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

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Biological Assessment

Stanislaus County, California

10-STA-0-CR

Federal Project No. BRLS-5938(199)

April 2017

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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 species list 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.

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

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

Common Name	Scientific Name	Status	Determination
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	No Effect
San Joaquin Valley orcutt grass	*Oricutta inaequalis*	FT; SE; List 1B	No Effect
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	May Affect, Likely 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.

Table 2: Construction Equipment

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

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.

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

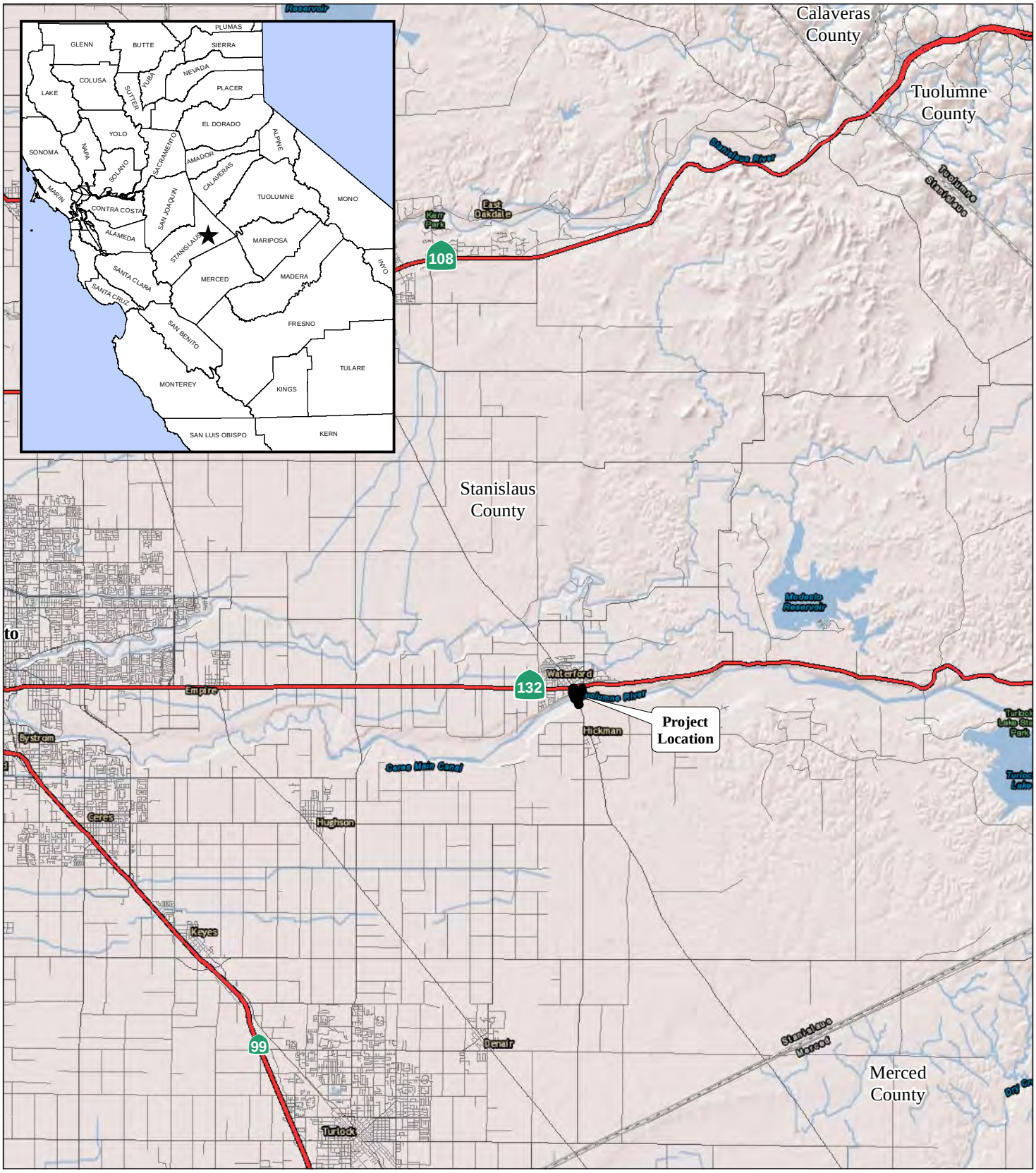
1.4.5.1. PROJECT DESIGN MODIFICATIONS FOR AVOIDANCE AND MINIMIZATION

Central Valley Steelhead/Critical Habitat

1. 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).



LEGEND

Project Location

FIGURE 1

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

Regional Location

0 1.5 3
MILES

SOURCE: ESRI Imagery (2015)

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LEGEND

Action Area

FIGURE 2

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

0 1000 2000
FEET

SOURCE: USGS 7.5-Minute Topographic Map (Sheridan and Lincoln)

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LEGEND

Action Area

FIGURE 3

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

0 500 1000
FEET

SOURCE: NAIP Aerial Imagery (7/2014)

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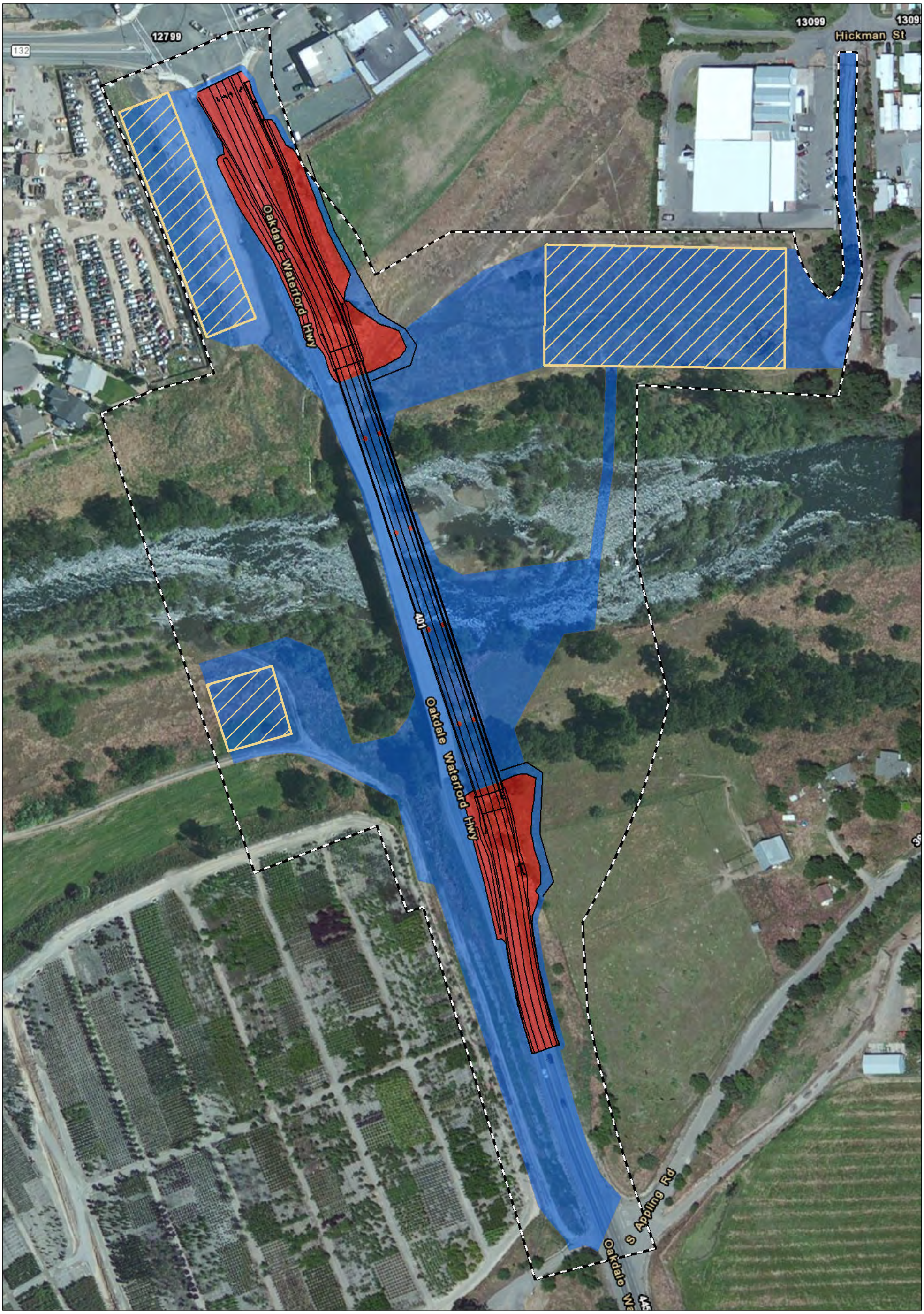

LEGEND

- Action Area
- Project Design
- Permanent Impact Area
- Temporary Impact Area
- Staging Areas

0 75 150
FEET

SOURCE: Basemap - Microsoft Aerial Imagery (2/2012); Mapping - Drake Haglan & Associates (2016)

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FIGURE 4

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

Biological Study Area and Project Design

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

1. 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

1. 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.

Chapter 2. Study Methods

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.

Table 3: Survey Dates and Personnel

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[1]
December 8, 2015	jurisdictional waters delineation	M. Trueblood, S. de Barros

Note: [1] 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).

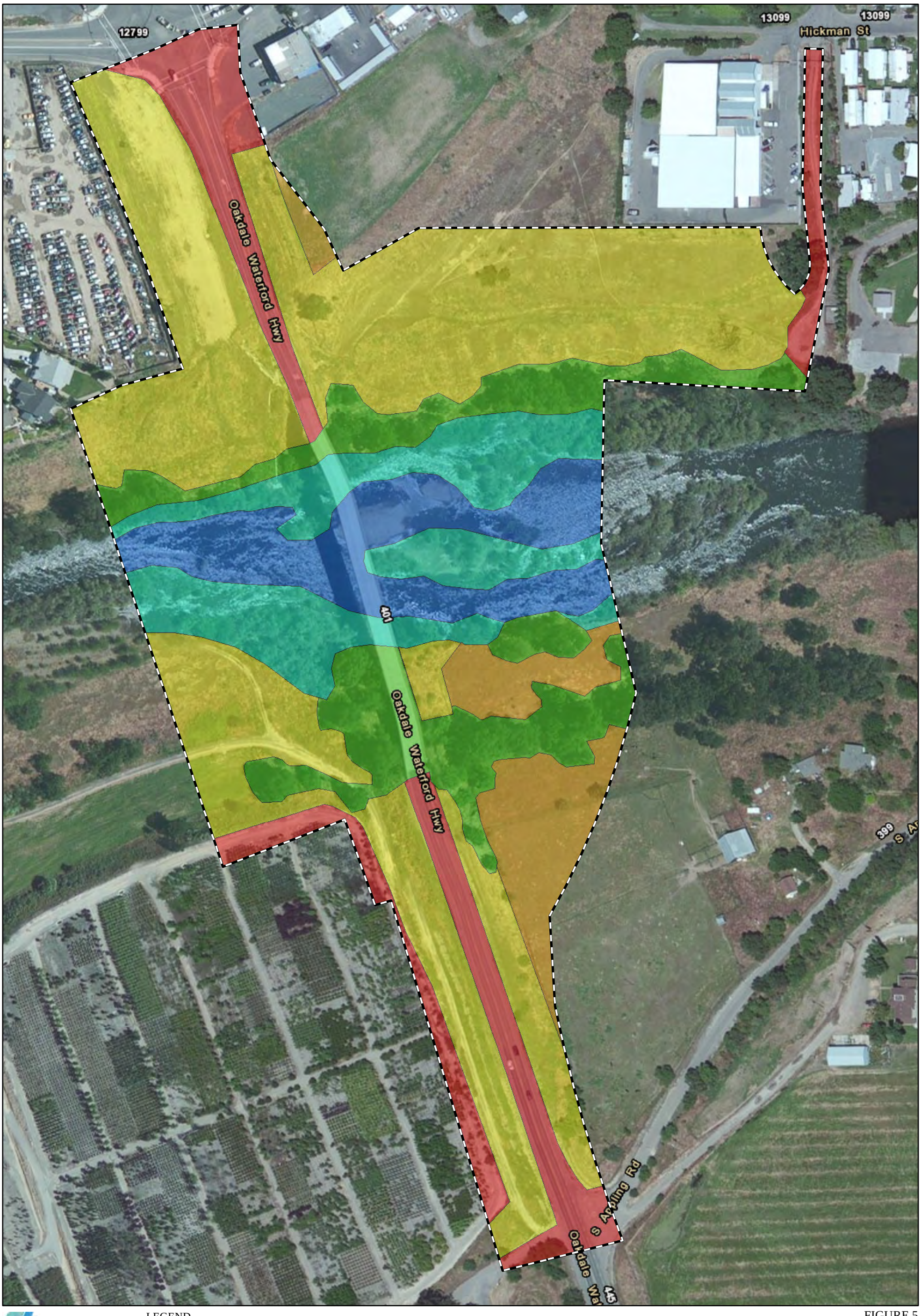
3.1. Habitat Conditions in the Action Area

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.

