

Lake County Bridge Replacement Project NES



Natural Environment Study

North Fork Cache Creek Bridge Replacement at Chalk Mountain Road

Spring Valley

Federal Project No. BRLO-5914(094), Bridge Number 14C-0048
District 1-Lake County

May 2018




Natural Environment Study

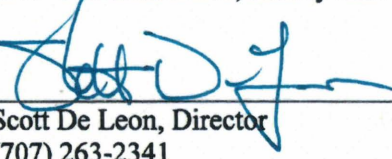
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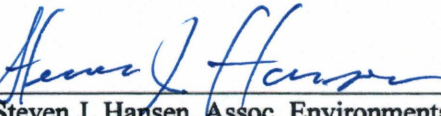
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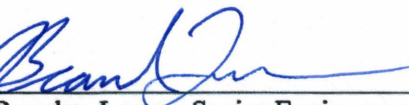
District 1-Lake County

STATE OF CALIFORNIA
Department of Transportation

Prepared By:  Date: 5-14-18
Steve Zalusky, Principal Biologist
(707) 889-1061
Northwest Biosurvey
1905 Westlake Drive, Kelseyville. VA 95451

Approval By:  Date: 5/24/2018
Scott De Leon, Director
(707) 263-2341
Lake County Department of Public Works.
255 N. Forbes St.
Lakeport, CA 95453

Approved By:  Date: 5/29/2018
Steven J. Hansen, Assoc. Environmental Planner
California Department of Transportation
District 1

Approved By:  Date: 05/29/18
Brandon Larsen, Senior Environmental Planner
Caltrans Office of Local Assistance
District 1

Summary

The Lake County Department of Public Works, in cooperation with the California Department of Transportation (Caltrans) and Federal Highway Administration (FHA), is proposing to replace an existing bridge (Bridge No. 14C-0048) over North Fork Cache Creek. The existing bridge is located east of the intersection of Wolf Creek Road and Chalk Mountain Road in eastern Lake County, approximately 5 miles northeast of Clearlake Oaks. The proposed project will replace the existing bridge, Bridge No. 14C-0048, where Chalk Mountain Road crosses the North Fork Cache Creek. The existing bridge was constructed in 1967 and is a 5-span, 206-foot long modified steel railroad car frame with timber decking, supported on reinforced concrete piers and abutment walls founded on shallow spread footings. With regard to historical significance, the existing bridge is not eligible for listing on the National Register of Historic Places.

The project need is to provide a safe permanent crossing over North Fork Cache Creek at this location since the existing structure has been designated as structurally deficient per the Caltrans Structure Maintenance & Investigations, Local Agency Bridge List (April 2016). The primary objective is to replace a Structurally Deficient structure to improve public safety and to provide for a structure that has long-term value for the County.

The replacement bridge will be wider to comply with current AASHTO standards for local rural roads, which will include at a minimum two 9-foot travel lanes and two 3-foot shoulders, plus crash-tested vehicular barriers. It is anticipated that deep foundations will be needed to support the replacement bridge.

Alternative 1: Chalk Mountain Road Bridge Realignment

The realignment of the roadway allows the existing bridge to remain in use during construction. The new bridge will be constructed first, while traffic remains on the old bridge, and then the roadway approaches will be constructed to conform to the existing road. The replacement structure will be approximately 220 feet long.

Alternative 2: Bridge Replacement/Construction Staging

Construction Staging will allow the replacement bridge to be constructed on the same road alignment while keeping a portion of the existing bridge open to traffic during construction. Construction staging will require the project to extend over two seasons (summer of 2020 and 2021). The proposed replacement structure will be approximately 220 feet long.

Impacted Habitat: The Biological Study Area (BSA) for both alternatives encompasses 19.82 acres including existing roadways, structures, and other disturbed areas as well as undisturbed natural habitat. The area of actual ground disturbing activities (Project Impact Area [PIA]) is

limited to 4.39 acres within the bridge replacement area. These impacts will consist of vegetation removal or trimming, and soil disturbance or compaction. Some potential impacts will be permanent, such as the modification of vegetation at the location of the permanent structure, approaches, and piers.

Special Status Species Impacted: Within the context of the federal Endangered Species Act (FESA), this project will have no effect on federally listed species.

Required Permits: Permits will be required for this project from the following agencies:

- California Department of Fish and Wildlife: 1602 Streambed Alteration Agreement
- U.S. Army Corps of Engineers: 404 Nationwide Permit
- Regional Water Quality Control Board: 401 Water Quality Certification

Invasive Species: Himalayan blackberry (*Rubus armeniacus*) occurs on the banks along the creek channel. Nearly half of the species identified within the biological study area are non-native species.

Beneficial Effects: The new bridge will provide safe access to recreation facilities over this part of North Fork Cache Creek.

Mitigation Agreements: There are no species present with sensitive regulatory status and no federal agency mitigation agreements are required. Although blue elderberry shrubs are present, Valley elderberry longhorn beetles (*Desmocerus californicus dimorphus* [VELB]), are not present at this location.

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List of Abbreviated Terms

| | |
|----------|--|
| BA | Biological Assessment |
| BSA | Biological Study Area |
| Caltrans | California Department of Transportation |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| CNDDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| FHA | Federal Highway Administration |
| FESA | Federal Endangered Species Act |
| NEPA | National Environmental Policy Act |
| NES | Natural Environment Study |
| PIA | Project Impact Area |
| RWQCB | Regional Water Quality Control Board |
| SWPPP | Stormwater Pollution Prevention Program |
| USFWS | U.S. Fish and Wildlife Service |
| VELB | Valley Elderberry Longhorn Beetle |
| WPCP | Water Pollution Control Program |

Chapter 1. Introduction

1.1. Project History

The existing bridge was constructed in 1967 and is a 5-span, 206-foot long modified steel railroad car frame with timber decking, supported on reinforced concrete piers and abutment walls founded on shallow spread footings. With regard to historical significance, the existing bridge is not eligible for listing on the National Register of Historic Places.

1.2. Project Description

1.2.1. Introduction

The project site is located east of the intersection of Wolf Creek Road and Chalk Mountain Road in eastern Lake County approximately 5 miles northeast of Clearlake Oaks (Attachment A, Figures 1 and 2, Regional and Project Location Map). The proposed project will replace the existing bridge, Bridge No. 14C-0048, where Chalk Mountain Road crosses the North Fork Cache Creek.

The project is not within an Environmental Protection Agency designated or proposed sole-source aquifer. This project is not in an area regulated by the State Coastal Zone Management Agency. The project is not in the Wild and Scenic River System. No agricultural or wetland resources will be affected. The project is consistent with the plans and goals of the community. The project will include Best Management Practices as specified in the Water Quality Technical Memorandum in Appendix H.

1.2.2. Project Purpose and Need

The existing bridge has been designated as structurally deficient per the Caltrans Structure Maintenance & Investigations, Local Agency Bridge List (April 2016). The purpose of the proposed project is to provide a replacement structure that is consistent with Caltrans structural design standards, is placed on a road alignment that meets appropriate AASHTO roadway geometry standards and is hydraulically capable of passing and clearing the design storm events (50-year storm plus 2 feet of freeboard and 100-year storm).

1.2.3. Description

The replacement bridge will be wider than the existing bridge to comply with current AASHTO standards for local rural roads, which will include at a minimum two 9-foot travel lanes and two 3-foot shoulders, plus crash-tested vehicular barriers. It is anticipated that deep foundations will be needed to support the replacement bridge.

Alternative 1: Constructing the Replacement Bridge on a Realigned Chalk Mountain Road:

The realignment of the roadway allows the existing bridge to remain in place for public use during construction of the replacement bridge. The replacement bridge will be constructed first, while traffic remains on the existing bridge. Once the construction of the replacement bridge is complete, the roadway approaches will be reconstructed to conform from the existing road to the replacement bridge. The replacement structure will be approximately 220 feet long.

Alternative 2: Constructing the Replacement Bridge Using Staged Construction:

Construction staging will allow the replacement bridge to be constructed on the existing road alignment while keeping a portion of the existing bridge open to public traffic during construction. Half of the replacement bridge would be constructed while the existing bridge remains open to traffic. Once construction of the first half of the replacement bridge is complete, public traffic would be redirected to the completed portion of the bridge, the existing bridge would be demolished, and the second half of the replacement bridge would be constructed. Construction staging will require the project to extend over two seasons (summer of 2020 and 2021). The proposed replacement structure will be approximately 220 feet long.

Bridge Demolition Work

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications modified to meet environmental permit requirements. All concrete and other debris resulting from the bridge demolition will be removed from the project site and disposed of by the contractor. The construction contractor will prepare a bridge demolition plan.

Right-of-Way

Temporary construction easements will be required from the five properties adjacent to the bridge site. Permanent right-of-way takes are anticipated from the two adjacent properties south of the bridge. Detailed right-of-way takes have not been determined at this point.

Utilities

There are several utilities at the site. Overhead electric and communication lines run parallel to the bridge on the north side of Chalk Mountain Road. These lines may need to be temporarily relocated or de-energized during the construction of the replacement bridge; to be determined as the design of the project progresses.

Construction Activities

Construction will consist of the following activities:

- Removing trees
- Clearing and grubbing
- Earthwork grading
- Installing a temporary creek diversion system using temporary levees along the low flow channel to define the creek flows within the low flow channel during the construction season
- Removing the existing bridge
- Excavating for the replacement bridge abutment and pier wall foundations
- Constructing new abutments in the creek banks
- Constructing a maximum of two 60" diameter support columns within the creek channel
- Placing temporary falsework within the creek channel
- Constructing the replacement bridge superstructure
- Placing rock slope protection along the creek banks in the vicinity of the new bridge abutments
- Reconstructing road approaches
- Placing post construction erosion control native grass seeds and mulch

The table below provides a description of the type of equipment likely to be used during the construction of the proposed project.

| Equipment | Construction Purpose |
|-------------------------|---|
| Drill Rig | Construction of drilled pile or pile foundation |
| Backhoe | Soil manipulation + drainage work |
| Bobcat | Fill distribution |
| Bulldozer / Loader | Earthwork construction + clearing and grubbing |
| Crane | Placement of precast concrete girders or false work beams |
| Dump Truck | Fill material delivery |
| Excavator | Soil manipulation and placement of rock slope protection |
| Front-End Loader | Dirt or gravel manipulation |
| Grader | Ground grading and leveling |
| Haul Truck | Earthwork construction + clearing and grubbing |
| Roller / Compactor | Earthwork and asphalt concrete construction |
| Paver | Asphalt concrete construction |
| Truck with seed sprayer | Erosion control landscaping |
| Water Truck | Earthwork construction + dust control |
| Generators | Power Hand Tools |

Creek Diversion and Dewatering

A creek diversion system will be used to divert flow through the construction zone and dewater the site. The temporary creek diversion system will be designed to convey flows so that the

proposed intermediate pier support(s) and west abutment can be constructed outside of flowing water. The creek diversion system will consist of placing temporary levees along the banks of the low flow channel to convey the water from the North Fork Cache Creek through the project site. A slight realignment of the low flow channel will be required to move the flow of water away from the west bank of North Fork Cache Creek at the bridge location. The temporary levees may consist of gravel bags, water filled bladder dams, or another agency approved method. Earth berms will not be used since they increase the risk of increasing the turbidity of the North Fork Cache Creek water. The operational timeline for the creek diversion will likely be June 15 to October 31, depending on the regulatory permit mitigation measures. The temporary levees will be completely removed and the creek channel will be returned to its original condition after project construction is completed and the existing bridge is removed.

Two span configurations are currently being considered for the replacement bridge: A two span structure and a three span structure. Each alternative requires intermediate supports within the creek that will consist of a single 60" diameter column bent. The two span alternative has one bent and the three span alternative has two bents. As a result, a maximum of two 60" diameter columns could potentially be within the Cache Creek channel.

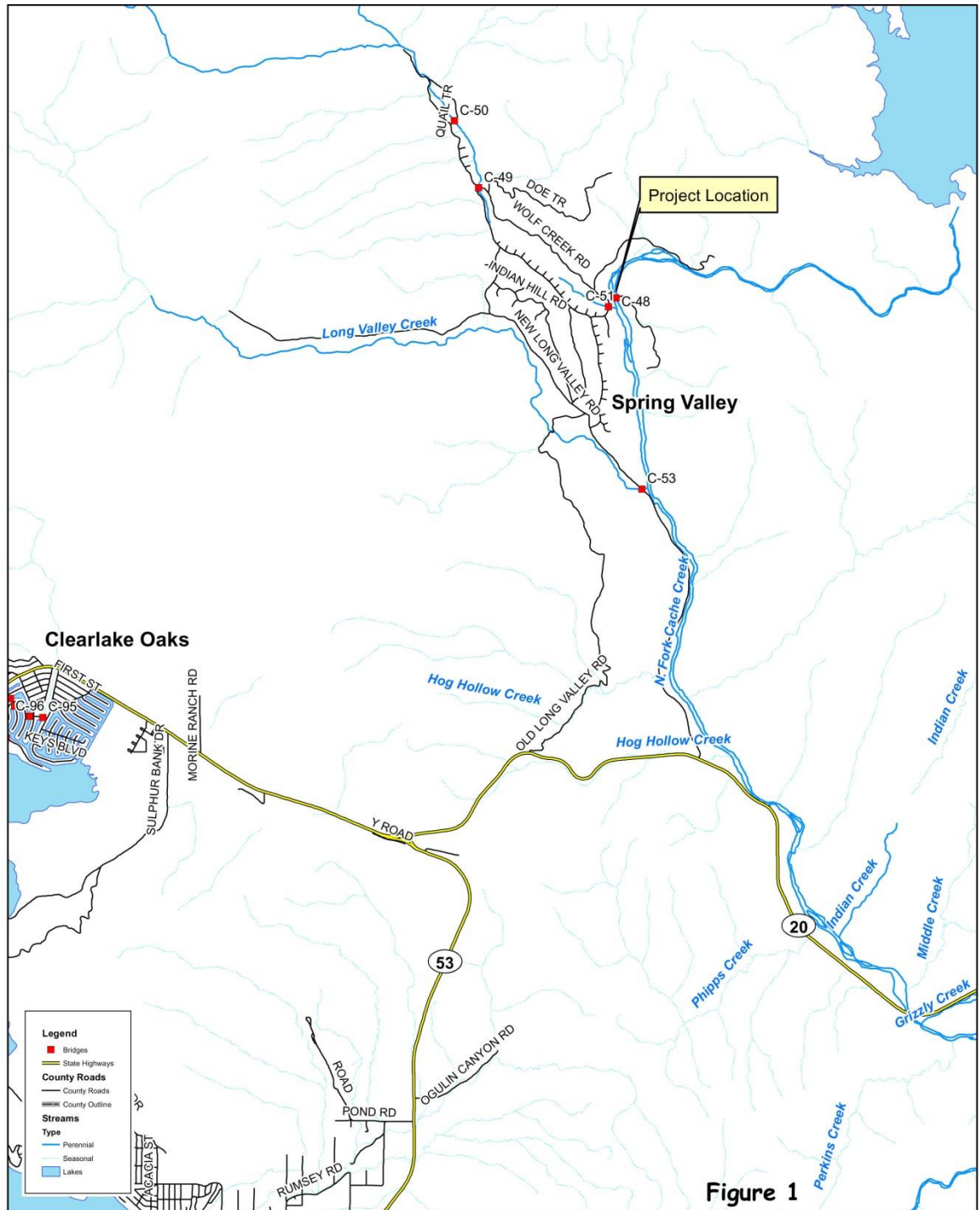
Laydown Areas

The potential project laydown areas are expected to be as shown in Appendix H, Figure 3. Staging of equipment and materials in either location will occur within the bounds of the PIA.

