pups). The next annual season is after maternity season and prior to winter torpor or hibernation; September 1 through about October 15 (or before evening temperatures fall below 45F, and prior to greater than ½" rainfall within 24 hours).
- 2. **Humane Bat Exclusion/Eviction Methods:** Under guidance of a qualified bat biologist experienced with humane bat eviction procedures on bridges, humane bat exclusion and eviction should be conducted by an experienced bat exclusion contractor or by the bridge contractor or subcontractor. Humane exclusion and eviction consists of daytime installation of blockage materials

and one-way exits attached to the concrete that will permit bats to exit during nightly feeding activities, but not allow re-entry into the roost feature. These one-way exits must be made and attached so that they can remain in place until bridge demolition occurs; however, if demolition is delayed, regular monitoring of exclusion blockage materials and one-way exit eviction materials will be required, and repairs made as needed.

Blockage materials for the expansion joints should consist of foam pipe insulation, cut to fit tightly into the expansion joint opening at the bottom and sides of soffits, with sufficient numbers of one-way exits installed to permit evacuation of the entire expansion joint by all bats. One-way exits should consist of 14" wide aluminum roll flashing formed into 8-10" long rectangles, with bent top flanges for attachment to the concrete surface of the bridge using Sikaflex brand polyurethane construction adhesive and Gorilla brand adhesive tape. The bottom portion of the aluminum flashing rectangles should be fitted with fiberglass window screen mesh using Gorilla brand adhesive tape to form an extension chute that will prevent re-entry by bats through the open bottom of the flashing rectangular one-way exit. See figures, below. The number of one-way exits installed at each roost location should be sufficient to allow complete evacuation of all bats.

3. **Swallow Nests:** Because bats may roost in abandoned cliff swallow (*Petrochelidon pyrrhonota*) nests (many of which were present on the bridge during my survey) after those birds have fledged and dispersed, removal should be conducted only after bird nesting season and bat maternity season, and should be conducted by or under supervision of the qualified bat biologist. If demolition is planned to occur earlier in the year when birds would normally be nesting and bats would be raising young, then bats should be humanely evicted first, followed by installation of bird exclusion netting and/or bird deterrence methods to prevent nesting swallows and roosting bats prior to bridge demolition.

### Take Avoidance Measures - Trees

Trees containing suitable potential bat roost habitat features in the form of cavities, crevices, or exfoliating bark may support roosting bats at any time of year. To prevent direct mortality of bats;

- Seasonal Constraints: Potential bat habitat trees, identified by a qualified bat biologist during a tree habitat assessment conducted several months prior to tree removal, shall be removed only between approximately March 1, or when evening temperatures are above 45°F and rainfall less than ½" in 24 hours occurs, and April 15, prior to parturition of pups. The next acceptable period is after pups become self-sufficiently volant September 1 through about October 15, or prior to evening temperatures dropping below 45°F and onset of rainfall greater than ½" in 24 hours.
- 2. Tree Removal Methods: Bat habitat trees should be removed only during seasonal periods of bat activity as described above, *and only after*;
  - a. Negative results from a night emergence survey conducted no more than 1-2 nights prior to tree removal by a qualified bat biologist, using night vision and/or IR-sensitive camera equipment and bioacoustic recording equipment, or;
  - b. All other vegetation other than trees within the Limit of Work is removed prior to bat habitat tree removal, during seasonal periods of activity, and preferably, within 4 days of commencing two-step removal of habitat trees, then either;
  - c. Two-step tree removal over two consecutive days (e.g. Tuesday and Wednesday, or Thursday and Friday). With this method, small branches and small limbs containing *no* cavity, crevice or exfoliating bark habitat on habitat trees, as identified by a qualified bat biologist are removed first on Day 1, *using chainsaws only* (no dozers, backhoes, etc.). The

following day (Day 2), the remainder of the tree is to be removed. The disturbance caused by chainsaw noise and vibration, coupled with the physical alteration of the tree, has the effect of causing colonial bat species to abandon the roost tree after nightly emergence for foraging. Removing the tree the next day prevents re-habituation and re-occupation of the altered tree.