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

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**



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

I:\DHG1401\GIS\Reports\BA\BA_fig5_plant comm.mxd (1/3/2017)

FIGURE 5

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

Vegetation Communities / Land Uses

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

- Action Area
- Data Point
- CDFW Waters - (9.09 ac)

Potential Jurisdictional Waters of the U.S. - (5.63 ac)

- Wetlands - (1.28 ac)
- Non-wetland Waters - (4.35 ac)

0 75 150
FEET

FIGURE 6

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)
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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 created by the emerging larvae. Consequently, VELB are assumed to be present within 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.

Table 5: Summary of Elderberry Shrubs within 100 Feet of Ground Disturbance

	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.

LEGEND

- Biological Study Area
- Permanent Impact Area
- Temporary Impact Area
- 20-Foot Buffer
- 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

0 100 200
FEET

SOURCE: Basemap - Microsoft Aerial Imagery (2/2012); Mapping - LSA Associates, Inc. (2016)

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FIGURE 7

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

Elderberry Locations and ESA Fencing

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

1. 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

1. 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.

Table 6: Summary of Required VELB Mitigation Plantings

Size Category	Total Number of Stems Impacted	Elderberry Planting Ratio	Elderberry Plantings	Associated Native Species Planting Ratio	Associated Species Planting	Total Mitigation Planting
Non-Riparian – No Exit 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**

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.

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

5.8.1.2. MAY AFFECT-NOT LIKELY TO ADVERSELY AFFECT

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.

1. 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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Appendix A USFWS and NOAA Fisheries Species Lists

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

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

United States Department of Interior
Fish and Wildlife Service

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 Location Map:

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

Project Counties: Stanislaus, CA

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 *(Rana draytonii)* Population: Wherever found	Threatened	Final designated	
California tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Crustaceans			
Conservancy fairy shrimp *(Branchinecta conservatio)* Population: Wherever found	Endangered	Final designated	
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Wherever found	Threatened	Final designated	
Vernal Pool tadpole shrimp *(Lepidurus packardi)* Population: Wherever found	Endangered	Final designated	
Fishes			
Delta smelt *(Hypomesus*	Threatened	Final designated	

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

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)* Population: Northern California DPS	Final designated

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) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

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

ESA Marine Invertebrates

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

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

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

ESA Whales

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

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

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

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Appendix B Design Plans

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
PLANS FOR THE CONSTRUCTION OF

HICKMAN ROAD BRIDGE REPLACEMENT OVER TUOLUMNE RIVER
STANISLAUS COUNTY, CALIFORNIA

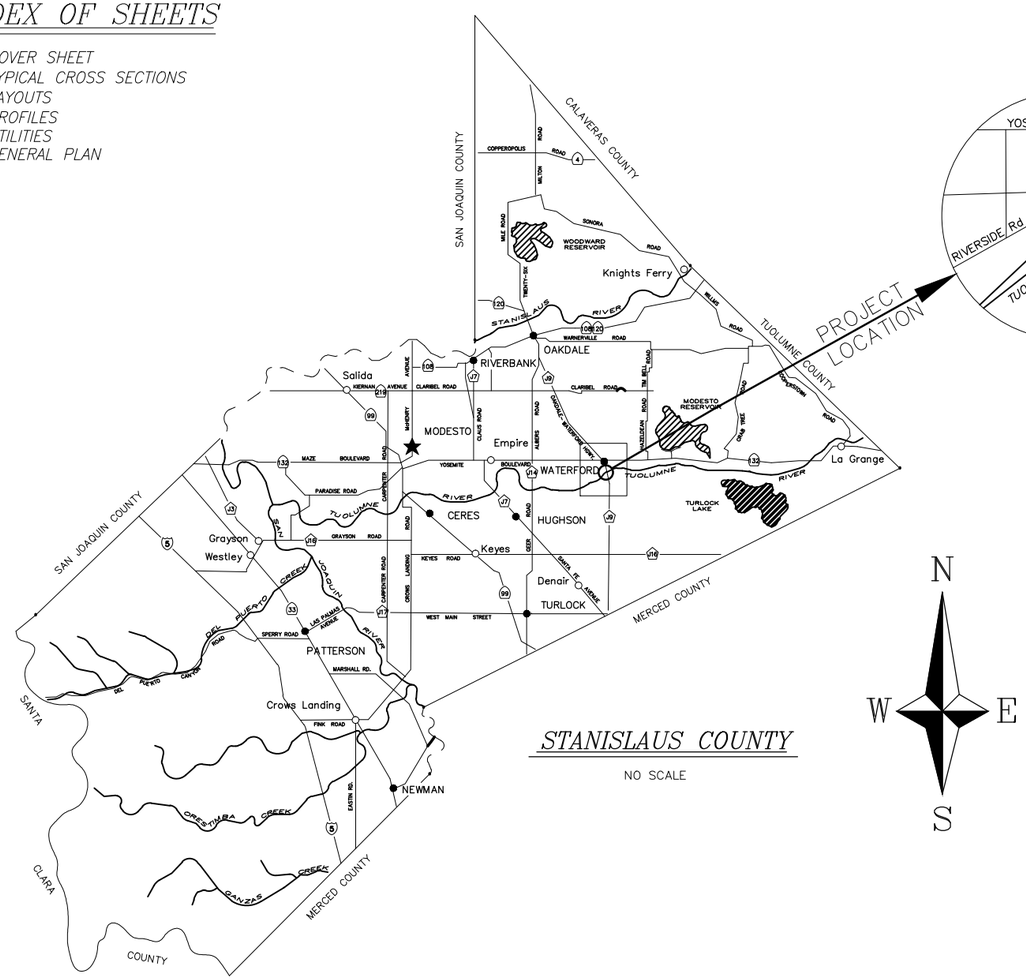
PROJECT NO. BRLS-5938(199)
BRIDGE NO. 38-C004

drake haglan AND ASSOCIATES
11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670

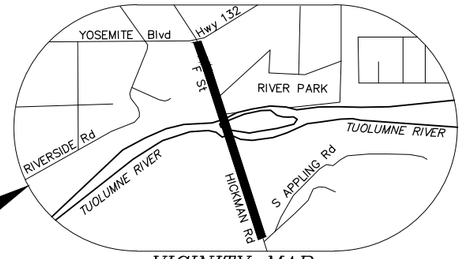
STATE OF CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
STANDARD PLANS

INDEX OF SHEETS



STANISLAUS COUNTY
NO SCALE



VICINITY MAP
NO SCALE

N
W E
S

GENERAL NOTES

1. THE CONTRACTOR SHALL POSSESS THE LICENSE(S) REQUIRED IN THE INVITATION TO BID & SPECIAL PROVISIONS.
2. ALL MATERIAL AND WORK SHALL CONFORM TO STANISLAUS COUNTY SPECIFICATIONS AND IMPROVEMENT STANDARDS, 2014 EDITION, TO BE SUPPLEMENTED BY CALTRANS STANDARD PLANS, DATED MAY, 2010 AND STANDARD SPECIFICATIONS, DATED MAY, 2010: AND ALL ADDENDA THERETO. ALL IMPROVEMENTS ARE SUBJECT TO THE INSPECTION AND APPROVAL OF THE PUBLIC WORKS DEPARTMENT.
3. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT ALL UTILITIES. THE CONTRACTOR SHALL DO NO EXCAVATION UNTIL ALL UTILITY AGENCIES AND THE STANISLAUS COUNTY DEPARTMENT OF PUBLIC WORKS HAVE BEEN NOTIFIED AND HAVE BEEN GIVEN THE OPPORTUNITY TO MARK THEIR FACILITIES IN THE FIELD. THE CONTRACTOR SHALL CALL U.S.A. AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO DOING ANY EXCAVATING.
4. THESE PLANS HAVE BEEN CHECKED BY THE STANISLAUS COUNTY DEPARTMENT OF PUBLIC WORKS AND/OR AUTHORIZED REPRESENTATIVE, BUT SUCH CHECKING AND/OR APPROVAL DOES NOT RELIEVE THE CONTRACTOR FROM HIS/HER RESPONSIBILITY TO CORRECT ERRORS, OMISSIONS, OR MAKE CHANGES REQUIRED BY CONDITIONS DISCOVERED IN THE FIELD DURING COURSE OF CONSTRUCTION.
5. ALL CONSTRUCTION SITE ACTIVITIES SHALL CONFORM TO THE STATE WATER RESOURCES CONTROL BOARD, NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES), WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION ACTIVITY.
6. PRIOR TO INITIATING ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THAT ALL NECESSARY FEDERAL, STATE, AND LOCAL PERMITS HAVE BEEN OBTAINED.
7. CONTACT:

   STANISLAUS COUNTY, DEPARTMENT OF PUBLIC WORKS
   SAMBATH CHRUN, (209) 525-7133

APPROVED BY STANISLAUS COUNTY:

_____ _____
COLT ESENWEIN *DATE*
DEPUTY DIRECTOR OF PUBLIC WORKS
STANISLAUS COUNTY

CALL BEFORE YOU DIG

REVISIONS

NO	DESCRIPTIONS	DATE	APPROVED

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD - MODESTO, CA 95358

Stanislaus County
Striving to be the best

COVER SHEET

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

JOB NO	#######
DATE	00/00/00
DR BY	SM
CK BY	
SURVEY	
CONST.	
SCALE	NO SCALE

SHEET NUMBER
1
OF X SHEETS

PLOT DATE: Mar. 01, 2016 - 10:43am
DA:\14013 - Hickman Road Bridge - Stanislaus Co\400 Project Design Files\420 Roadway & Civil\Submittal 30%\Plans\HR-R-T.dwg

PLOT DATE: March 1, 2016 FILE: U:\14013 - HICKMAN ROAD BRIDGE - STANISLAUS CO\400 PROJECT DESIGN FILES\420 ROADWAY & CIVIL\SUBMITTAL 30%\PLANS\HR-R-T.DWG