Construction Schedule and Timing

Construction of the proposed project is anticipated to take either 4 or 8 months to complete, depending upon which alternative is used, pending the scope of the final design and construction plans. Construction is anticipated to begin in the spring of 2020. All work within the North Fork Cache Creek channel will be conducted in accordance with the regulatory agency permits.

Figure 1. Vicinity Map

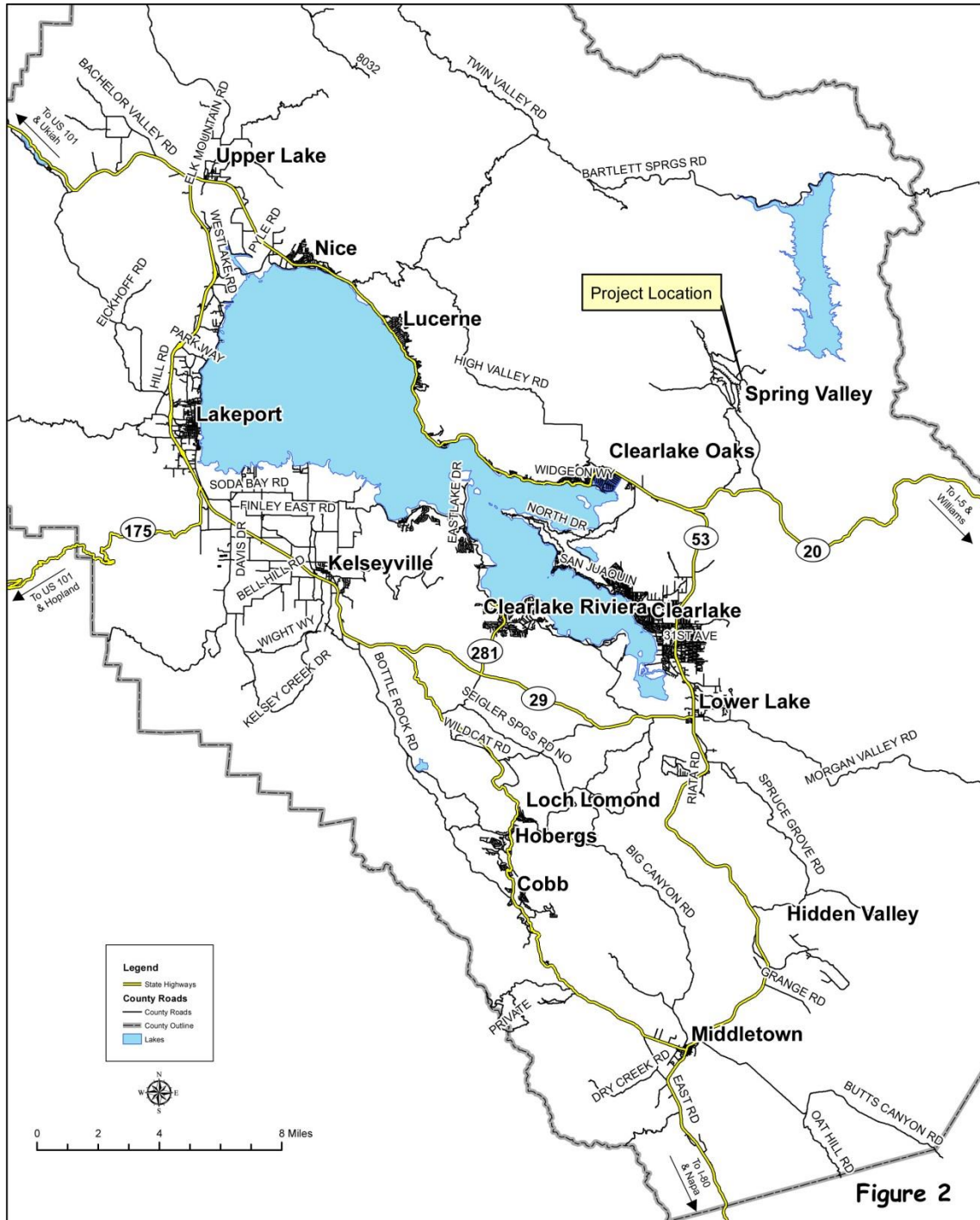


**Chalk Mountain Rd at Cache Creek (14C-0048)
Bridge Replacement Project- Vicinity Map**

Figure 1

0 2,500 5,000 10,000 Feet
Reference Scale: 1 inch = 5,000 feet (1:60,000)
Projection: California State Plane Zone II - NAD 83 - Feet

Figure 2. Location Map



**Chalk Mountain Rd at Cache Creek (14C-0048)
Bridge Replacement Project- Location Map**

Reference Scale: 1 inch = 4 miles (1:253,440)
Projection: California State Plane Zone II - NAD 83 - Feet

Chapter 2. Study Methods

This NES includes pre-survey research, a floristic-level botanical survey, a delineation of waters of the U.S., and a survey for Valley elderberry longhorn beetles. These studies are described below.

2.1. Regulatory Requirements

Construction may require the following permits or approvals:

- Construction General Permit 99-08-DWQ from the Regional Water Quality Control Board (because the total disturbance is over 1 acre)
- CEQA review by the Lake County Community Development Department (see below)

Any work within possible waters of the U.S. requires the following permits:

- U.S. Army Corps of Engineers 404 Permit or equivalent Nationwide Permit
- Regional Water Quality Control Board 401 Water Quality Certification
- California Department of Fish and Wildlife 1602 Streambed Alteration Agreement

While no county-initiated permits will be required for this county-initiated project by the Lake County Community Development Department, that agency will conduct an initial study and adopt a CEQA mitigated negative declaration. This CEQA review will also be required for the state agency permits listed above. This NES will also meet the National Environmental Policy Act (NEPA) review requirements of the federal agencies listed above.

2.2. Studies Required

Because this document will also be used in CEQA review, pre-survey research and field studies were conducted for species with sensitive status in California: A full protocol floristic-level botanical survey and Corps of Engineers protocol delineation of waters of the U.S. were conducted during the spring and summer of 2016.

The pre-survey research consists of a comparison of existing habitat conditions within the project boundaries to the geographic range and habitat requirements of sensitive plants and wildlife known to occur within the region. It includes all sensitive species that occupy habitats similar to those found in the project area and whose known geographic ranges encompass it. The analysis includes the following site characteristics:

- Location of the project area with regard to the geographic range of sensitive plant and wildlife species
- Location(s) of known populations of sensitive plant and wildlife species as mapped in the California Natural Diversity Database (CNDDDB) and RareFind 5
- Soils of the project area
- Elevation
- Presence or absence of special habitat features such as vernal pools and serpentine soils
- Plant communities existing within the project area

A full, in-season floristic-level survey was conducted for the project site. The survey area encompassed the project area and extended for a radius of 250 feet around the project corridor. The CNDDDB report and map for the Benmore Canyon quadrangle were referenced prior to the survey. Vegetation communities were identified based on the nomenclature of *A Manual of California Vegetation* (Sawyer, et al. 2009) as modified by the California Native Plant Society (CNPS), and mapped on a 1"=100' aerial photo. Vegetation type names are based on an assessment of dominant cover species. Plants occurring on the site were identified using *The Jepson Manual of Higher Plants of California*. Where necessary, species names were updated based on the 6th edition, CNPS *Inventory of Rare and Endangered Plants of California*.

A protocol-level delineation of waters of the U.S. as outlined in the 1987 Corps of Engineers delineation manual and the 2008 Arid West Supplement is included in this assessment. The delineation and findings are provided in this report.

All elderberry shrubs located within the BSA were identified and surveyed for sign of valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*) and their sign in accordance with the USFWS 1999 field survey protocol. Each elderberry shrub (with a stem diameter of greater than 1-inch measured at ground level) location was mapped with a Global

Positioning System (GPS) unit with submeter accuracy. The stems of each shrub were recorded into three stem diameter categories: 1 to 3 inches, 3 to 5 inches, and 5+ inches.

2.3. Personnel and Survey Dates

Personnel: The botanical field surveys, plant taxonomy, the delineation, and the elderberry beetle survey were conducted by Steve Zalusky, Northwest Biosurvey principal biologist. Mr. Zalusky has a Master of Science Degree in Biology from the California State University at Northridge and a Bachelor of Science Degree in Zoology from the University of California at Santa Barbara. Mr. Zalusky has over 30 years of experience as a biologist in the government and private sectors. He completed his wetland delineation training under Terry Huffman of Huffman & Associates, Inc.

Field surveys, database review, and report preparation were conducted with the assistance of Danielle Zalusky, Northwest Biosurvey principal planner. Ms. Zalusky has a Bachelor of Arts Degree and has completed all course work toward an M.A. Degree in Rural and Town Planning from Chico State University. Ms. Zalusky served more than 20 years as a planner in local

government and, prior to joining Northwest Biosurvey in 2002, was a senior planner for the Lake County Community Development Department.

Survey Dates: Site visits were made for botanical surveys, wildlife habitat assessments, and mapping for vegetation types and waterways on May 4, June 1, and July 15, 2016.

2.4. Agency Coordination and Professional Contacts

The initial agency contact between Caltrans and staff from the Lake County Department of Public Works was during the Caltrans field review in March 6, 2016.

Contributors include the following individuals:

| | |
|------------------|--|
| Brandon Larsen | Caltrans, Senior Environmental Planner Caltrans Project Local Assistance |
| Mike Kelly | Caltrans, Assoc. Environmental Planner, Biologist |
| Fred Pezeshk | Lake County Dept. of Public Works, Principal Civil Eng. |
| Todd Mansell | Lake County Dept. of Public Works, Engineer |
| Mark Dellinger | Lake County Special Dist., Administrator |
| Tom Smythe | Lake County Water Resources Depart., Water Resources Eng. |
| Michael Pugh | Drake Haglan and Assoc. |
| Leslie Haglan | Drake Haglan and Assoc. |
| Steve Zalusky | Northwest Biosurvey, Principal Biologist, Document preparation (biological resources) |
| Danielle Zalusky | Northwest Biosurvey, Principal Planner Document preparation (planning and regulatory) |

2.5. Limitations That May Influence Results

All surveys were conducted following agency protocols and within the appropriate survey window. The following surveys were conducted:

- Floristic-level botanical survey pursuant to CDFW protocol
- Delineation of other waters of the U.S. (creeks and streams) pursuant to the 1987 COE Delineation Manual and 2008 Arid West Supplement

- VELB protocol survey pursuant to the FWS Conservation Guidelines 1999

Northwest Biosurvey staff is not aware of any limitations that may influence the results of surveys conducted for this NES.

Chapter 3. Results: Environmental Setting

Regional Setting

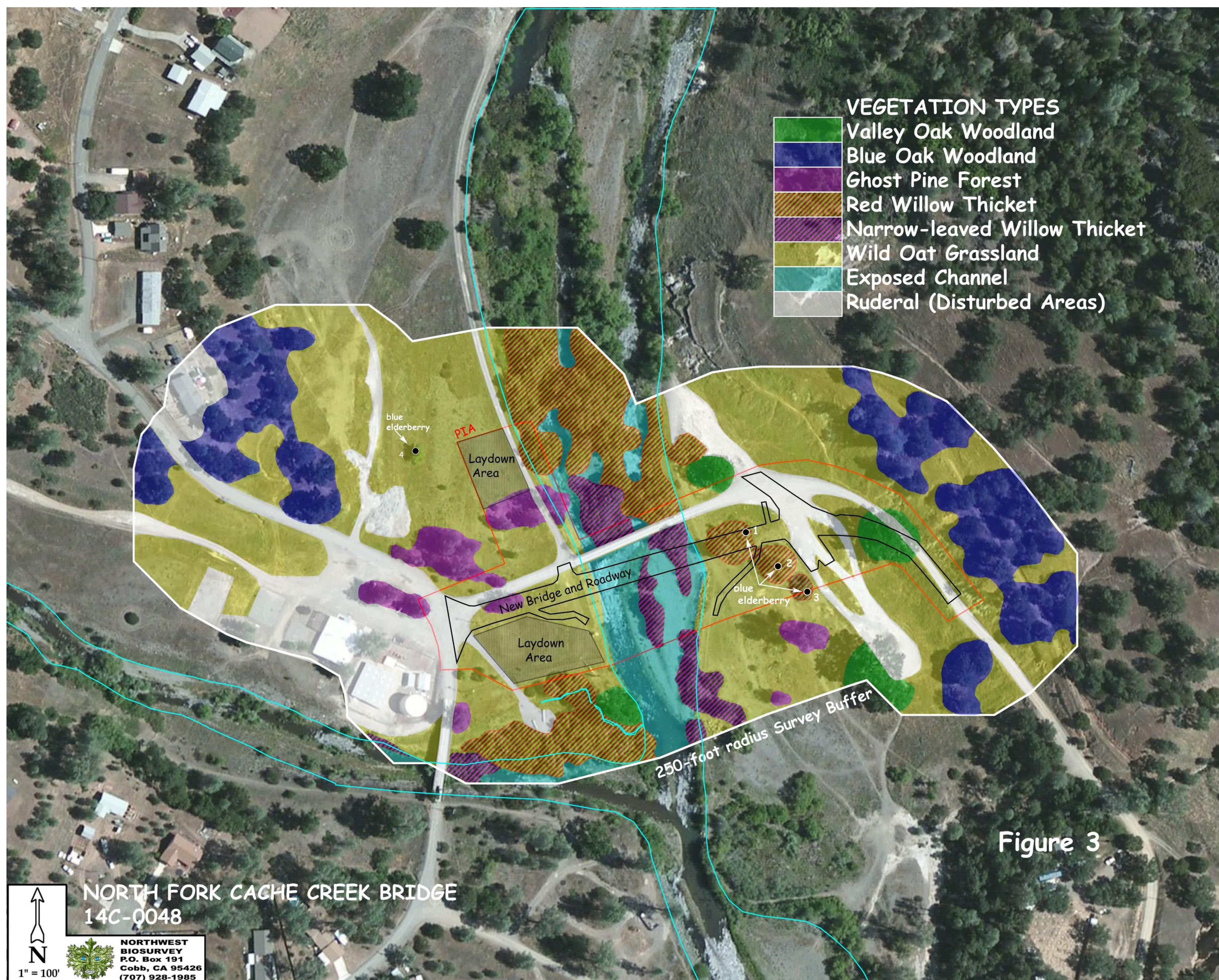
The project is located within the Interior North Coast Range of California. This is a region of steep, generally north-to-south-trending ridges and small interior valleys that eventually drain east to the Sacramento Valley and Sacramento River. The Chalk Mountain Road bridge crosses the North Fork of Cache Creek in Long Valley, a minor alluvial plain surrounded by steep mountains and containing the confluences of Long Valley Creek, Wolf Creek, and the North Fork of Cache Creek. Runoff from the valley continues southeast as the North Fork of Cache Creek for 8.6 river miles to its confluence with the main channel of Cache Creek. Cache Creek continues 25 miles to the Capay Valley reaching the Sacramento Valley near the town of Esparto approximately 50 river miles southeast of the project area.