- d. Trees containing suitable potential habitat must be trimmed with chainsaws on Day 1 under initial field supervision by a qualified bat expert to ensure that the tree cutters fully understand the process, and avoid incorrectly cutting potential habitat features or trees. After tree cutters have received sufficient instruction, the qualified bat expert does not need to remain on the site.
- 3. If non-habitat trees or other vegetation must be removed outside those dates, a 100' buffer around each habitat tree should be observed to reduce potential of disturbance of non-volant young during maternity season, or torpid bats during winter months.

### Mitigation Measures – Replacement Roost Habitat

Replacement of the Hickman Road Bridge over Tuolumne River will result in the permanent loss of day roost habitat for bat species unless replacement roost habitat is designed into the new bridge. Night roost habitat at this bridge appears to be minimal, and potentially limited to the day roost cavities, and abandoned cliff swallow nests. The undersurface of the deck does not contain recesses that could trap warm air, which are preferred at bat night roosts. However, if only the expansion joints and utility channels are being used, and not the girder interiors, there is sufficient habitat area for 10,000-20,000 bats in the existing bridge – a substantial number.

Off-site roost replacement is less effective than on-structure replacement habitat (Johnston, Tatarian and Pierson 2004, Tatarian, personal observations). Off-site roost habitat does not provide similar thermal characteristics and stability, potentially requires additional right-of-way availability, routine maintenance, protection from predators and vandals, and has a limited lifespan. On-structure mitigation can be readily designed and implemented in bridges, and should be very straightforward from a biological perspective for the Hickman Road Bridge. Properly designed and constructed on-structure habitat is made with concrete, so no maintenance or replacement is needed. Replacement roost features can be placed in locations that will not conflict with bridge maintenance or inspection.

Sincerely,

Greg Tatairan

#### REFERENCES

JOHNSTON, D. E. PIERSON, AND G. TATARIAN. 2004. CALIFORNIA BAT MITIGATION TECHNIQUES, SOLUTIONS, AND EFFECTIVENESS. PREPARED FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) AND CALIFORNIA STATE UNIVERSITY SACRAMENTO FOUNDATION. PROJECT NUMBER 2394-01. DECEMBER 29. 163 PP.

# PERSONAL COMMUNICATIONS

BELT, LAURA. 2015. LSA ASSOCIATES, INC. SENIOR WILDLIFE BIOLOGIST. EMAIL DISCUSSIONS. OCTOBER-NOVEMBER.

BRAY, JEFF. 2015. LSA ASSOCIATES, INC. PRINCIPAL, BIOLOGIST, PROJECT MANAGER. TELEPHONE AND EMAIL DISCUSSIONS. OCTOBER-NOVEMBER.



Figure 1. Hickman Road Bridge looking from north.



Figure 2. View from south end of bridge. Dead bat observed in roost crevice behind utility channel assembly at arrow.



Figure 3. Extensive areas of bat urine staining and bat fecal matter on soffit behind, beneath, and on utility channel assembly.



Figure 4. Urine staining indicates use by many bats over many years.



Figure 5. Dead bat visible with binoculars and light, but poor photo.



Figure 6. Hickman Road Bridge viewed from northeast abutment.



Figure 7. Roosting activity in expansion joints. Unknown whether bats are entering girder interiors through weep holes, but evidence of use by birds was present.



Figure 8. Roosting activity in expansion joints. Unknown whether bats are entering girder interiors through weep holes, but evidence of use by birds was present.



Figure 9. Interior of interior of one girder cell.



Figure 10. Interior of another girder cell.



Figure 11. Trees containing potential habitat features.



Figure 12. Trees containing potential habitat features.

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View northwest of the Hickman Road Bridge over the Tuolumne River.



View southeast of the Tuolumne River bottom from Hickman Road.



View west of the Tuolumne River from the Hickman Road Bridge.



View north of the Tuolumne River, east of the Hickman Road Bridge.

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View west of the Tuolumne River from the north bank.



View southwest of standing water in the Tuolumne River bottom, east of the Hickman Road Bridge.





View west of the Tuolumne River top of bank and the Hickman Road Bridge.



View east of pastureland along the southern bank of the Tuolumne River, west of the bridge.

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