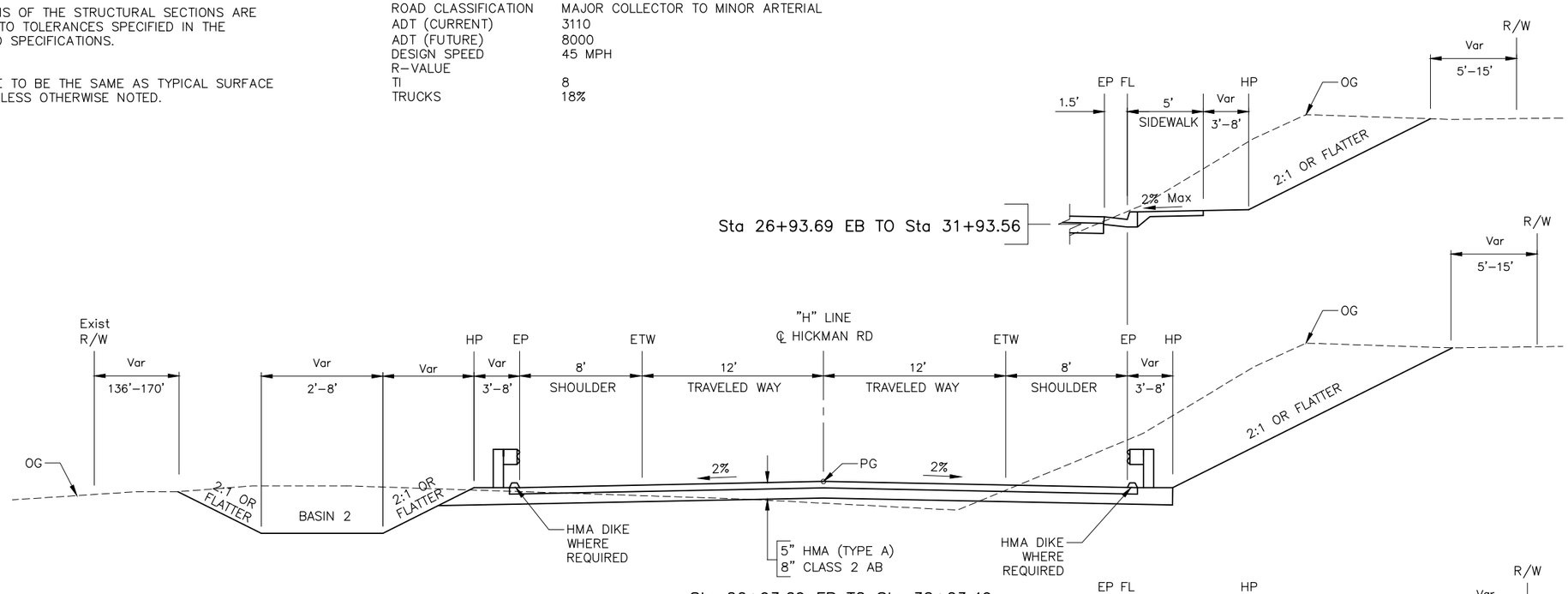
NOTES

1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

2. SUBGRADE TO BE THE SAME AS TYPICAL SURFACE SLOPE UNLESS OTHERWISE NOTED.

HICKMAN ROAD DESIGN DESIGNATION

ROAD CLASSIFICATION	MAJOR COLLECTOR TO MINOR ARTERIAL
ADT (CURRENT)	3110
ADT (FUTURE)	8000
DESIGN SPEED	45 MPH
R-VALUE	
TI	8
TRUCKS	18%



drake haglan AND ASSOCIATES
11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____
CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD – MODESTO, CA 95358

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TYPICAL CROSS SECTIONS

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	AS SHOWN

SHEET NUMBER
2
OF X SHEETS

811
CALL BEFORE YOU DIG

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

Dec. 14, 2015 - 2:33pm
I:\14013 - Hickman Road Bridge - Stanislaus Co\400 Project Design Files\420 Roadway & Civil\Submittal 30%\Plans\HR-R-X.dwg

NOTES:

1. FOR ACCURATE RIGHT-OF-WAY DATA, CONTACT COUNTY OFFICE.
2. ALL STATION/OFFSET CALLOUTS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

LEGEND:

- C — CUT
- F — FILL
- PROPOSED R/W
- PROPERTY LINE (P/L)
- EXISTING R/W
- PAVEMENT CONFORM

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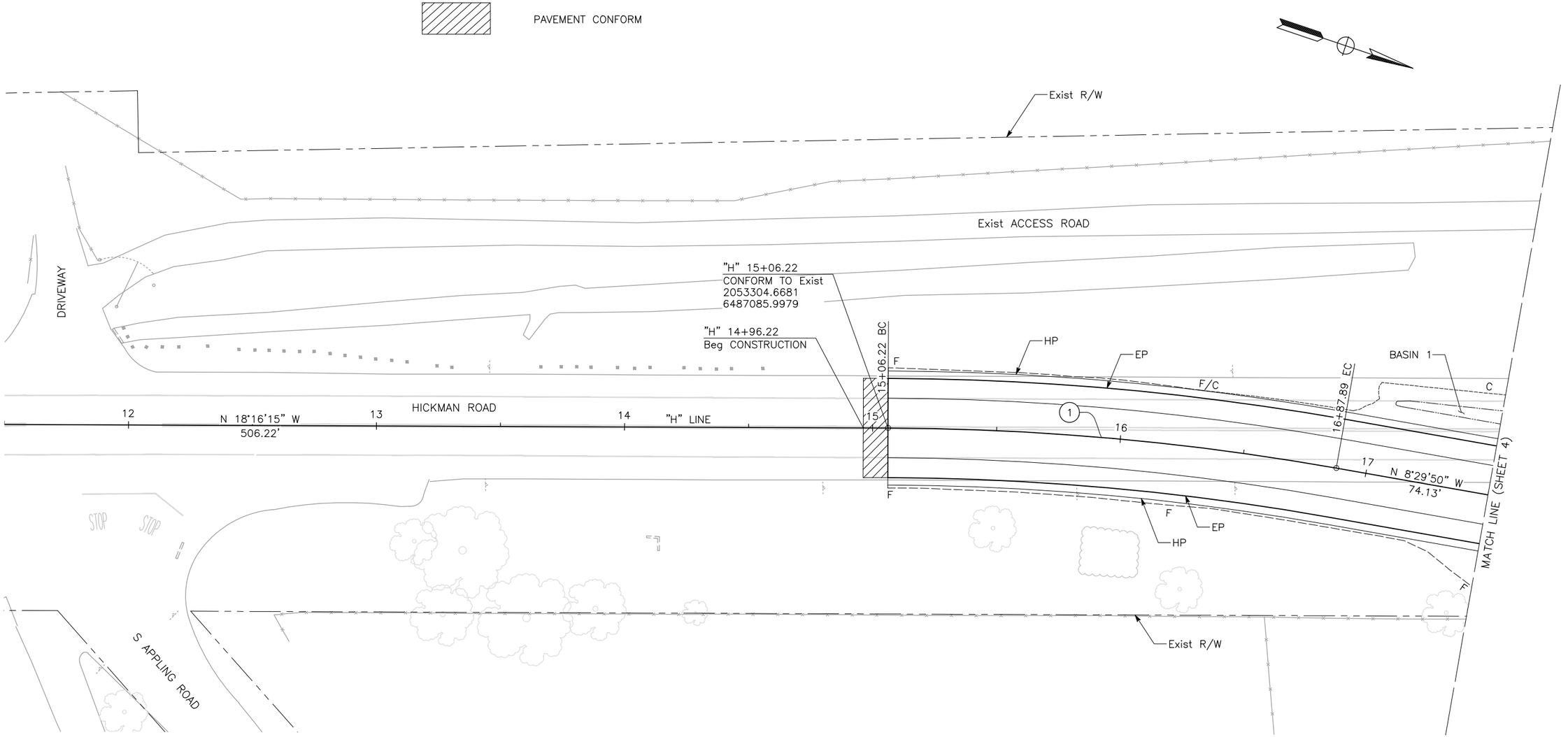

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11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD - MODESTO, CA 95358

LAYOUT

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	#######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

SHEET NUMBER
3
OF X SHEETS

CALL BEFORE YOU DIG

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

Dec. 16, 2015 - 11:38am
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drake haglan AND ASSOCIATES
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Rancho Cordova, CA 95670

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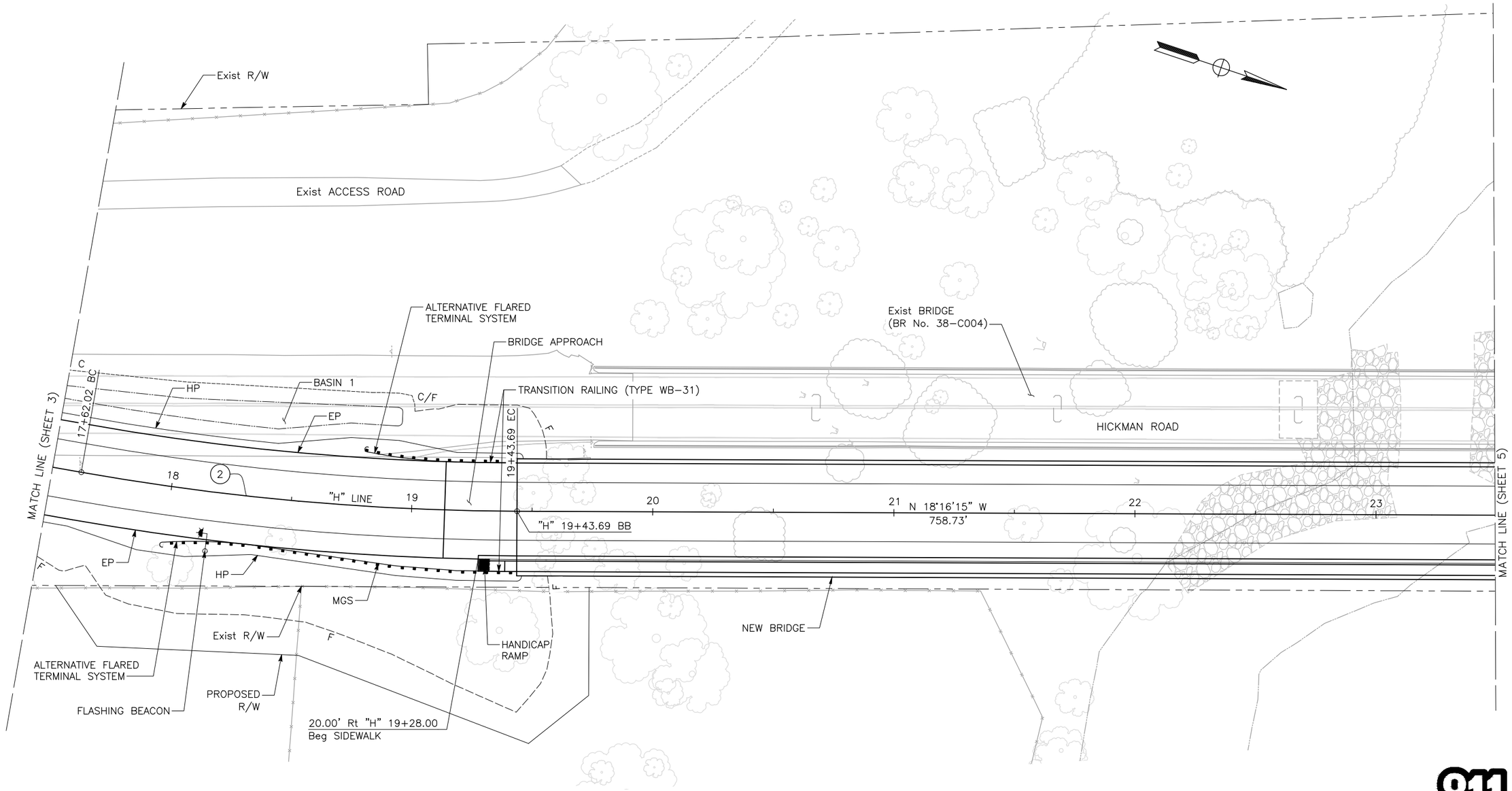

CALL BEFORE YOU DIG

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
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LAYOUT