This region of the Coast Range is typically dominated by chamise chaparral on steep slopes and blue oak woodland/savanna on the gentler hills and level valleys. Along Cache Creek and its tributaries, the transition from narrow riparian communities to the more xeric (dry soil) chaparral and woodland is abrupt due primarily to the steep river gradient and hot, dry Mediterranean climate.

3.1. Description of the Existing Biological and Physical Conditions

3.1.1. Study Area

The BSA covers 19.82 acres including the 4.39-acre Project Impact Area (PIA) surrounded by a 250-foot radius survey buffer. The 250-foot survey buffer was based on the original project design and has been retained even though the current PIA is smaller. The BSA and current PIA are shown in the aerial photo base-map provided in **Figure 3**.



3.1.2. Physical Conditions

3.1.2.1. TOPOGRAPHY AND DRAINAGE

The Chalk Mountain Road Bridge crosses the North Fork of Cache Creek along the eastern edge of Long Valley. Terrain east of the crossing rises steeply up the slope of Chalk Mountain, the site of an historic cinnabar mine. The entire valley is composed of Pleistocene xerofluvents washed into this minor basin by Long Valley Creek, Wolf Creek, and the North Fork Cache Creek that join within the valley and continue southeast as the North Fork Cache Creek.

The North Fork Cache Creek was historically seasonal in this area but following construction of the Indian Valley Reservoir four miles due east, the channel now maintains perennial agricultural irrigation flows throughout the summer and fall months. Agreements between the Yolo County Flood Control District and the California Department of Fish and Wildlife mandate a minimum 10 cfs flow to maintaining fisheries habitat. Larger releases may occur throughout the summer and fall months.

3.1.2.2. SOILS

Soils within and around the BSA are of three types and are described as follows:

- **Bale complex, 0-2% slopes (soil unit 106):** This complex consists of poorly drained, gently sloping soils on flood plains and terraces, and occurs here west of the creek. The soils, which include Cole, Cortina, and Yolo soils, formed in alluvium from rhyolite and basic igneous rock. The surface layer is clay loam. Permeability is moderate, runoff is slow, and there is little or no hazard of erosion. The water table is at 2-4 feet. Boron toxicity is strong, and most areas are in saltgrass or star thistle. Temporary ponding is common during periods of high rainfall.
- **Xerofluvents, very gravelly (soil unit 248):** This soil type consists of very deep, excessively drained soils on narrow flood plains adjacent to stream channels. These soils formed in alluvium derived from mixed rock sources, dominantly sandstone or shale. The soil profile varies from one location to another. Permeability is rapid and runoff is very slow. The hazard of erosion is slight except along streams that are subject to severe streambank erosion during high-intensity storms. These soils are subject to occasional periods of flooding in winter and spring. Vegetation is mostly sparse annual grasses and forbs. These soils occur east of the creek.
- **Xerofluvents-Riverwash complex (soil unit 249):** The complex occurs on narrow floodplains adjacent to stream channels, as well as within active stream channels. It includes 55% Xerofluvents and 30% Riverwash. The Xerofluvents are very deep, excessively drained soils that formed in alluvium derived from mixed rock sources.

Permeability is rapid and runoff is very slow. The hazard of erosion is slight except along streams. These soils are subject to frequent periods of flooding in winter and spring. Vegetation is limited to sparse annual grasses and forbs, including foxtail fescue, vinegar-weed and fillaree. The Riverwash soil is a very deep water-deposited sediment consisting of sand, gravel, cobbles and stones in active stream channels. Areas of Riverwash are inundated during periods of high water and are subject to deposition and removal of material.

3.1.3. Biological Conditions in the Biological Study Area

3.1.3.1. VEGETATION TYPES

The BSA contains six vegetation types based on or derived from the "Standardized Classification" scheme described in the California Native Plant Society (CNPS) *A Manual of California Vegetation*. These vegetation types and other cover types present are listed in **Table 1**. They are described below the table and shown in the plant communities map provided in **Figure 2**.

Table 1. Total Area of Vegetation Types and Other Land Cover

| Vegetation Type | Acres | Percent of Total |
|----------------------------|--------------|------------------|
| Valley Oak Woodland | 0.41 | 2.07 |
| Blue Oak Woodland | 2.58 | 13.00 |
| Ghost Pine Forest | 0.60 | 3.02 |
| Red Willow Thicket | 1.93 | 9.72 |
| Narrow-leaf Willow Thicket | 0.64 | 3.22 |
| Wild Oat Grassland | 8.66 | 43.63 |
| Exposed Channel | 1.15 | 5.79 |
| Ruderal (Disturbed Areas) | 3.88 | 19.55 |
| Total | 19.82 | 100.00 |

- **Valley Oak Woodland:** Within the survey area this community is represented by scattered mature valley oak (*Quercus lobata*) primarily along the eastern terrace of North Fork Cache Creek. Prolonged disturbance from maintenance and clearing of parking areas has removed much of the shrub layer and presumably the smaller trees that would have formed part of this community. The remaining lower canopy consists of red willow (*Salix laevigata*) thicket with blue elderberry (*Sambuca nigra ssp. caerulea*) and poison oak (*Toxicodendron diversilobum*). The ground cover layer is primarily wild oat grassland.

- **Blue Oak Woodland:** Blue oak woodland occurs to both the west and east on slopes rising from the floodplain of Cache and Wolf Creeks. In both locations it consists of an open woodland of mature blue oak (*Quercus douglasii*) with a poorly developed shrub layer limited primarily to poison oak and scattered common manzanita (*Arctostaphylos manzanita* subsp. *Manzanita*). The ground cover layer is wild oat grassland.
- **Ghost Pine Forest:** Ghost Pine (*Pinus sabiniana*) occurs in small copses and individual trees along the terraces adjacent to Cache and Wolf Creeks. The hot, dry, xerofluent soils here support only a scant shrub cover of California yerba santa (*Eriodictyon californicum*), common manzanita and poison oak. The ground cover is a mix of bare gravels, pine duff, and dispersed wild oat grassland with patches of Coville's buckwheat (*Eriogonum covilleianum*).
- **Red Willow Thicket:** This dense and generally closed-canopy community is dominated by red willow (*Salix laevigata*) which forms a mature upper canopy on the upper banks of Cache and Wolf Creeks. Banks adjacent to the channels support younger (shrubby) red willow and white alder (*Alnus rhombifolia*).

The scour zone along the channel is dominated by a shrub layer of Himalayan blackberry (*Rubus armeniacus*), mule fat (*Baccharis salicifolia*) and white sweet clover (*Melilotus alba*). The ground cover is a mix of open gravel bar and active stream flows with dense patches of common scouring rush (*Equisetum hyemale* subsp. *affine*), mugwort (*Artemisia douglasiana*), and narrow-leaf cattail (*Typha angustifolia*).

The red willow thicket community contains blue elderberry, a shrub that is known to provide potential habitat for the Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; VELB), a species with threatened status under the federal Endangered Species Act. The U.S. Fish and Wildlife Service has jurisdiction over this species and has regulatory authority under the endangered species act for determining whether surveys should be conducted for the species at any location. A USFWS protocol survey was conducted for these beetles and is attached to this report (Appendix F). The results were negative for VELB.

- **Narrow-leaved Willow Thicket:** Narrow-leaved (arroyo) willow (*Salix exigua* var. *hindsiana*) occurs as homogenous thickets on exposed gravel bars and banks within the active channels of Cache and Wolf Creeks. Exposed community edges of in-channel bars and the streamside edges of banks support the ground cover described for the red willow

thicket community. The landward edges along the banks support a continuation of the adjacent wild oat grassland. Within the community itself the ground cover consists of scoured, exposed gravel and sand.

- **Wild Oat Grassland:** The community is dominated by grasses such as slender wild oat (*Avena barbata*), ripgut grass (*Bromus diandrus*), perennial ryegrass (*Festuca perennis*), soft chess (*Bromus hordeaceus*), and Mediterranean barley (*Hordeum marinum ssp. gussoneanum*). Forbs include a dense mix of red-stem storksbill (*Erodium cicutarium*), with scattered miniature lupine (*Lupinus bicolor*) and wilding pink (*Petrorhagia prolifera*).
- **Exposed Channel:** The exposed creek channels consist of scoured gravel and sand that extends beneath the flowing portions of the streams. These open, exposed areas transition into the ground cover described for narrow-leaved and red willow thicket communities where these two communities occur.
- **Ruderal:** These are areas where development has already occurred and consist of roadways, structures, and landscaping.

3.1.3.2. BOTANICAL FIELD SURVEY RESULTS

Appendix A presents the results of the floristic-level botanical survey for the project site. Surveys were conducted on May 4, June 1, and July 15, 2016. Each of the sensitive plant taxa potentially occurring at the site was specifically searched for during the surveys. The surveys identified a total of 65 plant taxa within the BSA. The last column in each row of Appendix A identifies the taxa as native or introduced. Almost half of the plant taxa located within the BSA are non-natives. No plants with federal or state endangered status were identified.

This relatively low number of taxa is likely related to the conversion of adjacent habitats to residential and recreational use and the continued ground clearing maintenance of roadways and parking areas.

The red willow thicket community east of the creek and the existing bridge contains four blue elderberry plants. This shrub is known to provide potential habitat for the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; VELB), a species with threatened status under the FESA. All of the plants are within the PIA, and three of these shrubs are located within the riparian vegetation zone of the North Fork of Cache Creek. A USFWS protocol survey was conducted for these beetles. The results were negative for VELB.

3.1.3.3. WILDLIFE COMMON TO THE HABITATS WITHIN THE BIOLOGICAL STUDY AREA

The list of native wildlife common to the riparian and other habitats of the larger geographic region is extensive and will not be reproduced here. The proximity of the bridge to broad tracts of undisturbed natural habitat and a continuous riparian corridor makes it likely that some larger mammals such as mountain lion, bear, and blacktail deer are present, along with medium and small-sized mammals that are common to residential and rural areas and include skunks, possums, raccoons, squirrels, and rodents.

The list of bird species potentially present includes a range of passerines including songbirds, woodpeckers, blackbirds, doves, sparrows, and finches; warblers are potentially present during the nesting season in the willow thickets along the creek. The larger trees provide potential habitat for raptors. The current bridge structure may provide roosting habitat for bats. The aquatic habitats of the North Fork Cache Creek provide potential habitat for a number of California wildlife species of special concern. These include foothill yellow-legged frogs, western pond turtles, and otters. Anadromous fish are not present in this creek. This NES has focused on the potential presence of species with sensitive regulatory status within this geographic region that occur within similar habitats.

3.1.3.4. MIGRATION AND TRAVEL CORRIDORS

Cache Creek and its riparian corridor form a natural migration and travel corridor for fish, aquatic herptiles, and riparian birds. A wide range of common fish and wildlife use riverine and riparian habitat as migration routes and daily movement corridors either seasonally, or throughout the year, depending on species. Among these are species with sensitive regulatory status including western pond turtles, which may use the slower sections of the creek as habitat.

3.1.3.5. AQUATIC RESOURCES - POSSIBLE WATERS OF THE U.S.

Purpose: A delineation of possible waters of the U.S. was conducted as prescribed in the *Corps of Engineers Wetlands Delineation Manual*, January 1987 and the *Arid West 2008 Supplement*, version 2.0.

Results: The results of the delineation are shown on the aerial photo base map provided in **Figure 3**. Based on the delineation, there are a total of 3.05-acres of possible waters of the U.S. present as “other waters of the U.S.” (creeks and streams) within the BSA, and 0.87-acre of “other waters of the U.S.” in the PIA. See **Table 2** below for the results of the delineation.

Table 2. Possible Waters of the U.S.

| POSSIBLE WATERS OF THE U.S. Within the BSA | | | |
|---|--------------------|---------------------------|---------------------|
| Stream Segment | Length (ft) | Average Width (ft) | Area (acres) |
| A | 722 | 170 | 2.82 |
| B | 191 | 50 | 0.22 |
| C | 102 | 4.5 | 0.01 |
| Total Possible Waters of U.S. Within the Biological Study Area | | | 3.05 |
| POSSIBLE WATERS OF THE U.S. Within the PIA | | | |
| Stream Segment | Length (ft) | Average Width (ft) | Area (acres) |
| A | 215 | 177 | 0.87 |
| B | 0 | 0 | 0 |
| C | 0 | 0 | 0 |
| Total Possible Waters of the U.S. Within the Project Impact Area | | | 0.87 |

Note to reviewers: This report follows U.S. Army Corps of Engineers protocol for delineations of waters of the U.S. Waters identified on this property consist of “Other Waters” including creeks and streams. There are no “wetlands” on this site and consequently no wetland delineation forms are required or included in this report. The section above comprises the entire mandatory report format for “other” jurisdictional waters of the U.S.

3.1.3.6. INVASIVE SPECIES

The banks and upper terraces of North Fork Cache Creek within the PIA and BSA support numerous non-native grass, forb, and shrub species, including Himalayan blackberry. The floristic-level survey identified 65 species within the BSA, 30 of which are non-native (see **Appendix A**).



Figure 4. Possible Waters of the U.S.

3.2. Regional Species and Habitats of Concern

While this NES is intended primarily as a NEPA document focusing on species with federal sensitive status, it will also serve as a basis for the local agency CEQA review. Consequently, the list of species with sensitive status addressed in this NES will include those with sensitive status in California. As discussed below, extensive pre-survey research was conducted for both plants and wildlife prior to conducting field surveys. Due to the fact that a floristic-level botanical survey was conducted within the BSA, a definitive answer can be provided regarding the presence or absence of sensitive plant taxa. The “discussion” of presence or absence of sensitive plants is therefore limited to the tabular summary provided in **Table 3**.

Wildlife surveys (other than the survey for Valley longhorn elderberry beetles) were beyond the scope of the assessment. The potential for sensitive wildlife species to be present is summarized in **Table 3**; wildlife species for which habitat is potentially present are discussed in Section 4.3. The Species List produced by the U.S. Fish and Wildlife Service website (**Official Species List, Appendix G**) was consulted; threatened or endangered species in that list with a potential to occur within the BSA are included in **Table 3**, along with species, such as the delta smelt, which do not have a potential to occur but must be addressed regarding presence or absence of habitat pursuant to NES protocol.