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

SHEET NUMBER
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OF X SHEETS

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

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Rancho Cordova, CA 95670

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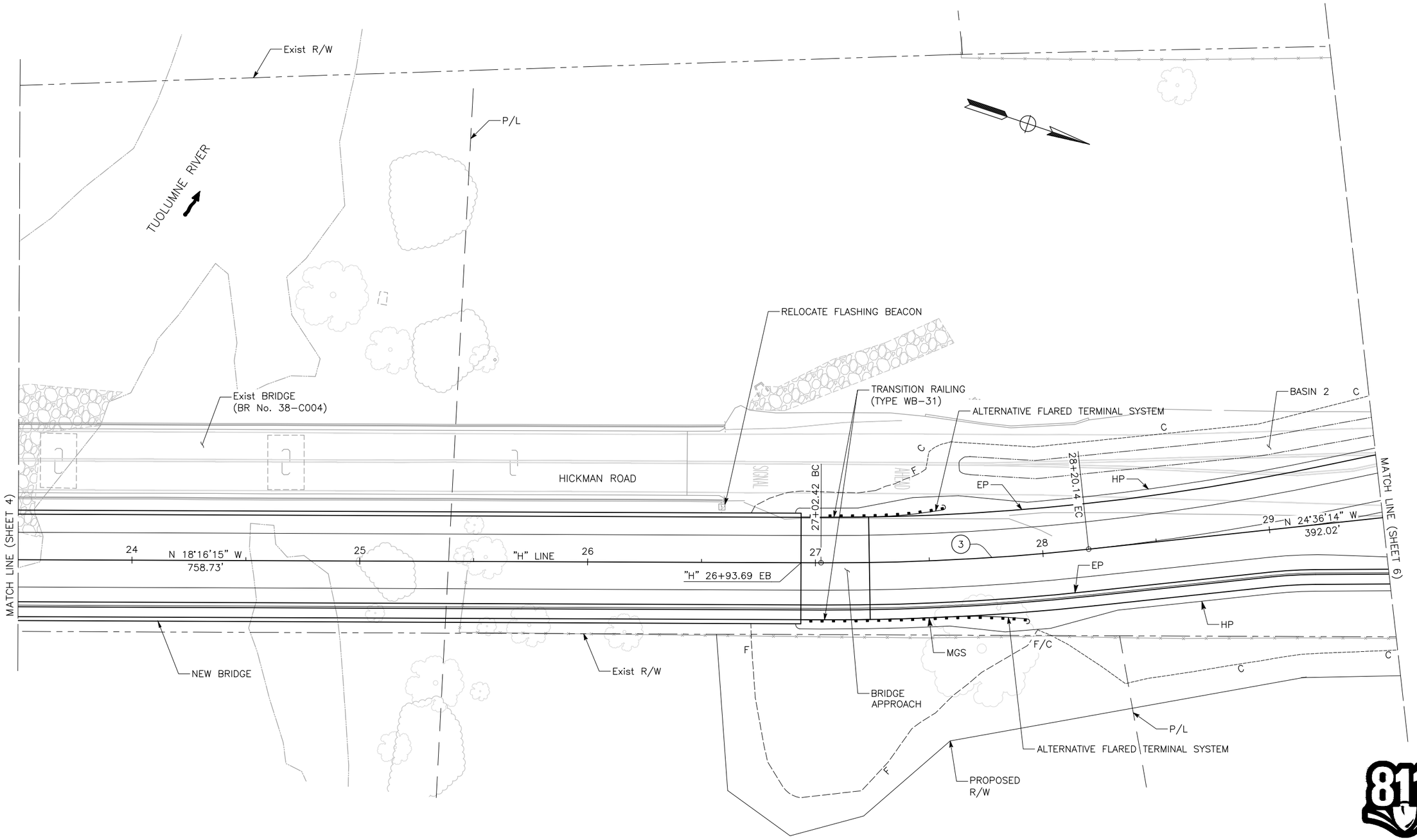

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REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
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LAYOUT

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
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SCALE	1"=20'

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OF X SHEETS

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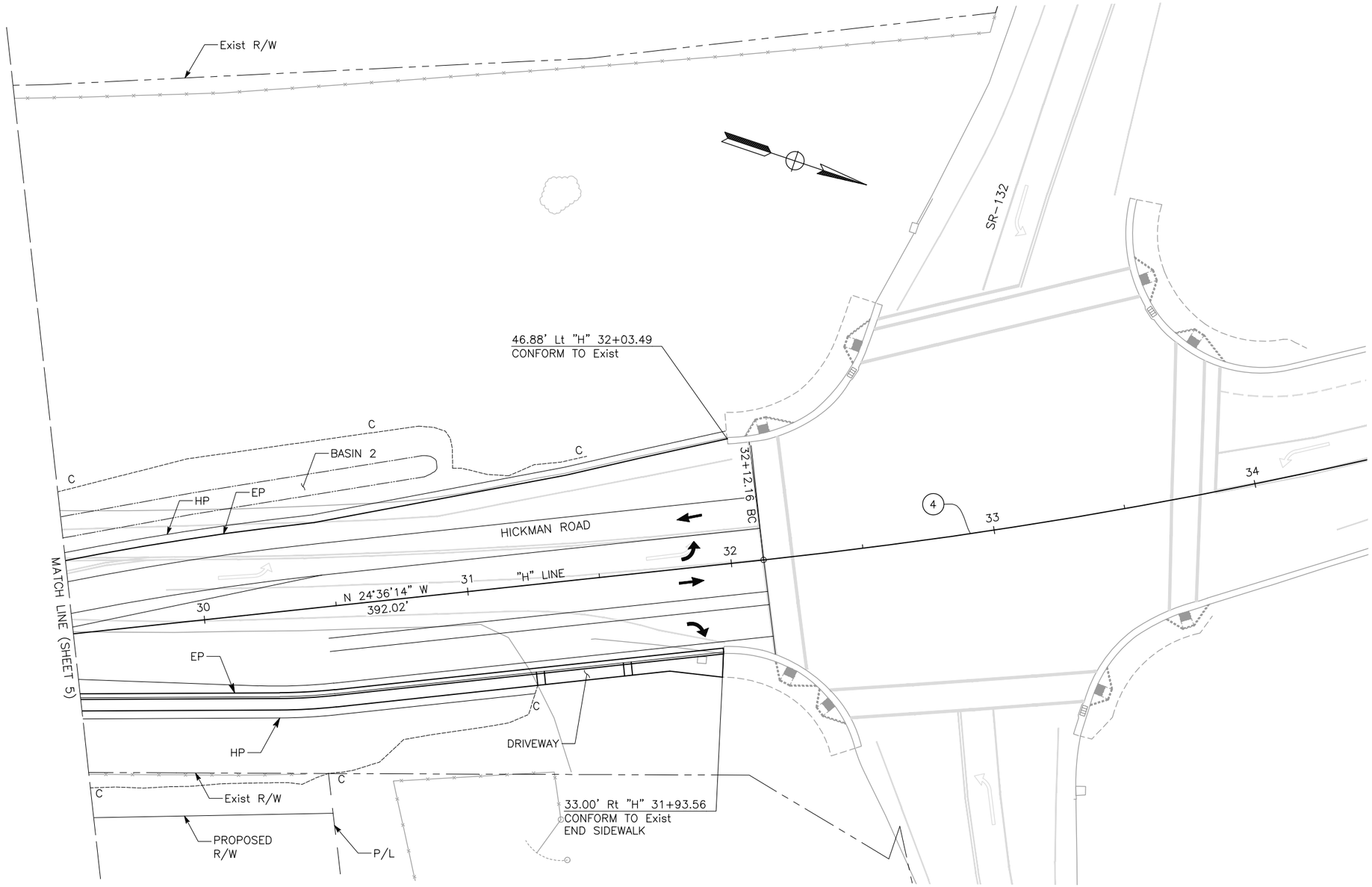

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Rancho Cordova, CA 95670

REGISTERED PROFESSIONAL ENGINEER
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Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
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LAYOUT

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

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OF X SHEETS

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CALL BEFORE YOU DIG

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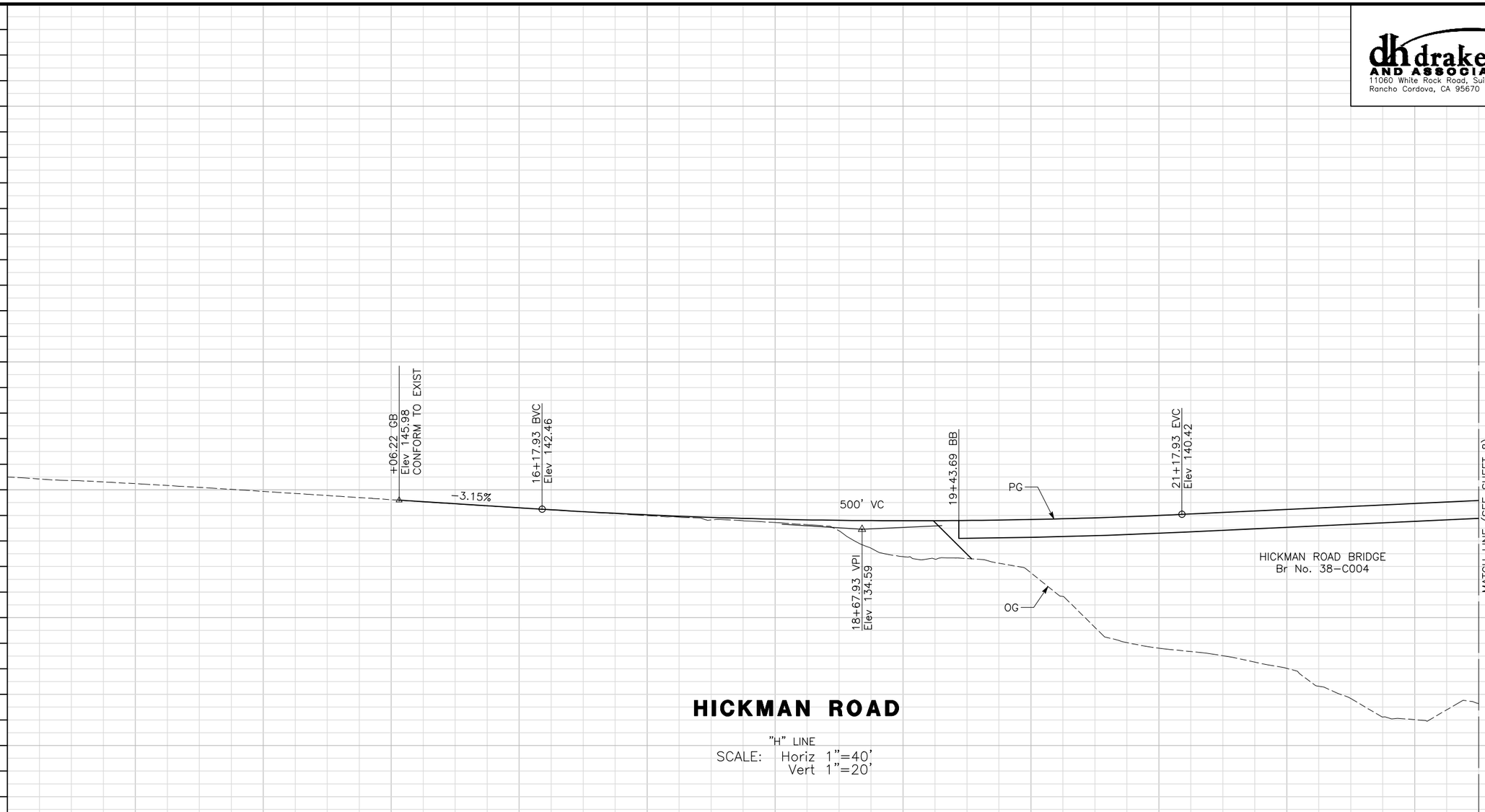

HICKMAN ROAD

"H" LINE

SCALE: Horiz 1"=40'
Vert 1"=20'

drake haglan AND ASSOCIATES
11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD - MODESTO, CA 95358