Table 3. Taxa with Sensitive State and/or Federal Status Within the Surrounding Region

| Scientific Name | Common Name | Status Calif. (CNPS/ CDFW) | Status Fed. | General Habitat Description | Habitat Present/ Absent | Rationale |
|-------------------------------------|------------------------|----------------------------|-------------|--|-------------------------|---|
| PLANTS: | | | | | | |
| <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | 4.3 | None | Chaparral, cismontane woodland, riparian forest/serpentine seeps | A | Necessary habitats not present and not found during botanical survey. |
| <i>Clarkia gracilis ssp. tracyi</i> | Tracy's clarkia | 4.2 | None | Chaparral (openings, usually serpentine) | A | Necessary habitats not present and not found during botanical survey. |
| <i>Collomia diversifolia</i> | serpentine collomia | 4.3 | None | Chaparral, cismontane woodland/ serpentine, rocky or gravelly | A | Necessary habitats not present and not found during botanical survey. |
| <i>Eriogonum tripodum</i> | tripod buckwheat | 4.2 | None | Serpentine chaparral | A | Necessary habitats not present and not found during botanical survey. |
| <i>Fritillaria purdyi</i> | Purdy's fritillary | 4.3 | None | Chaparral, cismontane woodland, lower montane coniferous forest; usually serpentine | A | Necessary habitats not present, not found during botanical survey. |
| <i>Horkelia bolanderi</i> | Bolander's horkelia | 1B.2 | None | Chaparral, lower montane conif. forest, meadows & seeps, valley & foothill grassland/edges | HP | Habitat present but species not found during botanical survey. |
| <i>Layia septentrionalis</i> | Colusa layia | 1B.2 | None | Chaparral, cismontane woodland, valley & foothill grassland/sandy, serpentine | A | Necessary habitats not present and not found during botanical survey. |
| <i>Malacothamnus helleri</i> | Heller's bush-mallow | 3.3 | None | Chaparral (sandstone), riparian woodland (gravel) | A | Necessary habitats not present, not found during botanical survey. |
| <i>Potamogeton zosteriformis</i> | eel-grass pondweed | 2B.2 | None | Marshes & swamps, wetlands | A | Necessary habitats not present and not found during botanical survey |

| Scientific Name | Common Name | Status Calif. (CNPS/ CDFW) | Status Fed. | General Habitat Description | Habitat Present/ Absent | Rationale |
|--|-----------------------------------|-------------------------------------|----------------|---|-------------------------------|--|
| ANIMALS: | | | | | | |
| <i>Desmocerus californicus dimorphus</i> | valley elderberry longhorn beetle | None | FT | Riparian woodland and shrub habitat of the Central Valley; riparian habitat, woodland etc., adjacent to streams and rivers | HP | Four blue elderberry shrubs are located within the PIA. A survey was conducted for Valley elderberry longhorn beetle with negative results. No impact from construction anticipated. |
| <i>Hypomesus transpacificus</i> | Delta smelt | None | FT | Estuarine, dead-end sloughs, larger rivers. | A | Delta smelt are found in and around the San Francisco Bay and Sacramento Delta. They spawn in slightly brackish water. They are not known to migrate north of Sacramento and have not been found in Cache Creek. Project impacts such as noise and turbidity will not affect this species. |
| <i>Oncorhynchus mykiss irideus</i> | steelhead | None | FT | Small cool fast-flowing tributary streams with gravel beds. Steelhead are generally anadromous species that require streams that are contiguous with the ocean. | A | Access to the ocean and cool temperatures or deep pools required by this species are not present on this portion of North Fork Cache Creek, and this species has not been identified at this location. Project impacts such as noise and turbidity will not affect this species. |
| <i>Emys marmorata</i> | western pond turtle | SSC | None | Aquatic turtle found in ponds, lakes, rivers, creeks, marshes & irrigation ditches with abundant vegetation and rocky or muddy bottoms; In woodland, forest, & grasslands | HP | The stream habitat of North Fork Cache Creek provides good seasonal habitat for this species. Surveys were not conducted for this species. |

| Scientific Name | Common Name | Status Calif. (CNPS/ CDFW) | Status Fed. | General Habitat Description | Habitat Present/ Absent | Rationale |
|-------------------------------------|-----------------------------|-------------------------------------|----------------|--|-------------------------------|--|
| <i>Rana boylei</i> | foothill yellow-legged frog | SSC/SC T | None | Partly-shaded, shallow streams & riffles with a rocky substrate usually in the cold upper reaches of streams. | HP | The stream habitat of North Fork Cache Creek provides good seasonal habitat for this species. Surveys were not conducted for this species. |
| <i>Rana draytonii</i> | California red-legged frog | SSC | FT | Habitat for red-legged frogs consists of ponds or lakes, or pools in shallow water streams with riparian vegetation and shade. | A | The warm stream habitat of this section of North Fork Cache Creek does not provide suitable habitat for this species, and the species has not been found by the authors during previous surveys in the vicinity. |
| <i>Haliaeetus leucocephalus</i> | bald eagle | SE/SFP | FD | Large bodies of water with adjacent snags | HP | There is suitable fishing habitat for this species within the BSA. |
| <i>Elanus leucurus</i> | white-tailed kite | SFP | None | Open areas near woodlands and water | HP | Grasslands adjacent to woodlands and water within the BSA may provide hunting and nesting habitat. |
| <i>Strix occidentalis caurina</i> | northern spotted owl | SSC | FT | Old-growth forests or mixed stands of old-growth & mature trees; occasionally in younger forests with patches of big trees | A | The cool and shaded conifer forest habitat required by this species does not occur in the project area. Project impacts related to noise will have no effect on this species. |
| <i>Dendroica petechia brewsteri</i> | yellow warbler | SSC | None | Riparian plant associations; prefers willows, cottonwoods, aspens, sycamores for nesting & foraging | HP | The riparian woodlands along North Fork Cache Creek provide suitable habitat for this species. |
| <i>Icteria virens</i> | yellow-breasted chat | SSC | None | Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses | HP | The riparian woodlands along North Fork Cache Creek provide suitable habitat for this species. |

| Scientific Name | Common Name | Status Calif. (CNPS/ CDFW) | Status Fed. | General Habitat Description | Habitat Present/ Absent | Rationale |
|--------------------------------------|----------------------------|-------------------------------------|----------------|--|-------------------------------|---|
| <i>Lontra canadensis ssp. sonora</i> | North American river otter | SSC | None | Edges of freshwater bodies and coastal habitats, in dens constructed usually from other animals' burrows | HP | This section of North Fork Cache Creek may provide suitable habitat for this species; no burrows were seen during the botanical survey. |
| <i>Antrozous pallidus</i> | pallid bat | SSC | None | Open, dry habitats, forest habitats, caves, tunnels, buildings, bridges; sensitive to human disturbance | HP | Woodlands within the BSA are scattered and provide poor roosting habitat for this species. The bridge structure itself contains openings that may be used for roosting by bats. |

KEY FOR TABLE 3:

Absent [A] - no habitat present and no further work needed.

Habitat Present [HP] - habitat is, or may be present. The species may be present.

Present [P] - the species is present.

Status:

Federal Endangered (FE), Federal Threatened (FT), Federal Proposed (FP, FPE, FPT); Federal Candidate (FC), Federal Species of Concern (FSC), Federal Delisted (FD); State Endangered (SE), State Threatened (ST), California Fully Protected (SFP), State Rare (SR), State Cand. End/Threatened (SCE/SCT), State Species of Special Concern (SSC); California Watch List (WL); California Native Plant Society (CNPS).

CNPS Rare Plant List: 1B.1 = Rare, threatened, or endangered in California and elsewhere; seriously threatened in California
 1B.2 = Rare, threatened, or endangered in California and elsewhere; fairly threatened in California
 1B.3 = Rare, threatened, or endangered in California and elsewhere; not very threatened in California
 2A = Presumed extinct in California, but extant elsewhere
 2B.1 = Rare, threatened, or endangered in Calif., but more common elsewhere; seriously threatened in Calif.
 2B.2 = Rare, threatened, or endangered in Calif., but more common elsewhere; fairly threatened in Calif.
 2B.3 = Rare, threatened, or endangered in Calif., but more common elsewhere; not very threatened in Calif.
 3 = Plants about which we need more information (Review List)
 3.1 = Plants about which we need more information (Review List); seriously threatened in California
 3.2 = Plants about which we need more information (Review List); fairly threatened in California
 3.3 = Plants about which we need more information (Review List); not very threatened in California
 4.2 = Plants of limited distribution (watch list); fairly threatened in California
 4.3 = Plants of limited distribution (watch list); not very threatened in California

3.2.1. Regional Plant Species of Special Concern

Prior to conducting a floristic-level botanical survey of the Biological Study Area in 2016, extensive pre-survey research was conducted in order to identify plants with sensitive regulatory status with a potential to occur within the survey area. This included a review of the *California Native Plant Society (CNPS) Electronic Inventory*, and a review of the *California Natural Diversity Database (CNDDDB)* for the Benmore Canyon U.S.G.S. 7½ minute topographic map as well as a CNDDDB database review of the nine surrounding quadrangles. The results of the floristic-level botanical survey are provided in **Appendix A**. No sensitive plant taxa were identified.

CNPS: A California Native Plant Society (CNPS) analysis was conducted for all plants with federal and state regulatory status, and all non-status plants on the CNPS Rare Plant Ranks 1B through 4. The query included all plants within this area of Lake County occurring within the plant communities identified on the project site. The inventory lists numerous species as potentially occurring at the site. These species were included in the list of potentially sensitive species specifically searched for during field surveys. These species are included in **Table 3**. It is important to note that this list includes species for which appropriate habitat is not present within the project site (including vernal pool and serpentine soil species). The CNPS database search does not allow fine-tuning for specific soil types and many specific habitats.

CNDDDB: The California Natural Diversity Database (CNDDDB) maps and information for the Benmore Canyon 7½' quadrangle were reviewed for this project. **Appendix B** presents a list of sensitive plant and wildlife species, including one sensitive habitat type, known to occur within this quadrangle, including all federal, state, and CNPS listed sensitive species. In addition to listing the species present within the quadrangle, the table provides a brief descriptor of the habitat requirements and blooming season, along with an assessment of whether the project area contains the necessary habitat requirements for each species. **Appendix C** lists the species within the nine quadrangles in the vicinity of this project.

3.2.2. Regional Wildlife of Special Concern

A total of 13 animal species are listed below. These consist of the species identified as present within the Benmore Canyon quadrangle by the CNDDDB, species listed in the USFWS Official Species List, and species potentially present due to suitable habitat:

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
- Steelhead (*Oncorhynchus mykiss irideus*)
- Delta smelt (*Hypomesus transpacificus*)
- Western pond turtle (*Emys marmorata*)
- Foothill yellow-legged frog (*Rana boylei*)
- California red-legged frog (*Rana draytonii*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Northern spotted owl (*Strix occidentalis caurina*)
- White-tailed kite (*Elanus leucurus*)
- Yellow warbler (*Dendroica petechia brewsteri*)
- Yellow-breasted chat (*Icteria virens*)
- North American river otter (*Lontra canadensis ssp. sonora*)
- Pallid bat (*Antrozous pallidus*)

Steelhead, Delta smelt, California red-legged frog, and northern spotted owl are all listed below based on standard protocol due to their presence in the region, although potential habitat is not present within the BSA and project impacts such as turbidity, noise, and vibrations from the project will not impact sensitive species outside of the BSA.

Steelhead is a mostly-anadromous species that requires streams contiguous with the ocean for spawning. North Fork Cache Creek flows to the Sacramento River, and steelhead no longer are found in this part of North Fork Cache Creek due to infrastructure 44 miles downstream at the Capay Diversion Dam that blocks fish passage. According to the Sacramento Watershed Program: “Barriers inhibit fall-run Chinook salmon, Pacific lamprey, and steelhead from migrating up Cache Creek. Anecdotal evidence suggests that in wet years, when flows in Yolo Bypass and Cache Creek are high, some salmon may reach the spawning gravels of lower Cache Creek from the Delta. However, in dry years no passable connection exists for salmon and steelhead between the Delta and mouth of Cache Creek.”

Delta smelt are limited to in and around the San Francisco Bay and the Sacramento Delta.

California red-legged frogs are typically pond frogs or frogs of slow moving streams with dense bank vegetation and three or more feet of depth. The frogs may be found outside of these habitats during wet weather but nearby ponded water is necessary for this species. Ideal red-legged frog habitat contains deep water (3 feet or more) adjacent to dense bank vegetation. A protocol Red-Legged Frog survey was conducted by Northwest Biosurvey in 2010 for the Spring Valley Lake Recovery project. The surveys were conducted on Wolf Creek just upstream of Spring Valley Lake. The results for red-legged frogs were negative and additional surveys were not recommended. Suitable habitat for this species does not occur in this area and noise and other impacts from this project will not affect red-legged frogs where they are present.

Northern spotted owls are usually found in dense, multi-layered old-growth conifer, redwood, and fir forests, although they may also be found in otherwise-suitable newer-growth forests in California. They are intolerant of high temperatures and inhabit cool, moist, well-shaded habitats. They nest in tree or snag cavities, or in broken tops of large trees. Mature multi-layered forests are required for breeding. Territories for this owl are very large.

Spotted owls occur in Lake County in suitable forest or woodland habitats. They would not occur in the dry, open oak woodlands within the BSA. The closest known occurrence of spotted owls are near Long Valley more than nine miles to the northwest. Impacts from the project related to noise or dust would not have an impact on this species where it does occur.

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

4.1. Natural Communities of Special Concern

There are no natural communities of special concern listed in the Benmore Canyon quadrangle.

4.2. Special Status Plant Species

No state or federal listed plant species, or other species with sensitive regulatory status in California, occur within the BSA.

4.3. Special Status Animal Species Occurrences

One animal species with federal status for which there is potential habitat within the PIA was surveyed for: Valley longhorn elderberry beetle. These beetles use blue elderberry shrubs as habitat. One shrub contained a single exit hole that did not have the characteristics of a VELB exit hole, and the project area is not within the known range of this species. A Biological Assessment (BA) for Valley elderberry longhorn beetle was therefore not requested by the reviewing agencies.

This NES will also be used by local regulatory agencies in the CEQA review process. For this reason, species with sensitive status in California are also analyzed here. Consequently, four species are included due to their California Species of Concern or California Fully Protected status and the presence of potential habitat within the BSA:

- Bald eagle (also California Endangered)
- Western pond turtle
- Foothill yellow-legged frog
- White-tailed kite
- Yellow warbler
- Yellow-breasted chat
- North American river otter
- Pallid bat

A table summarizing the permitted and restricted construction dates listed as mitigation for each species in the following accounts is provided in **Appendix D**. A chart showing restriction periods if mitigation is not implemented is provided in **Appendix E**.

Additionally, the U.S. Fish and Wildlife Service Species List for the Benmore Canyon 7½' quadrangle was reviewed. The USFWS states that the purpose of these lists is to *include all of the sensitive species that have been found in a certain area and ones that may be affected by projects in the area...* A list may include fishes hundreds of miles downstream from the project. A copy of the USFWS Official Species List of potential species within the quadrangle, and a tabular discussion of the individual species included in this Species List are attached as **Appendix G**.

4.3.1. Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

This species is a Federal Threatened Species. These beetles exclusively use elderberry shrubs as habitat and are largely confined to the central valley of California. Typical habitat occurs along riparian corridors. Larvae develop within the woody tissue of the shrub and emerge from bore holes as adults. This species is not listed in the CNDDDB for this quadrangle but is included here because of the presence of blue elderberry shrubs within the riparian woodland community. This beetle species has Federal Threatened Species status under the FESA.

A USFWS protocol survey for this species was conducted in May 2016. A total of four elderberry shrubs occur within the PIA; these were surveyed for exit holes and the number of stems exceeding 1" in diameter was inventoried on survey forms. The results of the survey were negative for presence of VELB or VELB exit holes and are discussed in the elderberry beetle survey report prepared for bridge replacement projects. The report is attached as **Appendix F**. The survey is summarized below.

4.3.1.1. SURVEY RESULTS

Northwest Biosurvey conducted a USFWS protocol survey for Valley elderberry longhorn beetle due to the presence of elderberry shrubs within the 250-foot radius biological study area. The species habitat consists of elderberry shrubs typically within a riparian setting.

Four elderberry shrubs occur within the BSA. Blue elderberry is limited to areas within red willow thicket along the east side of the bridge. Three of these shrubs will be removed as a result of construction of the bridge replacement.

Critical Habitat defined for this species by the FWS is limited to two locations in Sacramento County in the California Central Valley. Based on the FWS 5-year review of the listing completed in September of 2006, the historic range of the species has been expanded to include southern Shasta County to Fresno County and from the east side of the Coast Range (to an elevation of 500 feet) to the foothills of the Sierra Nevada in the Central Valley.

A July 14, 2016 Memorandum from District 1 of the Department of Transportation (**Attachment A of Appendix F**), Caltrans staff reports that: “*Caltrans Local Assistance received verbal confirmation in 2015 (from the U.S. Fish and Wildlife Service) that VELB was no longer considered to occur at elevations above 1,000 feet in Lake County.*” The Cache Creek Bridge is located at an elevation of 1,160 feet msl. Caltrans Local Assistance Staff states in the July 14, 2016 memo that they will consider other Lake County bridges on a case-by-case basis.

There are no known accounts of VELB in Lake County, which is well outside of the species’ known historic range and significantly higher in elevation (at 1,160 feet msl) than the locations of accounts on the eastern edge of the Coast Range (up to 500 feet msl). The one exit hole found in one of the shrubs does not have the characteristics of a VELB exit hole and may have been made by another unrelated species.

4.3.1.2. AVOIDANCE AND MINIMIZATION EFFORTS

Unless reviewing agencies determine that VELB are potentially present, no avoidance or minimization efforts are proposed for this species.

4.3.1.3. PROJECT IMPACTS

Unless reviewing agencies determine that VELB are potentially present, no impacts to this species are anticipated.

4.3.1.4. COMPENSATORY MITIGATION

Unless reviewing agencies determine that VELB are potentially present, no compensatory mitigation is proposed.

4.3.1.5. CUMULATIVE EFFECTS

It is the opinion of the authors of this NES that the project will have no effect on VELB; therefore, no cumulative impacts due to other current or future projects are possible.

4.3.2. Western pond turtle (*Emys marmorata*)

4.3.2.1. SURVEY RESULTS

This species is a California Species of Special Concern. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. They prefer slow or ponded water with sheltering vegetation but will range widely through less suitable habitat in search of these sites. Eggs are laid on land in sheltered nests. In Northern California, young overwinter in the nest and emerge the following spring. Food includes aquatic insects, crustaceans, fish, and riparian vegetation. When present, pond turtles are readily observed

basking along shorelines or on logs in shallow water. This part of North Fork Cache Creek provides potentially suitable habitat for this species throughout the year. This portion of the creek may be used as a movement corridor and may contain suitable nest sites. The CNDDB reports an occurrence of pond turtle northwest of the site on Wolf Creek. Northwest Biosurvey staff have observed the species in Spring Valley Lake on several occasions. It should be assumed present within the BSA.

4.3.2.2. AVOIDANCE AND MINIMIZATION EFFORTS

In order to avoid potential impacts to western pond turtles, work within the channel should occur only if avoidance and minimization efforts have been carried out as described below. Downed trees, stumps and other basking sites and refuges within these aquatic habitats should remain undisturbed.

Should any work occur within the banks or riparian habitat of the creek at times when the affected segment contains water, it should be immediately preceded by a site inspection of the channel by a qualified biologist with a valid CDFW collecting permit. Any turtles within the work area should be captured and transferred to another suitable portion of North Fork Cache Creek. The following measures should be taken in conjunction with the measures described above:

- The flowing portion of the stream shall be diverted through placement of temporary levees along the banks of the low flow channel to convey the water from the North Fork Cache Creek through the project site. The Resident Engineer shall check with Yolo County Flood Control to determine the volume of maximum construction season stream flows.
- The culverts shall be no less than two feet in diameter and inset into the channel to a depth of half their diameter in order to allow downstream passage of fish and herptiles. These structures shall be removed at the end of the project and prior to winter stream flows.
- The proposed diversion shall be reviewed and approved by a qualified biologist with a valid CDFW collecting permit prior to installation. That individual shall be present during its construction. During construction of this diversion, the qualified biologist shall inspect the diverted channel segment for sensitive herptiles and nests as described above and shall capture and release any herptiles or fish within the diversion area to a suitable segment of North Fork Cache Creek.
- Prior to construction outside of the period when water is present in the channel, the qualified biologist shall inspect adjacent banks within the proposed stream crossing (PIA) for turtle nests and flag any nests for installation of construction fencing around a 5-foot

radius. Any nests that cannot be avoided shall be moved and monitored by the qualified biologist. If nests are found a monitoring report containing photographs of the nest relocation effort and weekly inspections for a period of one (1) month shall be submitted to CDFW staff for review upon completion of the monitoring period.

- The Resident Engineer shall be responsible for assuring that the terms and conditions of the CDFW stream alteration agreement for this project are consistent with this mitigation measure.

4.3.2.3. PROJECT IMPACTS

If vegetation removal or other disturbance takes place within North Fork Cache Creek while it contains water and turtles are likely to be present, project activities have a potential to disrupt breeding and/or result in an incidental take of individuals of this species. Project activities occurring when there is water in the creek has the potential to impact young overwintering at nest sites if these are not located and either protected, or moved.

4.3.2.4. COMPENSATORY MITIGATION

None required.

4.3.2.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

4.3.3. Foothill yellow-legged frog (*Rana boylei*)

4.3.3.1. SURVEY RESULTS

This species is a California Species of Special Concern and is a candidate for state threatened status. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. These frogs are relatively common along the shaded banks of perennial headwater streams. They are heavily dependent on the presence of perennial water and are seldom far from pools where they can seek shelter from predation. The larvae require three to four months to mature, making most ephemeral streams unsuitable as breeding sites. These frogs tend to be distributed widely within watersheds containing suitable habitat. Perennial streams such as North Fork Cache Creek (particularly shaded backwater areas) provide excellent potential habitat for this species, and foothill yellow-legged frog is known to occur in nearby Wolf Creek where it was observed by Northwest Biosurvey staff during

surveys conducted in 2010 in nearby Wolf Creek. Foothill yellow-legged frog is a California Species of Special Concern. The species should be considered present within the BSA.

4.3.3.2. AVOIDANCE AND MINIMIZATION EFFORTS

In order to avoid potential impacts to foothill yellow-legged frogs, work within the channel should occur only if avoidance and minimization efforts have been carried out as described in Section 4.3.2.2 for western pond turtles. Work may begin sooner if inspection by a qualified biologist indicates that eggs or larvae of foothill yellow-legged frogs are not present.

In the event that work must occur within the active channel when the creek is flowing, all such work shall be performed in as few events as possible and all required materials and equipment shall be on-site prior to the event in order to avoid delays which would prolong the disturbance period. The period of disturbance shall be held to the minimal amount of time necessary to accomplish the required tasks. A qualified biologist with a valid California Department of Fish and Wildlife collecting permit shall be on-site during each day of the active channel disturbance event. Disturbance of the channel structure should be limited to the immediate construction site.

Any foothill yellow-legged adult or larval frogs within the work area shall be captured and transferred to an adjacent, unaffected stream segment. In the event that eggs of this species are found during these surveys, in-channel activities shall be delayed for one week (eggs usually hatch within 5 days) and the site reinspected to determine if eggs have hatched. If not, an additional delay will be required until the eggs have hatched.

In the event that work must occur within North Fork Cache Creek during periods of flow, the stream diversion measures described in Section 4.3.2.2 for western pond turtles shall be carried out in addition to those described above.

4.3.3.3. PROJECT IMPACTS

If vegetation removal or other disturbance takes place within North Fork Cache Creek while it contains water and compensatory mitigation is not implemented, project activities have a potential to disrupt breeding and/or result in an incidental take of individuals of this species.

4.3.3.4. COMPENSATORY MITIGATION

None required.

4.3.3.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

4.3.4. Bald Eagle (*Haliaeetus leucocephalus*)

4.3.4.1. SURVEY RESULTS

This species is a California Endangered Species and a California Fully Protected Species. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. These raptors require large bodies of water with abundant fish, and adjacent snags or perches. Nests are near water and consist of a stick platform on a large live tree, often the largest tree in a stand, usually with fairly open canopy.

The woodlands along the creek within the BSA provide ideal potential hunting habitat for this raptor, and it may nest in the rocky hills above the site. The species was not observed at the time of the site visits but has the potential to be present. The California Fully Protected status of these raptors pertains to nesting pairs with an emphasis on protecting nesting habitat. This species is also protected under the Migratory Bird Treaty Act.

4.3.4.2. AVOIDANCE AND MINIMIZATION EFFORTS

Work within a minimum of 250 feet of a nest should be avoided between February 15 and August 31 in order to avoid the potential for disrupting nesting and breeding, unless the work is preceded by the survey described below and the species is determined to not be present.

To the extent feasible, construction-related activities within the bridge crossing area, including vegetation removal, shall occur outside of the nesting season (February 15 through August 31). If construction during the nesting season cannot be avoided, any required vegetation removal should be the minimal amount necessary for construction and should be completed prior to the nesting season. In the event that vegetation removal is necessary during the nesting season, the work shall be preceded by a pre-construction nest survey conducted by a qualified biologist within two weeks of disturbance. If an active nest of a sensitive bird species is found, a construction buffer shall be established around it in consultation with CDFW staff and shall remain in place until fledging is completed or until it is determined that the nesting effort has failed as determined by the qualified biologist.

4.3.4.3. PROJECT IMPACTS

If construction activities occur within a minimum of 250 feet of a nest during the breeding season (February 15 and August 31) and compensatory mitigation is not implemented, project activities have a potential to cause nest abandonment and disrupt breeding.

4.3.4.4. COMPENSATORY MITIGATION

None required.

4.3.4.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

4.3.5. White-tailed kite (*Elanus leucurus*)

4.3.5.1. SURVEY RESULTS

This species is a California Fully Protected Species. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. These raptors are usually found near agricultural areas. The kite prefers open areas near woodlands and water. They hunt over open country and feed mostly on small diurnal mammals, but will sometimes eat birds, insects, amphibians and reptiles. They prefer large, deciduous trees surrounded by open land such as grassland, meadows, farmland, and wetlands for nesting and roosting sites, and dense woodlands for cover.

The oak woodlands adjacent to open grassland within the BSA provide ideal potential nesting and hunting habitat for this raptor. The species was not observed at the time of the site visits but has the potential to be present. The California Fully Protected status of these raptors pertains to nesting pairs with an emphasis on protecting nesting habitat. This species is also protected under the Migratory Bird Treaty Act.

4.3.5.2. AVOIDANCE AND MINIMIZATION EFFORTS

Work within a minimum of 250 feet of a nest should be avoided between February 15 and August 31 in order to avoid the potential for disrupting nesting and breeding, unless the work is preceded by the survey described below and the species is determined to not be present.

To the extent feasible, construction-related activities within the bridge crossing area, including vegetation removal, shall occur outside of the nesting season (February 15 through August 31). If construction during the nesting season cannot be avoided, any required vegetation removal should be the minimal amount necessary for construction and should be completed prior to the

nesting season. In the event that vegetation removal is necessary during the nesting season, the work shall be preceded by a pre-construction nest survey conducted by a qualified biologist within two weeks of disturbance. If an active nest of a sensitive bird species is found, a construction buffer shall be established around it in consultation with CDFW staff and shall remain in place until fledging is completed or until it is determined that the nesting effort has failed as determined by the qualified biologist.

4.3.5.3. PROJECT IMPACTS

If construction activities occur within a minimum of 250 feet of a nest during the breeding season (February 15 and August 31) and compensatory mitigation is not implemented, project activities have a potential to cause nest abandonment and disrupt breeding.

4.3.5.4. COMPENSATORY MITIGATION

None required.

4.3.5.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

4.3.6. Yellow warbler (*Dendroica petechia brewsteri*); Yellow-breasted chat (*Icteria virens*)

4.3.6.1. SURVEY RESULTS

These birds are California Species of Special Concern while nesting. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. These two species are discussed together because their habitat requirements are nearly identical. Both warblers and chats require riparian woodland with a dense shrubby understory or dense willow thickets near water for nesting and cover. They arrive in these areas in April and are typically gone by late September or October. The nesting season typically ranges from May to August; fledging is usually completed by August. Nests are constructed in shrubs and small trees in the lower canopy of the woodland. They forage for insects in the upper canopy. The red willow and narrow-leaved thicket communities along the north portion of the PIA provide excellent potential nesting habitat for these species.

4.3.6.2. AVOIDANCE AND MINIMIZATION EFFORTS

Work within 250 feet of the willow thicket habitats along North Fork Cache Creek should be avoided from February 15 through August 31 in order to avoid the potential for disrupting

nesting and breeding for these species, unless the work is preceded by the survey described below.

Any work requiring construction or vegetation clearing within 250 feet of the red and narrow-leaved willow thicket communities between February 15 and August 31 of any year should be preceded by pre-construction surveys pursuant to CDFW policy. In the event that this species is determined to be nesting within 250 feet of the proposed construction activities, construction should be delayed within 250 feet of the nest until after August 31, or until fledging is completed as determined by a qualified biologist. The construction buffer may be reduced depending on presence of screening vegetation or topography based on the recommendation of a qualified biologist.

4.3.6.3. PROJECT IMPACTS

If construction activities occur within 250 feet of the willow thicket communities during the breeding season (February 15 through August 31) and compensatory mitigation is not implemented, project activities have a potential to cause nest abandonment and disrupt breeding.

4.3.6.4. COMPENSATORY MITIGATION

None required.