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PROFILE

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	AS SHOWN

SHEET NUMBER
7
OF X SHEETS

811 CALL BEFORE YOU DIG

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

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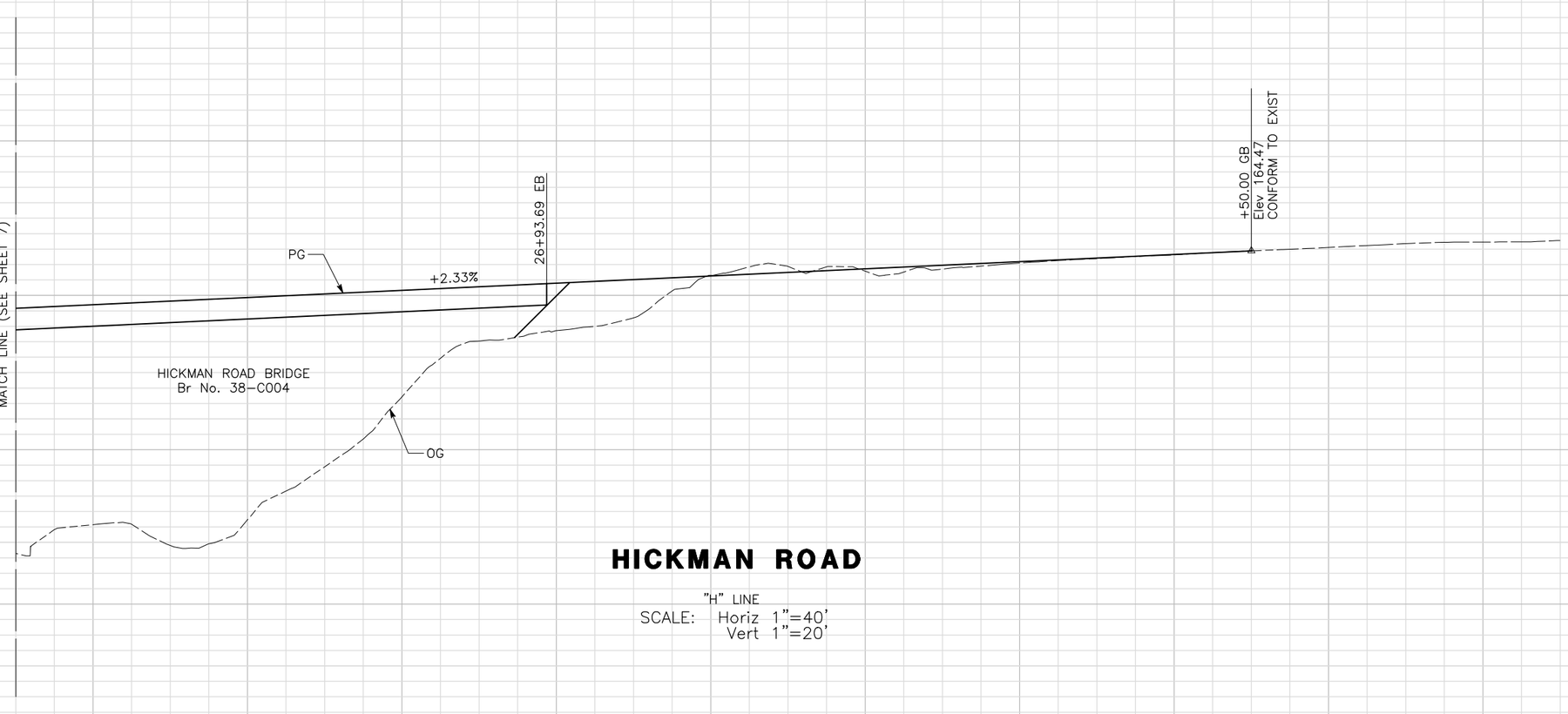

HICKMAN ROAD

"H" LINE
SCALE: Horiz 1"=40'
Vert 1"=20'

drake haglan AND ASSOCIATES
11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD - MODESTO, CA 95358

Stanislaus County
Striving to be the best

PROFILE

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	#######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	AS SHOWN

SHEET NUMBER
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OF X SHEETS

811 CALL BEFORE YOU DIG

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

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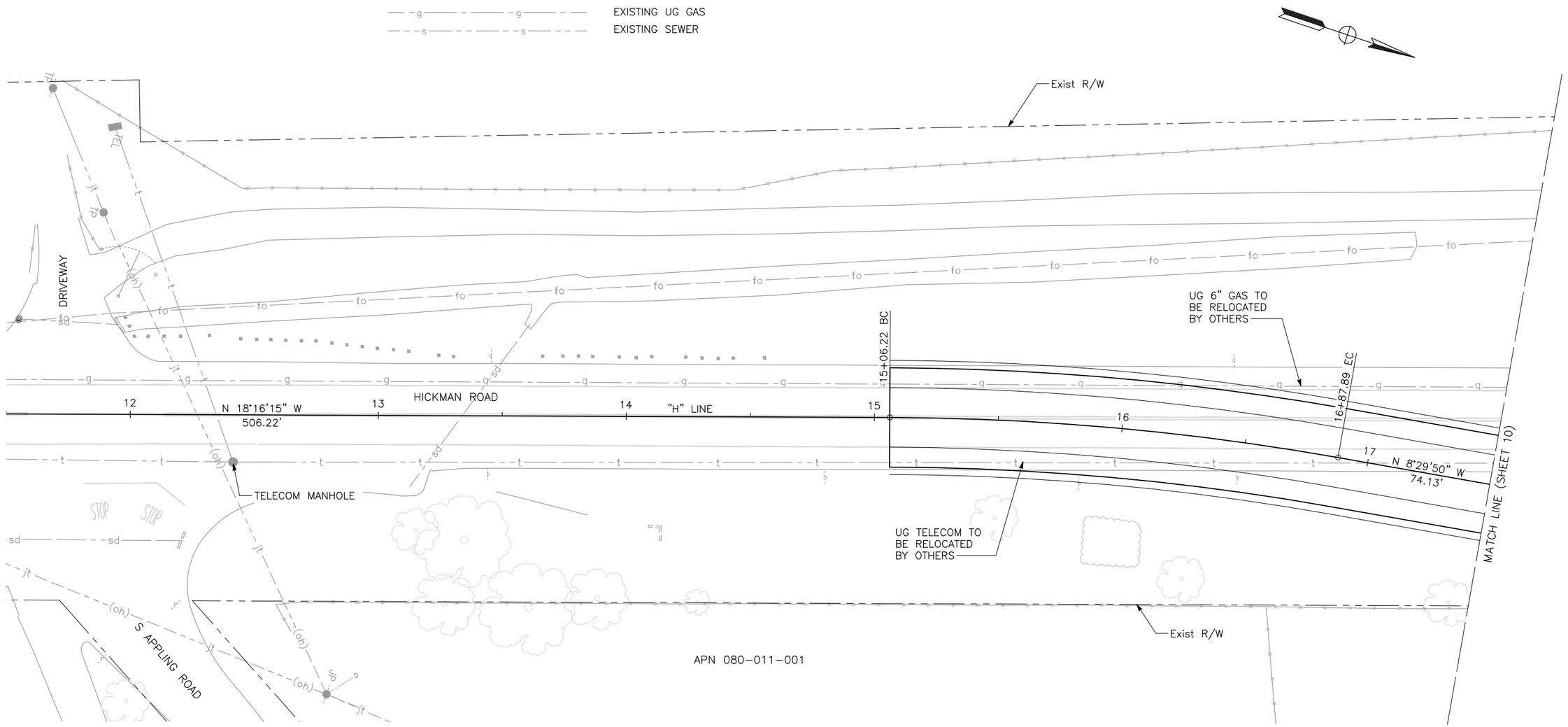
NOTES:

1. LOCATION OF UTILITY FACILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.

LEGEND:

——t——(oh)——	EXISTING OVERHEAD TELEPHONE
——e——(oh)——	EXISTING OVERHEAD ELECTRICAL
——jt——(oh)——	EXISTING OVERHEAD JOINT ELECTRICAL & TELEPHONE
——fo——fo——	EXISTING UG FIBER OPTIC TELECOM
——t——t——	EXISTING UG TELECOM
——sd——sd——	EXISTING STORM DRAIN
——g——g——	EXISTING UG GAS
——s——s——	EXISTING SEWER



UTILITY FACILITY	OWNER
OVERHEAD TELEPHONE	AT&T
OVERHEAD ELECTRICAL	TID AND MID
UNDERGROUND FIBER OPTIC TELECOM	CHARTER COMMUNICATIONS
UNDERGROUND TELECOM	AT&T
STORM DRAIN	CITY OF WATERFORD
GAS	PG&E
SEWER	CITY OF WATERFORD

APPROVED FOR UTILITY WORK ONLY

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STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
REVISIONS			

STANISLAUS COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD - MODESTO, CA 95358

UTILITIES

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	#######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

SHEET NUMBER 9
OF X SHEETS

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

Dec. 16, 2015 - 11:42am
u:\14013 - Hickman Road Bridge - Stanislaus Co\400 Project Design Files\420 Roadway & Civil\Submittal 30%\Plans\WR-R-U.dwg

drake haglan AND ASSOCIATES
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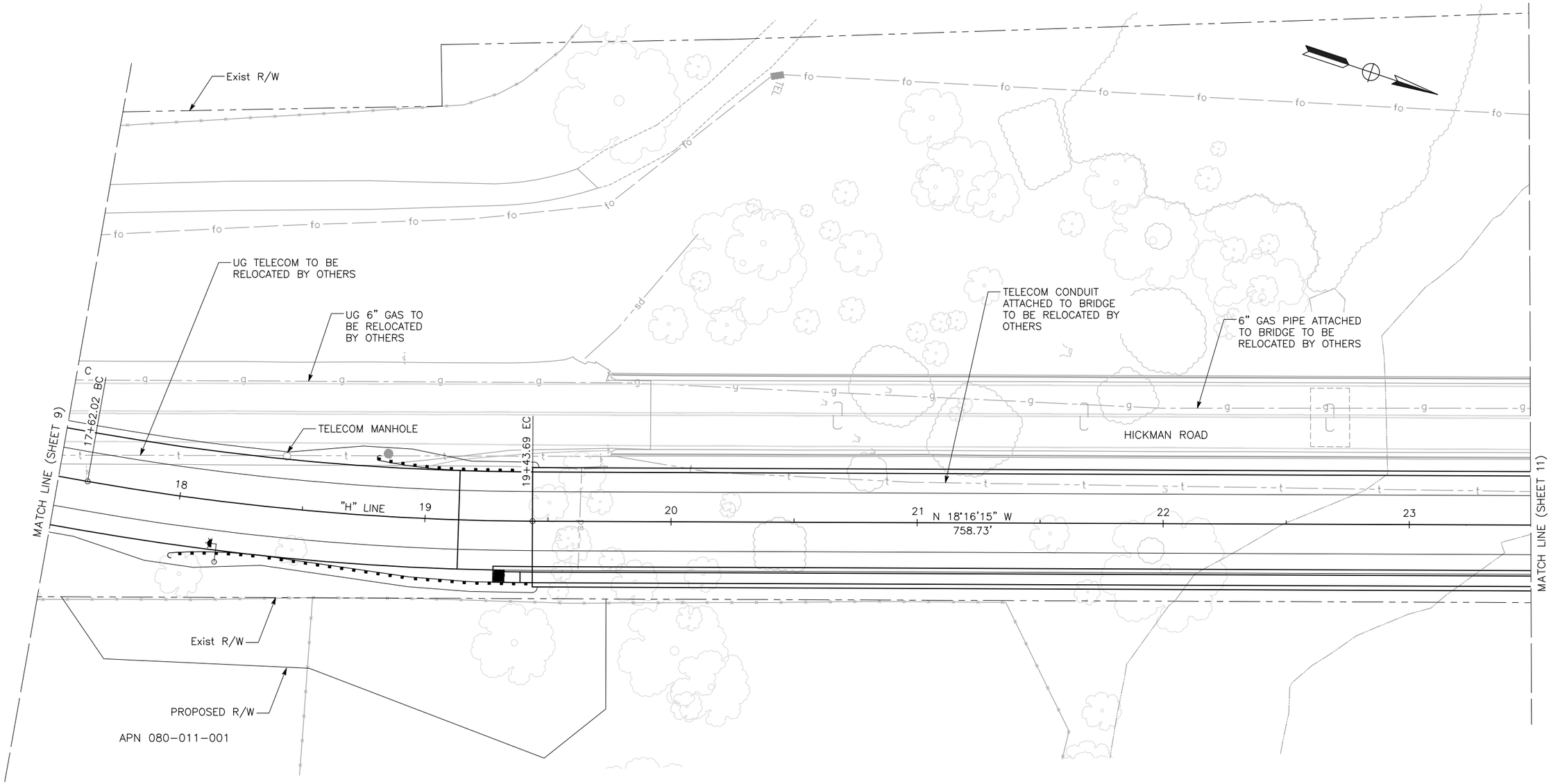
Rancho Cordova, CA 95670

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
	REVISIONS		



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UTILITIES

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

SHEET NUMBER
10
OF X SHEETS

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

Dec 16, 2015 - 11:42am
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NO	DESCRIPTIONS	REVISIONS DATE	APPROVED

Exist R/W

P/L

TUOLUMNE RIVER

fo

sd

ss

g

t

CONC HEADWALL

6" GAS PIPE ATTACHED TO BRIDGE TO BE RELOCATED BY OTHERS

UG 6" GAS TO BE RELOCATED BY OTHERS

MATCH LINE (SHEET 10)

MATCH LINE (SHEET 12)

HICKMAN ROAD

SWALE AHEAD

27+02.42 BC

28+20.14 EC

24

N 18°16'15" W
758.73'

25

"H" LINE

26

27

28

29

N 24°36'14" W
392.02'

TELECOM CONDUIT ATTACHED TO BRIDGE TO BE RELOCATED BY OTHERS

UG TELECOM TO BE RELOCATED BY OTHERS

Exist R/W

APN 080-035-009

APN 080-035-008

P/L

PROPOSED R/W

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UTILITIES

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

SHEET NUMBER
11
OF X SHEETS

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

Dec. 16, 2015 - 11:43am
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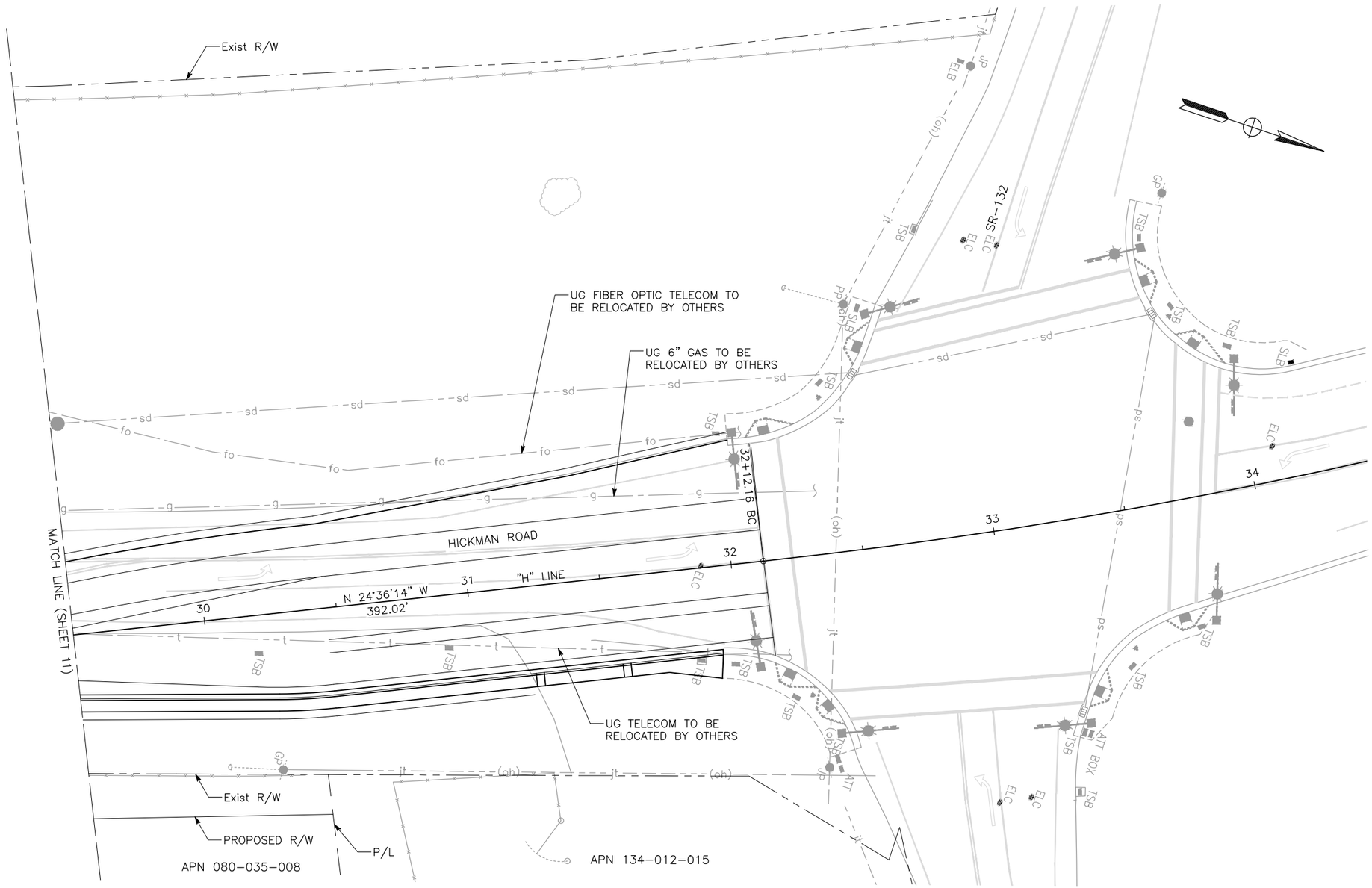
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	REVISIONS DATE	APPROVED



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UTILITIES

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

JOB NO	######
DATE	00/00/00
DR BY	S. Morales
CK BY	
SURVEY	
CONST.	
SCALE	1"=20'

SHEET NUMBER
12
OF X SHEETS

30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

Dec. 16, 2015 - 11:43am
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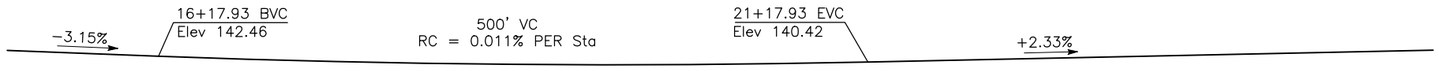
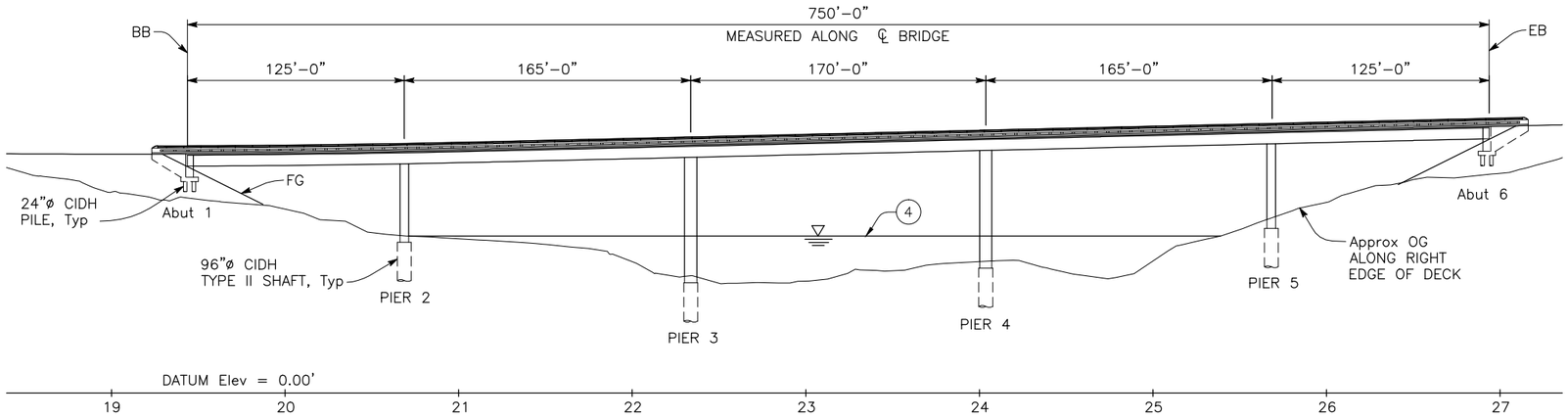
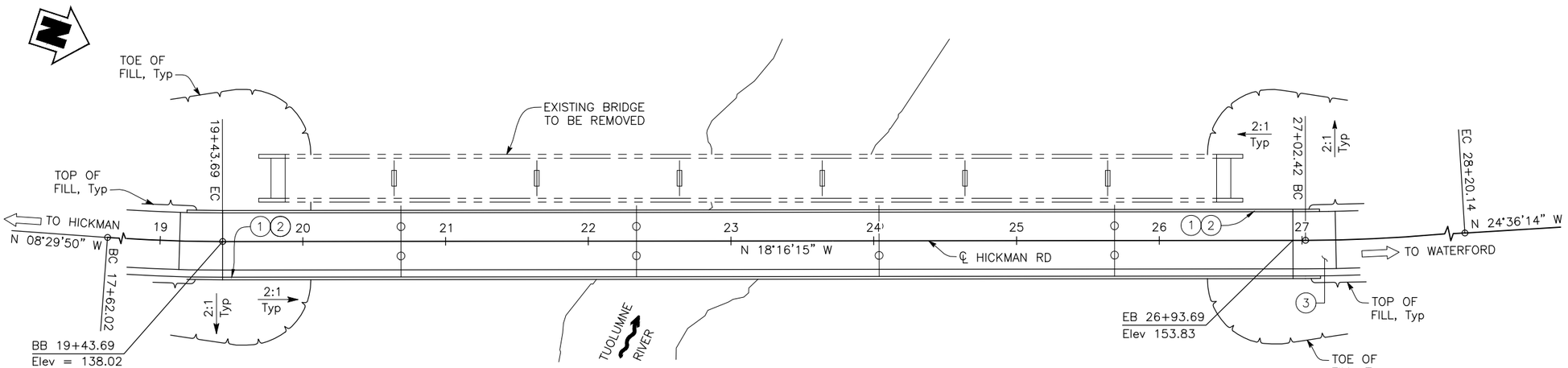
Rancho Cordova, CA 95670



PROFILE GRADE
NO SCALE



ELEVATION
1"=40'



PLAN
1"=40'

NOTES:

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

LEGEND:

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

CALL BEFORE YOU DIG

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Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	DATE	APPROVED
	REVISIONS		

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ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD - MODESTO, CA 95358

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30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

GENERAL PLAN

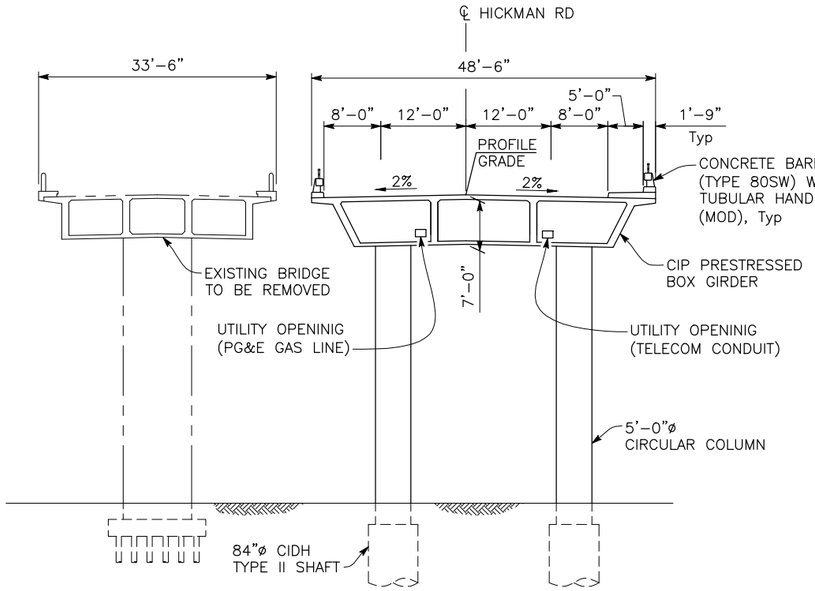
IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

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

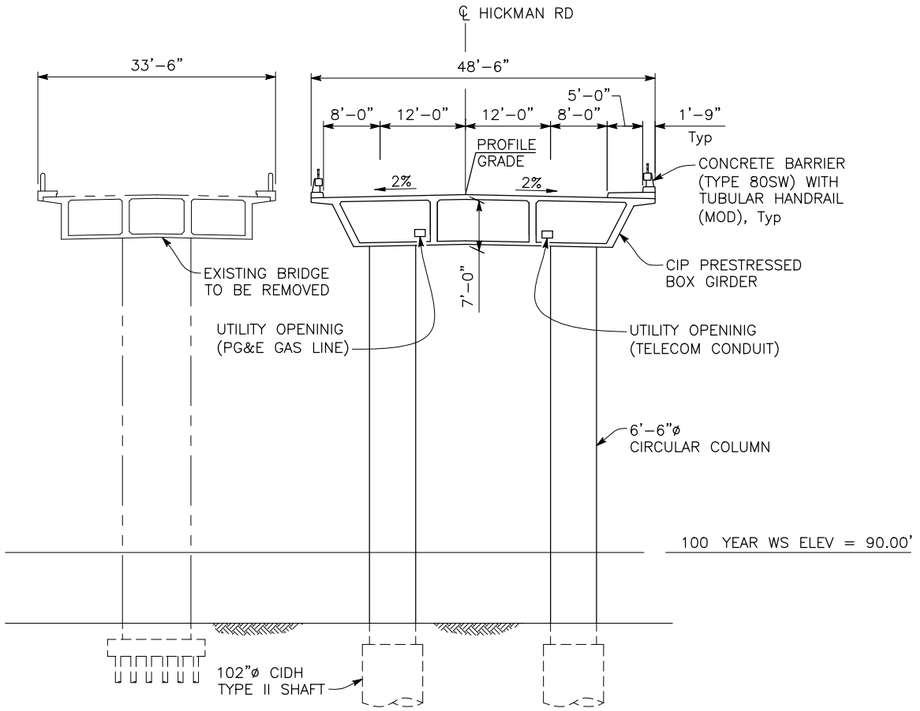
SHEET NUMBER
13
OF X SHEETS

Dec. 21, 2015 - 12:43pm
D:\14013 - Hickman Road Bridge - Stanislaus Co\400 Project Design Files\M30 Bridges & Structures\Submittal 35%\Plans\MR-S-GP.dwg

drake haglan AND ASSOCIATES
11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670