4.3.6.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

4.3.7. North American river otter (*Lontra canadensis ssp. sonora*)

4.3.7.1. SURVEY RESULTS

This species is a California Species of Special Concern. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. The otters inhabit a burrow close to the water's edge in freshwater and coastal habitats: they are found in river, lake, swamp, coastal shoreline, tidal flat, or estuary ecosystems. Their diet is mostly fish but includes crayfish, amphibians, aquatic insects, and occasionally small mammals. Their dens are constructed in the burrows of other animals, or in natural hollows, such as hollow trees or logs. River otters typically breed from December to April. In northern California, they are common in the north coast, Klamath, and Cascade drainages. River otters

are threatened mainly by human-caused water pollution and habitat destruction. The creek provides ideal habitat for this species.

4.3.7.2. AVOIDANCE AND MINIMIZATION EFFORTS

Disturbance in and adjacent to the creek should be avoided between December 1 and April 30 to avoid the potential for disrupting nesting and breeding, unless surveys and mitigation described below are implemented.

Work within 100 feet of the bridge crossing area should be avoided between December 1 and April 30 to avoid the potential for disrupting nesting and breeding, unless the work is preceded by the survey. If work requiring construction or vegetation clearing at the bridge site between these dates is performed, it should be preceded by pre-construction surveys by a qualified biologist for active otter den sites within the proposed active disturbance area. In the event that an active den site is present within the area of active disturbance, construction should be delayed within 50 feet of the nest until young are independent as determined by a qualified biologist.

4.3.7.3. PROJECT IMPACTS

In the absence of surveys and mitigation described below, disturbance within and adjacent to the creek between December 1 and April 30 has a potential to disrupt the breeding season for otters.

4.3.7.4. COMPENSATORY MITIGATION

None required.

4.3.7.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

4.3.8. Pallid bat (*Antrozous pallidus*)

4.3.8.1. SURVEY RESULTS

This species is a California Species of Special Concern. Surveys for this species were not requested by the lead agency and were not conducted as part of this assessment. Optimal habitat for these bats consists of open, dry habitats with rocky areas, but they may be found in open forest and woodlands with access to open habitats for feeding. These bats prefer the cool summer temperatures of caves, crevices, and mines as roosting sites but may also use

bridges, buildings, and hollow trees. Foraging occurs over open country. Maternity colonies tend to be in the more protected, isolated locations and may consist of more than 100 individuals. These bats have a home range of 1 to 3 miles and are known to roost with other bat species. This species is extremely sensitive to human disturbance of roosting sites. The underside of the existing bridge may contain spaces used by roosting bats.

4.3.8.2. AVOIDANCE AND MINIMIZATION EFFORTS

Removal of the bridge or any trees containing hollows or peeling bark within the BSA should be completed between September 15 and October 15, or between February 15 and April 1, in order to avoid disrupting the breeding season or disturbance of hibernating bats unless the surveys and mitigation described below are implemented.

If work is proposed within woodland habitat (outside of the dates listed above), all trees within of the proposed work that are suitable for use by bats shall be surveyed for signs of bats no earlier than fourteen days prior to tree removal or other habitat disturbance. Suitable trees include those with hollows and/or shedding bark. If pallid bats, or other bats with sensitive regulatory status, are discovered during the surveys, a buffer of 50 feet should be established depending on recommendations of the surveying biologist. Removal of these roost trees shall be restricted to between September 15 and October 15, when young of the year are capable of flying, or between February 15 and April 1 to avoid hibernating bats and prior to formation of maternity sites.

4.3.8.3. PROJECT IMPACTS

In the absence of surveys and mitigation described below, removal of trees suitable for roosting or breeding conducted between April 2 and September 14 has a potential to disrupt the breeding season and/or result in an incidental take of young-of-the-year bats. Removal between October 16 and February 14 has a potential to disrupt hibernation and may result in incidental take of this species.

4.3.8.4. COMPENSATORY MITIGATION

None required.

4.3.8.5. CUMULATIVE EFFECTS

No reasonably foreseeable future projects within the current proposed project's BSA are known at this time. The bridge replacement project will not result in a change of road use along Chalk Mtn. Road, and cumulative effects are not anticipated.

Chapter 5. Results: Permits and Technical Studies for Special Laws or Conditions

5.1. Federal Endangered Species Act Consultation Summary

Based on this natural environmental study, there are no species with federal threatened or endangered status within the project area:

- Blue elderberry shrubs are present; however, no VELB exit holes are present and the project is well outside the known range of this species.
- The warm stream habitat of this section of North Fork Cache Creek does not provide suitable habitat for California red-legged frog, and the species has not been found by the authors during previous surveys in the vicinity.
- Access to the ocean and cool temperatures or deep pools required by steelhead are not present on this portion of North Fork Cache Creek and barriers downstream prohibit their passage to the project area.
- Delta smelt are found in and around the San Francisco Bay and Sacramento Delta and have not been found in Cache Creek. Turbidity from project construction will not reach Delta Smelt where they occur in the bay and delta.
- The cool and shaded conifer forest habitat required by northern spotted owls does not occur in the project area.

The proposed project therefore will have no effect on any federally listed or proposed species.

5.2. Federal Fisheries and Essential Fish Habitat Consultation Summary

There are currently no fish species present within the Clear Lake Basin with federal threatened or endangered status or that are part of a federally managed fishery.

5.3. California Endangered Species Act Consultation Summary

There are no California endangered species within the BSA. However, as discussed in Section 4.3, there are several wildlife species with sensitive status in California potentially present that require CEQA review and mitigation under Section 15380(d) of the CEQA Guidelines: western pond turtle, foothill yellow-legged frog, white-tailed kite, yellow warbler, yellow-breasted chat, North American river otter, and pallid bat. This NES will serve as the principal biological resource assessment for local and state agency CEQA review. The NES will therefore undergo review and comment from the CDFW through that process.

5.4. Wetlands and Other Waters Coordination Summary

Other waters of the U.S. are present within the biological study area as a stream. This NES report contains a protocol delineation of other waters of the U.S. pursuant to the 1987 delineation manual and 2008 Arid West Guidelines. The delineation will be submitted to the Corps of Engineers for a Jurisdictional Determination and Nationwide Permit by the Lake County Department of Public Works. Wetlands do not occur within the BSA.

5.5. Invasive Species

Himalayan blackberry occurs throughout the upper stream terraces of the BSA along the channel. Mulch and other materials brought to the construction site that are free of non-native plant material and seeds will reduce the impact of additional invasive species.

5.6. Water Quality

See Water Quality Technical Memorandum in Appendix H.

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Appendix A Plant Taxa within the Biological Study Area

| Habit | Species | Common Name | Family | Origin |
|-------|---|---------------------------------------|-----------------|--------|
| forb | <i>Anthriscus caucalis</i> | bur chervil | Apiaceae | A |
| forb | <i>Lomatium dasycarpum</i> ssp. <i>dasycarpum</i> | woolly-fruited lomatium | Apiaceae | N |
| forb | <i>Achillea millefolium</i> | common yarrow | Asteraceae | N |
| forb | <i>Achyrachaena mollis</i> | blow wives | Asteraceae | N |
| forb | <i>Artemesia douglasiana</i> | mugwort | Asteraceae | N |
| forb | <i>Centaurea solstitialis</i> | yellow star thistle | Asteraceae | A |
| forb | <i>Chamomilla suaveolens</i> | pineapple weed | Asteraceae | A |
| forb | <i>Cirsium vulgare</i> | bull thistle | Asteraceae | A |
| forb | <i>Hypochaeris glabra</i> | smooth cat's ear | Asteraceae | A |
| forb | <i>Micropus californicus</i> var. <i>californicus</i> | cottontop, slender cottonweed | Asteraceae | N |
| forb | <i>Psilocarpus tenellus</i> | slender woolly marbles | Asteraceae | N |
| forb | <i>Sonchus oleraceus</i> | common sow thistle | Asteraceae | A |
| forb | <i>Amsinckia menziesii</i> var. <i>intermedia</i> | rancher's fireweed, common fiddleneck | Boraginaceae | N |
| forb | <i>Brassica nigra</i> | black mustard | Brassicaceae | A |
| forb | <i>Cerastium glomeratum</i> | mouse-ear chickweed, sticky mouse-ear | Caryophyllaceae | A |
| forb | <i>Petrorhagia prolifera</i> | wilding pink, wild carnation | Caryophyllaceae | A |
| forb | <i>Convolvulus arvensis</i> | orchard morning-glory | Convolvulaceae | A |
| forb | <i>Dudleya cymosa</i> ssp. <i>cymosa</i> | canyon live-forever | Crassulaceae | N |
| forb | <i>Dipsacus fullonum</i> | fuller's teasel | Dipsacaceae | A |
| forb | <i>Equisetum hyemale</i> ssp. <i>affine</i> | common scouring rush | Equisetaceae | N |
| forb | <i>Croton setigerus</i> | turkey mullein | Euphorbiaceae | N |
| forb | <i>Lupinus bicolor</i> | miniature lupine | Fabaceae | N |
| forb | <i>Melilotus indica</i> | sour clover | Fabaceae | A |

| Habit | Species | Common Name | Family | Origin |
|-------|---|---------------------------------------|------------------|--------|
| forb | <i>Trifolium hirtum</i> | rose clover | Fabaceae | A |
| forb | <i>Erodium cicutarium</i> | red-stem storksbill | Geraniaceae | A |
| forb | <i>Juncus effusus</i> var. <i>pacificus</i> | Pacific bog rush | Juncaceae | N |
| forb | <i>Mentha spicata</i> var. <i>spicata</i> | spearmint | Lamiaceae | A |
| forb | <i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i> | winecup clarkia, four-spot | Onagraceae | N |
| forb | <i>Eschscholzia californica</i> | California poppy | Papaveraceae | N |
| forb | <i>Eriogonum covilleianum</i> | Coville's buckwheat | Polygonaceae | N |
| forb | <i>Eriogonum nudum</i> var. <i>nudum</i> | naked-stemmed eriogonum | Polygonaceae | N |
| forb | <i>Rumex crispus</i> | curly dock | Polygonaceae | A |
| forb | <i>Frangula californica</i> ssp. <i>californica</i> | California coffeeberry | Rhamnaceae | N |
| forb | <i>Galium aparine</i> | goose grass, common bedstraw | Rubiaceae | N |
| forb | <i>Scrophularia californica</i> ssp. <i>californica</i> | California bee plant | Scrophulariaceae | N |
| forb | <i>Verbascum blattaria</i> | moth mullein | Scrophulariaceae | N |
| forb | <i>Typha angustifolia</i> | narrow-leaf cattail | Typhaceae | N |
| grass | <i>Aira caryophylla</i> | silver European hairgrass | Poaceae | A |
| grass | <i>Avena barbata</i> | slender wild oat | Poaceae | A |
| grass | <i>Bromus hordeaceus</i> | soft chess | Poaceae | A |
| grass | <i>Bromus madritensis</i> ssp. <i>rubens</i> | red brome | Poaceae | A |
| grass | <i>Festuca</i> (former: <i>Vulpia</i>) <i>microstachys</i> | desert fescue | Poaceae | N |
| grass | <i>Festuca californica</i> | California fescue | Poaceae | N |
| grass | <i>Festuca perennis</i> (former: <i>Lolium perenne</i>) | Italian rye grass, perennial ryegrass | Poaceae | A |
| grass | <i>Festuca rubra</i> | red fescue | Poaceae | N |
| grass | <i>Gastridium phleoides</i> (former: <i>ventricosum</i>) | nitgrass | Poaceae | A |
| grass | <i>Hordeum marinum</i> ssp. <i>gussoneanum</i> | Mediterranean barley | Poaceae | A |
| grass | <i>Poa bulbosa</i> | bulbous bluegrass | Poaceae | A |
| grass | <i>Polypogon monspeliensis</i> | rabbits-foot grass, annual beardgrass | Poaceae | A |

| Habit | Species | Common Name | Family | Origin |
|-------|--|--------------------------------------|-----------------|--------|
| shrub | <i>Toxicodendron diversilobum</i> | poison oak | Anacardiaceae | N |
| shrub | <i>Baccharis salicifolia</i> | mulefat | Asteraceae | A |
| shrub | <i>Sambucus nigra ssp. caerulea</i> | blue elderberry | Caprifoliaceae | N |
| shrub | <i>Arctostaphylos manzanita ssp. manzanita</i> | common manzanita | Ericaceae | N |
| shrub | <i>Melilotus alba</i> | white sweet clover | Fabaceae | A |
| shrub | <i>Eriodictyon californicum</i> | California yerba santa | Hydrophyllaceae | N |
| shrub | <i>Rubus armeniacus (former: discolor)</i> | Himalayan blackberry | Rosaceae | A |
| tree | <i>Alnus rhombifolia</i> | white alder | Betulaceae | N |
| tree | <i>Cercis occidentalis</i> | western redbud | Fabaceae | N |
| tree | <i>Quercus lobata</i> | California valley oak | Fagaceae | N |
| tree | <i>Quercus wislizeni var. wislizeni</i> | interior live oak | Fagaceae | N |
| tree | <i>Pinus sabiniana</i> | ghost pine, foothill pine | Pinaceae | N |
| tree | <i>Salix exigua var. hindsiana</i> | narrow-leaved willow, sandbar willow | Salicaceae | N |
| tree | <i>Salix laevigata</i> | red willow | Salicaceae | N |
| vine | <i>Calystegia occidentalis ssp. occidentalis</i> | western morning-glory | Convolvulaceae | N |

Origin: N=Native, A=Alien

Appendix B CNDDDB Database Review: Benmore Canyon Quadrangle

| Plant Species | Common Name | Habitat Requirements, Fed/State/CNPS* Status | Blooming Season | Habitat Present |
|-------------------------------------|------------------------|--|-----------------------------------|--------------------|
| <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | Chaparral, cismontane woodland, riparian forest/serpentine seeps; --/--/4.3 | June-Sept. per. herb | no |
| <i>Clarkia gracilis ssp. tracyi</i> | Tracy's clarkia | Chaparral (openings, usually serpentine); --/--/4.2 | April-June ann. herb | no |
| <i>Collomia diversifolia</i> | serpentine collomia | Chaparral, cismontane woodland/serpentine, rocky or gravelly; --/--/4.3 | May-June ann. herb | no |
| <i>Eriogonum tripodum</i> | tripod buckwheat | Serpentine chaparral; --/--/4.2 | May-July decid. shrub | no |
| <i>Fritillaria purdyi</i> | Purdy's fritillary | Chaparral, cismontane woodland, lower montane coniferous forest; usually serpentine; --/--/4.3 | March-June bulb. herb | no |
| <i>Horkelia bolanderi</i> | Bolander's horkelia | Chaparral, lower montane conif. forest, meadows & seeps, valley & foothill grassland/edges; --/--/1B.2 | June-Aug. per. herb | yes |
| <i>Layia septentrionalis</i> | Colusa layia | Chaparral, cismontane woodland, valley & foothill grassland/sandy, serpent.; --/--/1B.2 | April-May ann. herb | no |
| <i>Malacothamnus helleri</i> | Heller's bush-mallow | Chaparral (sandstone), riparian woodland (gravel); --/--/3.3 | May-July decid. shrub | no |
| <i>Potamogeton zosteriformis</i> | eel-grass pondweed | Marshes & swamps, wetlands; --/--/2B.2 | June-July ann. herb aquatic | no |

| Wildlife Species | Common Name | Habitat Requirements/Status | Season Present | Habitat Present |
|---------------------------------|-----------------------------|--|---------------------|-----------------|
| <i>Rana boylei</i> | foothill yellow-legged frog | Riparian/aquatic: partly-shaded, shallow streams & riffles with a rocky substrate in variety of habitats; SSC/SCTG3/S3 | year-round | yes |
| <i>Emys marmorata</i> | western pond turtle | Aquatic turtle found in ponds, lakes, rivers, creeks, marshes & irrigation ditches with abundant vegetation and rocky or muddy bottoms; In woodland, forest, & grasslands; SSC/G3G4/S3 | year-round | yes |
| <i>Haliaeetus leucocephalus</i> | bald eagle | Large bodies of water with adjacent snags; FD/SE/SFP/G5/S2 | nesting & wintering | no |

*See CNPS Table for key

Key:

SE/ST/SD=State Endangered/Threatened/Delisted
 SC/SCD=State Candidate for Listing/Delisting
 SSC=CDFW Species of Special Concern
 SFP=CDFW Fully Protected
 WL=CDFW Watch List
 FE/FT/FD=Federal Endangered/Threatened/Delisted
 SCT=State Candidate for Threatened

NatureServe Conservation Status:

G1/S1 = Global/State Critically Imperiled
 G2/S2 = Global/State Imperiled
 G3/S3 = Global/State Vulnerable
 G4/S4 = Global/State Apparently Secure
 G5/S5 = Global/State Secure
 SNR = Not yet assessed

Appendix C CNDDDB 9-Quad Species List

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|---------------------|--|--------------------------------|-----------|-----------|---------|------|
| Bartlett Springs | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Bartlett Springs | <i>Accipiter gentilis</i> | northern goshawk | None | None | SSC | - |
| Bartlett Springs | <i>Aquila chrysaetos</i> | golden eagle | None | None | FP ; WL | - |
| Bartlett Springs | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Bartlett Springs | <i>Falco peregrinus anatum</i> | American peregrine falcon | Delisted | Delisted | FP | - |
| Bartlett Springs | <i>Strix occidentalis caurina</i> | northern spotted owl | Thrt | Cand Thrt | SSC | - |
| Bartlett Springs | <i>Bombus caliginosus</i> | obscure bumble bee | None | None | - | - |
| Bartlett Springs | <i>Pekania pennanti</i> | fisher - West Coast DPS | Prop Thrt | Cand Thrt | SSC | - |
| Bartlett Springs | <i>Lasionycteris noctivagans</i> | silver-haired bat | None | None | - | - |
| Bartlett Springs | <i>Balsamorhiza macrolepis</i> | big-scale balsamroot | None | None | - | 1B.2 |
| Bartlett Springs | <i>Calycadenia micrantha</i> | small-flowered calycadenia | None | None | - | 1B.2 |
| Bartlett Springs | <i>Erigeron greenei</i> | Greene's narrow-leaved daisy | None | None | - | 1B.2 |
| Bartlett Springs | <i>Calystegia collina ssp. oxyphylla</i> | Mt. Saint Helena morning-glory | None | None | - | 4.2 |
| Bartlett Springs | <i>Carex hystericina</i> | porcupine sedge | None | None | - | 2B.1 |
| Bartlett Springs | <i>Arctostaphylos manzanita ssp. elegans</i> | Konocti manzanita | None | None | - | 1B.3 |
| Bartlett Springs | <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | None | None | - | 4.3 |
| Bartlett Springs | <i>Eriastrum tracyi</i> | Tracy's eriastrum | None | Rare | - | 3.2 |
| Bartlett Springs | <i>Eriogonum tripodum</i> | tripod buckwheat | None | None | - | 4.2 |
| Benmore Canyon | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Benmore Canyon | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Benmore Canyon | <i>Emys marmorata</i> | western pond turtle | None | None | SSC | - |
| Benmore Canyon | <i>Layia septentrionalis</i> | Colusa layia | None | None | - | 1B.2 |
| Benmore Canyon | <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | None | None | - | 4.3 |
| Benmore Canyon | <i>Fritillaria purdyi</i> | Purdy's fritillary | None | None | - | 4.3 |
| Benmore Canyon | <i>Malacothamnus helleri</i> | Heller's bush-mallow | None | None | - | 3.3 |
| Benmore Canyon | <i>Clarkia gracilis ssp. tracyi</i> | Tracy's clarkia | None | None | - | 4.2 |
| Benmore Canyon | <i>Collomia diversifolia</i> | serpentine collomia | None | None | - | 4.3 |
| Benmore Canyon | <i>Eriogonum tripodum</i> | tripod buckwheat | None | None | - | 4.2 |
| Benmore Canyon | <i>Potamogeton zosteriformis</i> | eel-grass pondweed | None | None | - | 2B.2 |
| Benmore Canyon | <i>Horkelia bolanderi</i> | Bolander's horkelia | None | None | - | 1B.2 |
| Clearlake Highlands | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Clearlake Highlands | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Clearlake Highlands | <i>Ardea alba</i> | great egret | None | None | - | - |

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|---------------------|--|---|------|-----------|------|------|
| Clearlake Highlands | <i>Ardea herodias</i> | great blue heron | None | None | - | - |
| Clearlake Highlands | <i>Coccyzus americanus occidentalis</i> | western yellow-billed cuckoo | Thrt | End | - | - |
| Clearlake Highlands | <i>Archoplites interruptus</i> | Sacramento perch | None | None | SSC | - |
| Clearlake Highlands | <i>Lavinia exilicauda chi</i> | Clear Lake hitch | None | Thrt | - | - |
| Clearlake Highlands | <i>Hedychridium milleri</i> | Borax Lake cuckoo wasp | None | None | - | - |
| Clearlake Highlands | <i>Dubiraphia brunnescens</i> | brownish dubiraphian riffle beetle | None | None | - | - |
| Clearlake Highlands | <i>Antrozous pallidus</i> | pallid bat | None | None | SSC | - |
| Clearlake Highlands | <i>Corynorhinus townsendii</i> | Townsend's big-eared bat | None | Cand Thrt | SSC | - |
| Clearlake Highlands | <i>Myotis lucifugus</i> | little brown bat | None | None | - | - |
| Clearlake Highlands | <i>Myotis yumanensis</i> | Yuma myotis | None | None | - | - |
| Clearlake Highlands | <i>Pyrulopsis ventricosa</i> | Clear Lake pyrg | None | None | - | - |
| Clearlake Highlands | <i>Emys marmorata</i> | western pond turtle | None | None | SSC | - |
| Clearlake Highlands | <i>Clear Lake Drainage Resident Trout Stream</i> | Clear Lake Drainage Resident Trout Strm | None | None | - | - |
| Clearlake Highlands | <i>Coastal and Valley Freshwater Marsh</i> | Coastal and Valley Freshwater Marsh | None | None | - | - |
| Clearlake Highlands | <i>Northern Basalt Flow Vernal Pool</i> | Northern Basalt Flow Vernal Pool | None | None | - | - |
| Clearlake Highlands | <i>Northern Volcanic Ash Vernal Pool</i> | Northern Volcanic Ash Vernal Pool | None | None | - | - |
| Clearlake Highlands | <i>Eryngium constancei</i> | Loch Lomond button-celery | End | End | - | 1B.1 |
| Clearlake Highlands | <i>Harmonia hallii</i> | Hall's harmonia | None | None | - | 1B.2 |
| Clearlake Highlands | <i>Hemizonia congesta ssp. calyculata</i> | Mendocino tarplant | None | None | - | 4.3 |
| Clearlake Highlands | <i>Lasthenia burkei</i> | Burke's goldfields | End | End | - | 1B.1 |
| Clearlake Highlands | <i>Viburnum ellipticum</i> | oval-leaved viburnum | None | None | - | 2B.3 |
| Clearlake Highlands | <i>Sedella leiocarpa</i> | Lake County stonecrop | End | End | - | 1B.1 |
| Clearlake Highlands | <i>Arctostaphylos manzanita ssp. elegans</i> | Konocti manzanita | None | None | - | 1B.3 |
| Clearlake Highlands | <i>Arctostaphylos stanfordiana ssp. raichei</i> | Raiche's manzanita | None | None | - | 1B.1 |
| Clearlake Highlands | <i>Calochortus uniflorus</i> | pink star-tulip | None | None | - | 4.2 |
| Clearlake Highlands | <i>Limnanthes floccosa ssp. floccosa</i> | woolly meadowfoam | None | None | - | 4.2 |
| Clearlake Highlands | <i>Hesperolinon bicarpellatum</i> | two-carpellate western flax | None | None | - | 1B.2 |
| Clearlake Highlands | <i>Toxicoscordion fontanum</i> | marsh zigadenus | None | None | - | 4.2 |
| Clearlake Highlands | <i>Calyptridium quadripetalum</i> | four-petaled pussypaws | None | None | - | 4.3 |
| Clearlake Highlands | <i>Piperia michaelii</i> | Michael's rein orchid | None | None | - | 4.2 |
| Clearlake Highlands | <i>Cordylanthus tenuis ssp. brunneus</i> | serpentine bird's-beak | None | None | - | 4.3 |
| Clearlake Highlands | <i>Antirrhinum virga</i> | twig-like snapdragon | None | None | - | 4.3 |
| Clearlake Highlands | <i>Gratiola heterosepala</i> | Boggs Lake hedge-hyssop | None | End | - | 1B.2 |
| Clearlake Highlands | <i>Imperata brevifolia</i> | California satintail | None | None | - | 2B.1 |
| Clearlake Highlands | <i>Eriastrum brandegeae</i> | Brandegee's eriastrum | None | None | - | 1B.1 |
| Clearlake Highlands | <i>Leptosiphon acicularis</i> | bristly leptosiphon | None | None | - | 4.2 |

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|---------------------|--|------------------------------------|----------|-----------|------|------|
| Clearlake Highlands | <i>Navarretia leucocephala ssp. bakeri</i> | Baker's navarretia | None | None | - | 1B.1 |
| Clearlake Highlands | <i>Navarretia leucocephala ssp. pauciflora</i> | few-flowered navarretia | End | Thrt | - | 1B.1 |
| Clearlake Highlands | <i>Navarretia leucocephala ssp. plieantha</i> | many-flowered navarretia | End | End | - | 1B.2 |
| Clearlake Highlands | <i>Potamogeton zosteriformis</i> | eel-grass pondweed | None | None | - | 2B.2 |
| Clearlake Highlands | <i>Myosurus minimus ssp. apus</i> | little mousetail | None | None | - | 3.1 |
| Clearlake Highlands | <i>Horkelia bolanderi</i> | Bolander's horkelia | None | None | - | 1B.2 |
| Clearlake Oaks | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Clearlake Oaks | <i>Pandion haliaetus</i> | osprey | None | None | WL | - |
| Clearlake Oaks | <i>Strix occidentalis caurina</i> | northern spotted owl | Thrt | Cand Thrt | SSC | - |
| Clearlake Oaks | <i>Archoplites interruptus</i> | Sacramento perch | None | None | SSC | - |
| Clearlake Oaks | <i>Lavinia exilicauda chi</i> | Clear Lake hitch | None | Thrt | - | - |
| Clearlake Oaks | <i>Dubiraphia brunnescens</i> | brownish dubiraphian riffle beetle | None | None | - | - |
| Clearlake Oaks | <i>Antrozous pallidus</i> | pallid bat | None | None | SSC | - |
| Clearlake Oaks | <i>Corynorhinus townsendii</i> | Townsend's big-eared bat | None | Cand Thrt | SSC | - |
| Clearlake Oaks | <i>Myotis yumanensis</i> | Yuma myotis | None | None | - | - |
| Clearlake Oaks | <i>Gonidea angulata</i> | western ridged mussel | None | None | - | - |
| Clearlake Oaks | <i>Great Valley Mixed Riparian Forest</i> | Great Valley Mixed Riparian Forest | None | None | - | - |
| Clearlake Oaks | <i>Hemizonia congesta ssp. calyculata</i> | Mendocino tarplant | None | None | - | 4.3 |
| Clearlake Oaks | <i>Layia septentrionalis</i> | Colusa layia | None | None | - | 1B.2 |
| Clearlake Oaks | <i>Arctostaphylos manzanita ssp. elegans</i> | Konocti manzanita | None | None | - | 1B.3 |
| Clearlake Oaks | <i>Erythronium helenae</i> | St. Helena fawn lily | None | None | - | 4.2 |
| Clearlake Oaks | <i>Calyptridium quadripetalum</i> | four-petaled pussypaws | None | None | - | 4.3 |
| Clearlake Oaks | <i>Potamogeton zosteriformis</i> | eel-grass pondweed | None | None | - | 2B.2 |
| Hough Springs | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Hough Springs | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Hough Springs | <i>Falco peregrinus anatum</i> | American peregrine falcon | Delisted | Delisted | FP | - |
| Hough Springs | <i>Phalacrocorax auritus</i> | double-crested cormorant | None | None | WL | - |
| Hough Springs | <i>Perognathus inornatus</i> | San Joaquin Pocket Mouse | None | None | - | - |
| Hough Springs | <i>Asclepias solanoana</i> | serpentine milkweed | None | None | - | 4.2 |
| Hough Springs | <i>Balsamorhiza macrolepis</i> | big-scale balsamroot | None | None | - | 1B.2 |
| Hough Springs | <i>Harmonia hallii</i> | Hall's harmonia | None | None | - | 1B.2 |
| Hough Springs | <i>Amsinckia lunaris</i> | bent-flowered fiddleneck | None | None | - | 1B.2 |
| Hough Springs | <i>Streptanthus barbiger</i> | bearded jewelflower | None | None | - | 4.2 |
| Hough Springs | <i>Calystegia collina ssp. oxyphylla</i> | Mt. Saint Helena morning-glory | None | None | - | 4.2 |
| Hough Springs | <i>Carex klamathensis</i> | Klamath sedge | None | None | - | 1B.2 |
| Hough Springs | <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | None | None | - | 4.3 |