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



TYPICAL SECTION - BENTS 3 & 4
1"=10'

LEGEND:

—— – – —— Indicates Existing Bridge

———————— Indicates New Structure

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REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____ CIVIL
STATE OF CALIFORNIA

NO	DESCRIPTIONS	REVISIONS DATE	APPROVED

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND OPERATIONS DIVISION
1716 MORGAN ROAD – MODESTO, CA 95358

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30% PLANS - 12/23/15 - NOT FOR CONSTRUCTION

TYPICAL SECTION

IMPROVEMENT PLANS FOR:
HICKMAN ROAD BRIDGE REPLACEMENT
OVER TUOLUMNE RIVER
WATERFORD, CALIFORNIA

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

SHEET NUMBER
14
OF X SHEETS

Dec. 21, 2015 - 12:54pm
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Appendix C Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Road Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dept of Public Works State: CA Sampling Point: 1

Investigator(s): Mike Trueblood, Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

Are Vegetation No, Soil Yes, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	5	N	FACW
2. Cephalanthus occidentalis	5	N	OBL
3.			
4.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	5	N	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Eichhornia crassipes	5	N	OBL
2. Polygonum sp.	20	Y	OBL
3. Cynodon dactylon	30	Y	FAC
4. Verbena lasiostachys	5	N	FAC
5. Lemna minor	1	N	OBL
6. Ludwigia peploides	2	N	OBL
7.			
8.			
	63	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust 12

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100						Coarse Sand (River rock)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 6

Hydric Soil Present? Yes ✓ No ___

Remarks:

River Rock/cobble/coarse sand. No soil color available Indicator not used.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2

Water Table Present? Yes ✓ No ___ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford / Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 1a

Investigator(s): Mike Truebland ; Stefan deBarros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus lobata	5	N	FACU
2. Cephalanthus occidentalis	1	N	OBL
3. Sambucus nigra caerulea	1	N	UPL
4.			
	7	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	95	Y	UPL
2. Verbena lasiostachys	1	N	FAC
3. Circium vulgare	1	N	FACU
4.			
5.			
6.			
7.			
8.			
	97	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 4/6	50					Sandy-Silt	Matrix is equal
0-13	10YR 4/3	50					Sandy-Silt ✓	parts of each color

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): –

Water Table Present? Yes _____ No ✓ Depth (inches): >13

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >13

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 2

Investigator(s): Mike Trueblood ; Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix exigua	2	N	OBL
2. Salix laevigata	2	N	FACW
3.			
4.			
	4	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Cyperus eragrostis	5	N	FACW
2. Mentha pusutis	5	N	OBL
3. Verbena lasiostachys	10	N	FAC
4. Paspalum dilatatum	30	Y	FAC
5. Eichhornia crassipes	20	Y	OBL
6. Lemna minor	1	N	OBL
7.			
8.			
	71	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

_____ Prevalence Index is ≤3.0[1]

_____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
surface								River Rock

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: River

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

River Rock / cobble. No soil color available

Indicator not used.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ✓ No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 2a

Investigator(s): Mike Trueblood & Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix exigua	10	Y	OBL
2. Salix laevigata	5	N	FACW
3. Salix lasiolepis	2	N	FACW
4.			
	17	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	25	Y	FACU
2.			
3.			
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Brassica nigra	2	N	UPL
2. Avena fatua	30	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	32	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. Vitis californica	5	N	FAC
2.			
	5	= Total Cover	

% Bare Ground in Herb Stratum 43 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ✓

Remarks:

SOIL

Sampling Point: 2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12								River rock and coarse sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Area is in high flow wash below OHWM. Does not support wetlands River Rock/cobble/coarse Sand. Area only inundated during rain events. No soil color available Indicator not used

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Is only inundated/saturated during rain events.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford / Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 2b

Investigator(s): Mike Trueblood, Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	1	N	FACW
2. Salix laevigata	10	Y	FACW
3.			
4.			
	11	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Eichhornia crassipes	20	Y	OBL
2. Eleocharis sp.	60	Y	OBL
3. Cyperus eragrostis	5	N	FACW
4. Ludwigia peploides	2	N	OBL
5. Paspalum dilatatum	5	N	FAC
6. Polygonum sp	15	N	FACW
7.			
8.			
	107	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/1	90	5YR 5/8	10	C	M	River Rock & Coarse Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ✓ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): -

Water Table Present? Yes ✓ No ___ Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford / Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 2c

Investigator(s): Mike Truebloed ; Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	30	Y	FACW
2.			
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	40	Y	FACW
2.			
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Cirsium vulgare	1	N	UPL
2. Conium maculatum	1	N	FACW
3. Bromus diandrus	3	Y	UPL
4.			
5.			
6.			
7.			
8.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 2c

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/4	97	5YR 4/6	3	C	M	Fine Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >15

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >15

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dept of Public Works State: CA Sampling Point: 3

Investigator(s): Mike Trueblood ; Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Eichhornia crassipes	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Inundated, therefore, no pit dug. Ponded area in river wash depression

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 24-36

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford/Stanislaus Sampling Date: 12/18/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 3a

Investigator(s): Mike Truebblood, Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes _____ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nicotiana glauca	1	N	FAC
2.			
3.			
4.			
	1	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	20	Y	FACU
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Verbena lasiostachys	10	Y	FAC
2. Brassica nigra ✓	20	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	35	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12								River Rock & Coarse Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

River Rock/ Cobble/ coarse SAND

Area is in high flow wash below OHWM. Does not support wetlands.

Area only inundated during rain events. No soil color available, Indicator not used.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): –

Water Table Present? Yes _____ No ✓ Depth (inches): >12

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Is only inundated/saturated during rain events.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd. Bridge City/County: Waterford / Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 4

Investigator(s): Mike Trueblood, Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix exigua	30	Y	OBL
2.			
3.			
4.			
	30 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

Herb Stratum (Plot size: _____)			
1. Carex sp.	2	N	FACW
2. Cyperus eragrostis	5	N	FACW
3. Eichhornia crassipes	10	N	OBL
4. Eleocharis sp.	20	Y	OBL
5. Mentha pulegium	3	N	OBL
6. Ludwigia peploides	5	N	OBL
7. Cynodon dactylon	10	N	FACU
8. Verbena lasiostachys	30	Y	FAC
	85 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5								River Rock ; Coarse Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _ ___ No _____

Remarks:

River Rock/cobble/ coarse sand soil color not available

Indicator not used

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): –

Water Table Present? Yes ✓ No ____ Depth (inches): 1

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd Bridge City/County: Waterford/ Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 4a

Investigator(s): Mike Trueblood ; Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nicotina glauca	1	N	FAC
2.			
3.			
4.			
	1	= Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. Rubus armeniacus	20	Y	FACU
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: ___)			
1. Verbena lasiostachys	10	Y	FAC
2. Brassica nigra	20	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 4a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12								River Rock & Coarse Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

-Area is in high flow wash below OHWM. -Inundated during high flood event. -Does not support wetland. No soil color Available. Indicator not used.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): –

Water Table Present? Yes _____ No ✓ Depth (inches): >12

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd. Bridge City/County: Waterford/ Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 5

Investigator(s): Mike Truehlood & Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. Populus fremontii	2	N	FACW
2. Salix exigua	15	Y	OBL
3.			
4.			
	17 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	3	N	FACU
2.			
3.			
4.			
5.			
	3 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Polygonum sp.	10	N	OBL
2. Eleocharis sp.	20	Y	OBL
3. Cyperus eragrostis	5	N	FACW
4. Lemna sp.	60	Y	OBL
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Inundated pond. No soil pit dug.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 6-12

Water Table Present? Yes ✓ No ___ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd. Bridge City/County: Waterford / Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 5a

Investigator(s): Mike Trueblood, Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix exigua	10	Y	OBL
2. Sambucus nigra cerulea	5	N	UPL
3.			
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	5	N	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	30	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 10	x 1 = 10
FACW species _____	x 2 = _____
FAC species 5	x 3 = 15
FACU species 5	x 4 = 20
UPL species 35	x 5 = 175
Column Totals: 50 (A)	205 (B)

Prevalence Index = B/A = 4.1

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 5a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12								River Rock & Coarse Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ___

Remarks:

Area in high flow wash below OHWM. Does not support wetland.
Area only inundated during rain events. No soil color Available. Indicator not used

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >12

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >12

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Is only inundated/saturated during rain events.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Heckman Rd. Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 6

Investigator(s): Mike Taylor Wood ; Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata ✓	20	Y	FACW
2.			
3.			
4.			
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	5		FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Lemna minor	30	Y	OBL
2. Verbena lasiostachys	20	Y	FAC
3. Paspalum dilatatum ✓	5	N	FAC
4. Xanthium strumarium	1	N	FAC
5. Equisetum sp.	1	N	FAC
6. Cynodon dactylon ✓ ✓	30	Y	FACU
7.			
8.			
	87 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	5GY 5/1	80	5YR 4/6	20	C	M	Sand	
>-7								River Rock

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ✓ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ✓ No ___ Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd. Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 6a

Investigator(s): Mike Trueblood ; Stefan de Barros Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	80	Y	FACW
2.			
3.			
4.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Rubus armeniacus	5	N	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	80	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 80	x 2 = 160
FAC species _____	x 3 = _____
FACU species 5	x 4 = 20
UPL species 80	x 5 = 400
Column Totals: 165 (A)	580 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 6a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/6	100						River Rock & Coarse Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): > 8

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): > 8

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hickman Rd. Bridge City/County: Waterford/Stanislaus Sampling Date: 12/8/2015

Applicant/Owner: Stanislaus County Dep of Public Works State: CA Sampling Point: 6b

Investigator(s): Mike Trueblood ; Stefan de Borras Section, Township, Range: S33, T3S, R11E

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 year? Yes ✓ No _____ (If no, explain in Remarks.)

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	5	N	FACW
2.			
3.			
4.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Erodium sp.	80	Y	UPL
2. Verbena lasiostachys	5	N	FAC
3. Bromus diandrus	20	Y	UPL
4.			
5.			
6.			
7.			
8.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 5	x 2 = 10
FAC species 5	x 3 = 15
FACU species _____	x 4 = _____
UPL species 100	x 5 = 500
Column Totals: 110 (A)	525 (B)

Prevalence Index = B/A = 4.77

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 6b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/6	90	5YR 4/6	10	C	M	Cobbly - Silty Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ 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)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): —

Water Table Present? Yes _____ No ✓ Depth (inches): >13

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): >13

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix D Tree Inventory

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
21	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
24	Prunus sp.	7	13/10	Hordeum murinum, Bromus diandrus	Healthy	Yes
25	Quercus lobata	17	20/12	Hordeum murinum, Bromus diandrus	Healthy	Yes
26	Quercus lobata	6, 8	18/15	Hordeum murinum, Bromus diandrus	Healthy	Yes
27	Quercus lobata	14	20/12	Hordeum murinum, Bromus diandrus	Healthy	Yes
28	Quercus lobata	9	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	Healthy	Yes
32	Quercus lobata	7	20/12	Hordeum murinum, Bromus diandrus, Silybum marianum	Healthy	Yes
33	Quercus lobata	5	12/12	Hordeum murinum, Bromus diandrus, Silybum 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

No.	Tree Species	DBH	Height/ Canopy	Associated Vegetation	Health/Notes	Retain?
69	Salix laevigata	Trifurcate @3' ; t1 - 4.5, 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
79	Quercus lobata	8.5	40/20	Hordeum murinum, Bromus diandrus	Healthy	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	45/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
83	Ficus carica	Biforcate @ 6" ; t1 - 7, t2 -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
95	Quercus lobata	Bifurcate @ 2' ; t1 - 30, 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	60/50	Hordeum murinum, Bromus diandrus	Healthy	Yes
101	Quercus lobata	Bifurcate @ 2.5' ; t1 - 22, t2 - 7.5	50/40	Hordeum murinum, Bromus diandrus	Healthy	No
102	Quercus lobata	6.5	30/12	Hordeum murinum, Bromus diandrus	Healthy	No

No.	Tree Species	DBH	Height/ Canopy	Associated Vegetation	Health/Notes	Retain?
103	Quercus lobata	6.5	30/15	Hordeum murinum, Bromus diandrus	Healthy	No
104	Quercus lobata	16.75	60/40	Hordeum murinum, Bromus diandrus	Healthy	Yes
105	Prunus dulcis	6	20/30	Hordeum murinum, Bromus diandrus	Healthy	No
106	Prunus dulcis	6	20/30	Hordeum murinum, Bromus diandrus	Healthy	No
107	Quercus lobata	34	65/60	Hordeum murinum, Bromus diandrus	Healthy	No
108	Salix gooddingii	groundlevel ; t1 - 6, t2 - 6, t3 - 6, t4 - 9	25/15	Salix species, Rubus armeniacus	Healthy	Yes
109	Salix gooddingii	Bifurcate @ 5" ; t1 - 11.5, t2 - 8	25/15	Salix species, Rubus armeniacus	Healthy	Yes
110	Populus sp.	6	35/20	Salix species, Rubus armeniacus, Cephalanthus occidentalis	Healthy	Yes
111	Populus sp.	6	35/20	Salix species, Rubus armeniacus, Cephalanthus occidentalis	Healthy	Yes
112	Populus sp.	8.5	35/25	Salix species, Rubus armeniacus, Cephalanthus occidentalis	Healthy	Yes
113	Salix gooddingii	Quadfurcate @ 2' ; t1 - 15, t2 - 17, t3 -14, t4 - 12	25/45	Salix species, Rubus armeniacus, Cephalanthus occidentalis, Datura stramonium	Healthy	Yes
114	Salix laevigata	6	30/15	Salix species, Rubus armeniacus, Cephalanthus occidentalis, Datura stramonium	Healthy	Yes
115	Quercus lobata	Quadfurcate @ 2' ; t1 - 13, t2 - 14, t3 -12, t4 - 10	50/50	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
116	Quercus lobata	30	60/40	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
117	Quercus lobata	16	60/20	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
118	Quercus lobata	Trifurcate @1.5' ; t1 - 16, t2 - 16, t3 - 24	60/60	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
119	Quercus lobata	Trifurcate @1.5' ; t1 - 12.5, t2 - 9, t3 - 14	50/40	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
120	Quercus lobata	Bifurcate @ 1.5' ; t1 -7, t2- 6.5	30/20	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
121	Quercus lobata	Quadfurcate @ 1' ; t1 - 11, t2 - 6, t3 - 10.5, t4 - 6	50/40	Bromus Diandrus, Silybum marianum, Hordeum murinum, Rubus armeniacus, Datura stramonium	Healthy	Yes
122	Prunus dulcis	8.5	30/20	Bromus Diandrus, Silybum marianum, Hordeum murinum	Healthy	Yes
123	Quercus lobata	13.5	40/30	Bromus Diandrus, Silybum marianum, Hordeum murinum	Healthy	Yes

Appendix E Elderberry Shrub Inventory

Elderberry/VELB Survey Field Form

Shrub ID	Riparian/ Non-Riparian	DGH Stems ≥ 1"& ≤ 3"	DGH Stems ≥ 3"& ≤ 5"	DGH Stems ≥ 5"	Total Stem Count	Exit holes on Shrub Y/N	Height (feet)	Dripline Diameter (ft)	Associated Species	Shrub Location
1	Non	11	1	0	12	N	8	20	Bromus diandrus, Brassica nigra	20-100 ft
2	Non	1	0	0	1	N	6	3	Bromus diandrus, Brassica nigra	20-100 ft
3	Non	2	4	0	6	N	9	8	Avena fatua, Bromus diandrus, Festuca perennis	<20 ft
4	Non	0	0	1	1	N	10	10	Brommus diandrus	<20 ft
5	Non	2	1	1	4	N	12	1	Brommus diandrus	<20 ft
6	Non	0	1	1	2	N	10	8	Brommus diandrus	<20 ft
7	Riparian	1	1	2	4	Y	14	15	Brommus diandrus	<20 ft
8	Riparian	8	0	0	8	N	12	8	Hordeum murinum, Bromus diantrus, Centaurea solstitialis	<20 ft
9	Riparian	4	2	0	6	N	7	12	Bromus diandrus	<20 ft
10	Riparian	4	6	1	11	N	12	20	Bromus diandrus, Festuca perennis	<20 ft
11	Riparian	1	5	0	6	N	10	12	Bromus diandrus, Festuca perennis	<20 ft
12	Riparian	5	0	0	5	N	10	15	Bromus diandrus, Festuca perennis	<20 ft
13	Riparian	1	0	0	1	N	7	6	Quercus lobata, Bromus diandrus	20-100 ft
14	Riparian	1	2	0	3	N	9	10	Hordeum murinum, Prunus sp.	20-100 ft
15	Riparian	15	0	1	16	N	10	15	Hordeum murinum, Bromus diantrus, Centaurea solstitialis	<20 ft
16	Riparian	5	0	0	5	N	12	12	Festuca perennis, Hordeum murinum, Quercus lobata	<20 ft
17	Riparian	2	0	1	3	N	121	20	Quercus lobata, Festuca perennis, Petroselinum sp.	<20 ft
18	Riparian	6	2	1	9	N	20	15	Quercus lobata, Festuca perennis, Petroselinum sp.	<20 ft
19	Riparian	6	0	0	6	N	10	15	Petroselimun sp., Bromus diandrus	<20 ft
20	Riparian	10	1	0	11	N	15	10	Petroselimun sp., Bromus diandrus	<20 ft
21	Riparian	5	0	0	5	N	15	20	Petroselimun sp., Bromus diandrus	<20 ft
22	Riparian	4	0	0	4	N	8	6	Petroselimun sp., Bromus diandrus	<20 ft
23	Riparian	1	0	0	1	N	6	6	Festuca perennis, Hordeum murinum, Nicotiana glauca	<20 ft
24	Riparian	8	1	8	17	N	20	25	Brassica nigra, Bromus diandrus, Centaurea solstitalis	<20 ft
25	Riparian	5	0	0	5	N	10	12	Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
26	Riparian	7	0	1	8	N	20	8	Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
27	Riparian	0	1	1	2	N	20	10	Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
28	Riparian	3	0	0	3	N	15	5	Brassica nigra, Bromus diandrus, Silybum marianum	20-100 ft
29	Riparian	2	0	0	2	N	15	15	Rubus armeniacus, Petroselinum sp.	20-100 ft
30	Riparian	1	0	0	1	N	12	8	Salix exigua, Rubus armeniacus	20-100 ft
31	Riparian	0	0	0	0		0	0	Shrub no longer present (removed)	
32	Riparian	3	3	2	8	N	20	25	Rubus armeniacus, Bromus diandrus	20-100 ft
33	Riparian	1	0	1	2	N	20	15	Rubus armeniacus, Bromus diandrus	20-100 ft
34	Riparian	1	0	0	1	N	8	5	Rubus armeniacus, Bromus diandrus	20-100 ft
35	Riparian	1	1	0	2	N	10	5	Rubus armeniacus, Bromus diandrus	20-100 ft
36	Riparian	2	2	0	4	N	15	8	Rubus armeniacus, Bromus diandrus	20-100 ft
37	Riparian	1	0	0	1	N	7	4	Rubus armeniacus, Bromus diandrus	20-100 ft
38	Riparian	12	2	0	14	N	13	10	Rubus armeniacus, Bromus diandrus	20-100 ft

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	N	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	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	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	1	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	N	10	5	Rubus armeniacus, Bromus diandrus	>100 ft
81	Riparian	3	0	0	3	N	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	N	12	12	Bromus diandrus, Quercus lobata	>100 ft

Appendix F Bat Assessment Survey Results Letter

Wildlife Research Associates

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12/16/2015

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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 6th in priority for work http://www.stancounty.com/publicworks/pdf/bridge-repair-projects.pdf .

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 http://uglybridges.com/1048856. 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:

1. **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;

1. **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 Tatarian

Greg Tatarian

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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.

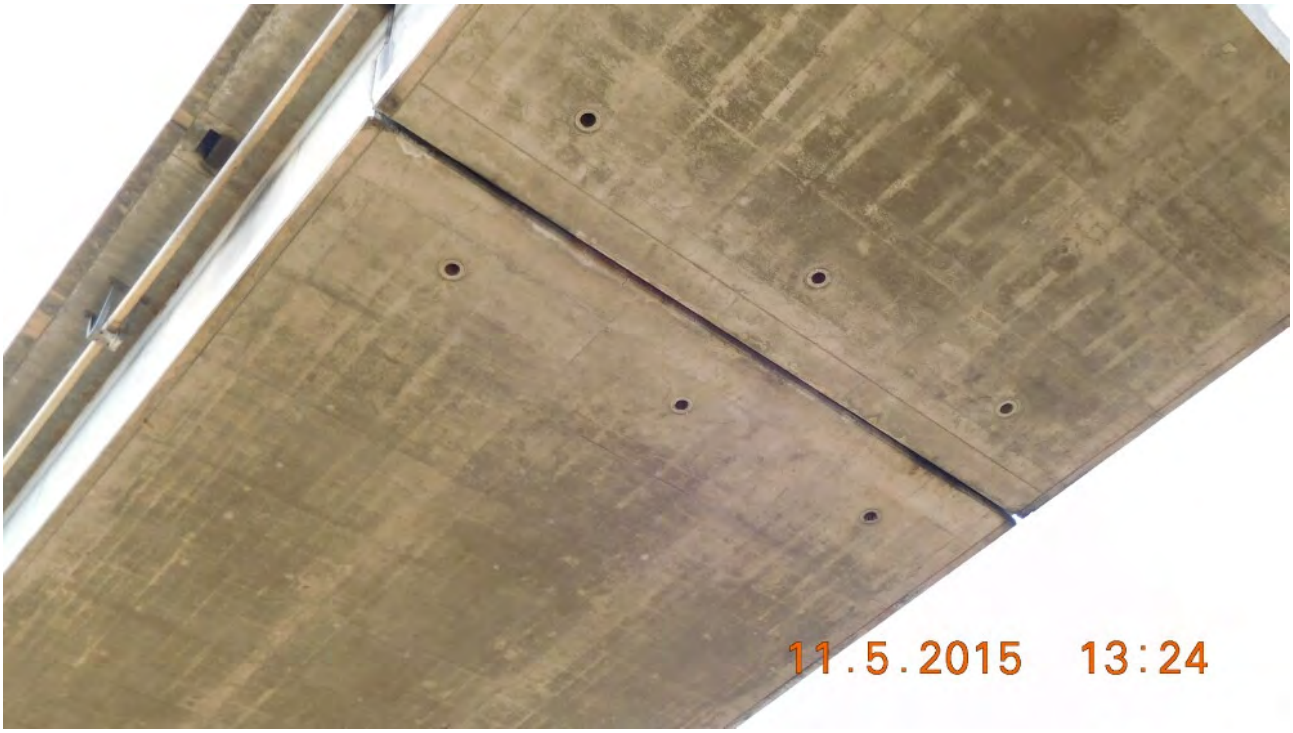

Figure 8. Roosting activity in expansion joints. Unknown whether bats are entering girder interiors through weep holes, but evidence of use by birds was present.

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.

Appendix G Representative Photos

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

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

View southeast of the Tuolumne River bottom from Hickman Road.

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

LSA

Hickman Road Bridge (38C0004) Replacement Project
Stanislaus County, California
10-STA-0-CR
Federal Project No. BRLS-5938 (199)
Representative Photos (Page 1 of 2)

SOURCE: LSA Associates, Inc. 9/2015

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View west of the Tuolumne River from the north bank.

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

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

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

LSA

Hickman Road Bridge (38C0004) Replacement Project
Stanislaus County, California
10-STA-0-CR
Federal Project No. BRLS-5938 (199)
Representative Photos (Page 2 of 2)

SOURCE: LSA Associates, Inc. 9/2015

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