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|---------------|---|---------------------------------------|------|-----------|------|------|
| Hough Springs | <i>Astragalus rattanii</i> var. <i>jepsonianus</i> | Jepson's milk-vetch | None | None | - | 1B.2 |
| Hough Springs | <i>Fritillaria purdyi</i> | Purdy's fritillary | None | None | - | 4.3 |
| Hough Springs | <i>Hesperolinon drymarioides</i> | drymaria-like western flax | None | None | - | 1B.2 |
| Hough Springs | <i>Calyptridium quadripetalum</i> | four-petaled pussypaws | None | None | - | 4.3 |
| Hough Springs | <i>Clarkia gracilis</i> ssp. <i>tracyi</i> | Tracy's clarkia | None | None | - | 4.2 |
| Hough Springs | <i>Castilleja rubicundula</i> var. <i>rubicundula</i> | pink creamsacs | None | None | - | 1B.2 |
| Hough Springs | <i>Collomia diversifolia</i> | serpentine collomia | None | None | - | 4.3 |
| Hough Springs | <i>Eriogonum nervulosum</i> | Snow Mountain buckwheat | None | None | - | 1B.2 |
| Hough Springs | <i>Eriogonum tripodum</i> | tripod buckwheat | None | None | - | 4.2 |
| Hough Springs | <i>Delphinium uliginosum</i> | swamp larkspur | None | None | - | 4.2 |
| Hough Springs | <i>Horkelia bolanderi</i> | Bolander's horkelia | None | None | - | 1B.2 |
| Hough Springs | <i>Brodiaea rosea</i> | Indian Valley brodiaea | None | End | - | 1B.1 |
| Leesville | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Leesville | <i>Falco mexicanus</i> | prairie falcon | None | None | WL | - |
| Leesville | <i>Trachykele hartmani</i> | serpentine cypress wood-boring beetle | None | None | - | - |
| Leesville | <i>Perognathus inornatus</i> | San Joaquin Pocket Mouse | None | None | - | - |
| Leesville | <i>Anodonta californiensis</i> | California floater | None | None | - | - |
| Leesville | <i>Emys marmorata</i> | western pond turtle | None | None | SSC | - |
| Leesville | <i>Wildflower Field</i> | Wildflower Field | None | None | - | - |
| Leesville | <i>Balsamorhiza macrolepis</i> | big-scale balsamroot | None | None | - | 1B.2 |
| Leesville | <i>Harmonia hallii</i> | Hall's harmonia | None | None | - | 1B.2 |
| Leesville | <i>Helianthus exilis</i> | serpentine sunflower | None | None | - | 4.2 |
| Leesville | <i>Layia septentrionalis</i> | Colusa layia | None | None | - | 1B.2 |
| Leesville | <i>Senecio clevelandii</i> var. <i>clevelandii</i> | Cleveland's ragwort | None | None | - | 4.3 |
| Leesville | <i>Amsinckia lunaris</i> | bent-flowered fiddleneck | None | None | - | 1B.2 |
| Leesville | <i>Streptanthus drepanoides</i> | sickle-fruit jewelflower | None | None | - | 4.3 |
| Leesville | <i>Calystegia collina</i> ssp. <i>oxyphylla</i> | Mt. Saint Helena morning-glory | None | None | - | 4.2 |
| Leesville | <i>Calystegia collina</i> ssp. <i>tridactylosa</i> | coast range bindweed | None | None | - | 1B.2 |
| Leesville | <i>Acmispon rubriflorus</i> | red-flowered bird's-foot-trefoil | None | None | - | 1B.1 |
| Leesville | <i>Astragalus breweri</i> | Brewer's milk-vetch | None | None | - | 4.2 |
| Leesville | <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | None | None | - | 4.3 |
| Leesville | <i>Astragalus rattanii</i> var. <i>jepsonianus</i> | Jepson's milk-vetch | None | None | - | 1B.2 |
| Leesville | <i>Lupinus milo-bakeri</i> | Milo Baker's lupine | None | Thrt | - | 1B.1 |
| Leesville | <i>California macrophylla</i> | round-leaved filaree | None | None | - | 1B.2 |
| Leesville | <i>Fritillaria pluriflora</i> | adobe-lily | None | None | - | 1B.2 |
| Leesville | <i>Clarkia gracilis</i> ssp. <i>tracyi</i> | Tracy's clarkia | None | None | - | 4.2 |

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|----------------|---|-----------------------------------|----------|-----------|---------|------|
| Leesville | <i>Castilleja rubicundula</i> var. <i>rubicundula</i> | pink creamsacs | None | None | - | 1B.2 |
| Leesville | <i>Collomia diversifolia</i> | serpentine collomia | None | None | - | 4.3 |
| Leesville | <i>Navarretia jepsonii</i> | Jepson's navarretia | None | None | - | 4.3 |
| Leesville | <i>Eriogonum nervulosum</i> | Snow Mountain buckwheat | None | None | - | 1B.2 |
| Leesville | <i>Delphinium uliginosum</i> | swamp larkspur | None | None | - | 4.2 |
| Leesville | <i>Horkelia bolanderi</i> | Bolander's horkelia | None | None | - | 1B.2 |
| Leesville | <i>Brodiaea rosea</i> | Indian Valley brodiaea | None | End | - | 1B.1 |
| Lower Lake | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Lower Lake | <i>Aquila chrysaetos</i> | golden eagle | None | None | FP ; WL | - |
| Lower Lake | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Lower Lake | <i>Ardea herodias</i> | great blue heron | None | None | - | - |
| Lower Lake | <i>Lavinia exilicauda chi</i> | Clear Lake hitch | None | Thrt | - | - |
| Lower Lake | <i>Saldula usingeri</i> | Wilbur Springs shorebug | None | None | - | - |
| Lower Lake | <i>Antrozous pallidus</i> | pallid bat | None | None | SSC | - |
| Lower Lake | <i>Corynorhinus townsendii</i> | Townsend's big-eared bat | None | Cand Thrt | SSC | - |
| Lower Lake | <i>Myotis lucifugus</i> | little brown bat | None | None | - | - |
| Lower Lake | <i>Myotis yumanensis</i> | Yuma myotis | None | None | - | - |
| Lower Lake | <i>Lomatium hooveri</i> | Hoover's lomatium | None | None | - | 4.3 |
| Lower Lake | <i>Harmonia hallii</i> | Hall's harmonia | None | None | - | 1B.2 |
| Lower Lake | <i>Lasthenia burkei</i> | Burke's goldfields | End | End | - | 1B.1 |
| Lower Lake | <i>Layia septentrionalis</i> | Colusa layia | None | None | - | 1B.2 |
| Lower Lake | <i>Astragalus rattanii</i> var. <i>jepsonianus</i> | Jepson's milk-vetch | None | None | - | 1B.2 |
| Lower Lake | <i>Fritillaria pluriflora</i> | adobe-lily | None | None | - | 1B.2 |
| Lower Lake | <i>Hesperolinon sharsmithiae</i> | Sharsmith's western flax | None | None | - | 1B.2 |
| Lower Lake | <i>Malacothamnus helleri</i> | Heller's bush-mallow | None | None | - | 3.3 |
| Lower Lake | <i>Navarretia leucocephala</i> ssp. <i>bakeri</i> | Baker's navarretia | None | None | - | 1B.1 |
| Lower Lake | <i>Navarretia leucocephala</i> ssp. <i>pauciflora</i> | few-flowered navarretia | End | Thrt | - | 1B.1 |
| Lower Lake | <i>Potamogeton zosteriformis</i> | eel-grass pondweed | None | None | - | 2B.2 |
| Lower Lake | <i>Delphinium uliginosum</i> | swamp larkspur | None | None | - | 4.2 |
| Wilbur Springs | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Wilbur Springs | <i>Accipiter cooperii</i> | Cooper's hawk | None | None | WL | - |
| Wilbur Springs | <i>Aquila chrysaetos</i> | golden eagle | None | None | FP ; WL | - |
| Wilbur Springs | <i>Falco mexicanus</i> | prairie falcon | None | None | WL | - |
| Wilbur Springs | <i>Athene cunicularia</i> | burrowing owl | None | None | SSC | - |
| Wilbur Springs | <i>Paracoenia calida</i> | Wilbur Springs shore fly | None | None | - | - |
| Wilbur Springs | <i>Ochthebius reticulatus</i> | Wilbur Springs minute moss beetle | None | None | - | - |

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|----------------|---|--------------------------------|------|-----------|------|------|
| Wilbur Springs | <i>Saldula usingeri</i> | Wilbur Springs shorebug | None | None | - | - |
| Wilbur Springs | <i>Antrozous pallidus</i> | pallid bat | None | None | SSC | - |
| Wilbur Springs | <i>Corynorhinus townsendii</i> | Townsend's big-eared bat | None | Cand Thrt | SSC | - |
| Wilbur Springs | <i>Emys marmorata</i> | western pond turtle | None | None | SSC | - |
| Wilbur Springs | <i>Wildflower Field</i> | Wildflower Field | None | None | - | - |
| Wilbur Springs | <i>Plagiobryoides vinosula</i> | wine-colored tufa moss | None | None | - | 4.2 |
| Wilbur Springs | <i>Allium fimbriatum</i> var. <i>purdyi</i> | Purdy's onion | None | None | - | 4.3 |
| Wilbur Springs | <i>Lomatium hooveri</i> | Hoover's lomatium | None | None | - | 4.3 |
| Wilbur Springs | <i>Lomatium repostum</i> | Napa lomatium | None | None | - | 4.3 |
| Wilbur Springs | <i>Balsamorhiza macrolepis</i> | big-scale balsamroot | None | None | - | 1B.2 |
| Wilbur Springs | <i>Centromadia parryi</i> ssp. <i>parryi</i> | pappose tarplant | None | None | - | 1B.2 |
| Wilbur Springs | <i>Centromadia parryi</i> ssp. <i>rudis</i> | Parry's rough tarplant | None | None | - | 4.2 |
| Wilbur Springs | <i>Erigeron greenei</i> | Greene's narrow-leaved daisy | None | None | - | 1B.2 |
| Wilbur Springs | <i>Harmonia hallii</i> | Hall's harmonia | None | None | - | 1B.2 |
| Wilbur Springs | <i>Helianthus exilis</i> | serpentine sunflower | None | None | - | 4.2 |
| Wilbur Springs | <i>Layia septentrionalis</i> | Colusa layia | None | None | - | 1B.2 |
| Wilbur Springs | <i>Senecio clevelandii</i> var. <i>clevelandii</i> | Cleveland's ragwort | None | None | - | 4.3 |
| Wilbur Springs | <i>Amsinckia lunaris</i> | bent-flowered fiddleneck | None | None | - | 1B.2 |
| Wilbur Springs | <i>Cryptantha excavata</i> | deep-scarred cryptantha | None | None | - | 1B.3 |
| Wilbur Springs | <i>Extriplex joaquinana</i> | San Joaquin spearscale | None | None | - | 1B.2 |
| Wilbur Springs | <i>Calystegia collina</i> ssp. <i>oxyphylla</i> | Mt. Saint Helena morning-glory | None | None | - | 4.2 |
| Wilbur Springs | <i>Astragalus breweri</i> | Brewer's milk-vetch | None | None | - | 4.2 |
| Wilbur Springs | <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | None | None | - | 4.3 |
| Wilbur Springs | <i>Astragalus rattanii</i> var. <i>jepsonianus</i> | Jepson's milk-vetch | None | None | - | 1B.2 |
| Wilbur Springs | <i>Astragalus rattanii</i> var. <i>rattanii</i> | Rattan's milk-vetch | None | None | - | 4.3 |
| Wilbur Springs | <i>Lupinus milo-bakeri</i> | Milo Baker's lupine | None | Thrt | - | 1B.1 |
| Wilbur Springs | <i>Lupinus sericatus</i> | Cobb Mountain lupine | None | None | - | 1B.2 |
| Wilbur Springs | <i>California macrophylla</i> | round-leaved filaree | None | None | - | 1B.2 |
| Wilbur Springs | <i>Fritillaria pluriflora</i> | adobe-lily | None | None | - | 1B.2 |
| Wilbur Springs | <i>Fritillaria purdyi</i> | Purdy's fritillary | None | None | - | 4.3 |
| Wilbur Springs | <i>Hesperolinon bicarpellatum</i> | two-carpellate western flax | None | None | - | 1B.2 |
| Wilbur Springs | <i>Hesperolinon drymarioides</i> | drymaria-like western flax | None | None | - | 1B.2 |
| Wilbur Springs | <i>Malacothamnus helleri</i> | Heller's bush-mallow | None | None | - | 3.3 |
| Wilbur Springs | <i>Clarkia gracilis</i> ssp. <i>tracyi</i> | Tracy's clarkia | None | None | - | 4.2 |
| Wilbur Springs | <i>Castilleja rubicundula</i> var. <i>rubicundula</i> | pink creamsacs | None | None | - | 1B.2 |
| Wilbur Springs | <i>Mimulus nudatus</i> | bare monkeyflower | None | None | - | 4.3 |

| QUAD NAME | SCIENTIFIC NAME | COMMON NAME | FED. | CALIF | CDFG | CNPS |
|----------------|---|-----------------------------|----------|-----------|---------|------|
| Wilbur Springs | <i>Puccinellia simplex</i> | California alkali grass | None | None | - | 1B.2 |
| Wilbur Springs | <i>Collomia diversifolia</i> | serpentine collomia | None | None | - | 4.3 |
| Wilbur Springs | <i>Navarretia jepsonii</i> | Jepson's navarretia | None | None | - | 4.3 |
| Wilbur Springs | <i>Delphinium uliginosum</i> | swamp larkspur | None | None | - | 4.2 |
| Wilbur Springs | <i>Horkelia bolanderi</i> | Bolander's horkelia | None | None | - | 1B.2 |
| Wilbur Springs | <i>Brodiaea rosea</i> | Indian Valley brodiaea | None | End | - | 1B.1 |
| Wilson Valley | <i>Rana boylei</i> | foothill yellow-legged frog | None | Cand Thrt | SSC | - |
| Wilson Valley | <i>Aquila chrysaetos</i> | golden eagle | None | None | FP ; WL | - |
| Wilson Valley | <i>Haliaeetus leucocephalus</i> | bald eagle | Delisted | End | FP | - |
| Wilson Valley | <i>Antrozous pallidus</i> | pallid bat | None | None | SSC | - |
| Wilson Valley | <i>Corynorhinus townsendii</i> | Townsend's big-eared bat | None | Cand Thrt | SSC | - |
| Wilson Valley | <i>Margaritifera falcata</i> | western pearlshell | None | None | - | - |
| Wilson Valley | <i>Emys marmorata</i> | western pond turtle | None | None | SSC | - |
| Wilson Valley | <i>Lomatium hooveri</i> | Hoover's lomatium | None | None | - | 4.3 |
| Wilson Valley | <i>Harmonia hallii</i> | Hall's harmonia | None | None | - | 1B.2 |
| Wilson Valley | <i>Layia septentrionalis</i> | Colusa layia | None | None | - | 1B.2 |
| Wilson Valley | <i>Senecio clevelandii</i> var. <i>clevelandii</i> | Cleveland's ragwort | None | None | - | 4.3 |
| Wilson Valley | <i>Amsinckia lunaris</i> | bent-flowered fiddleneck | None | None | - | 1B.2 |
| Wilson Valley | <i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i> | Freed's jewelflower | None | None | - | 1B.2 |
| Wilson Valley | <i>Astragalus clevelandii</i> | Cleveland's milk-vetch | None | None | - | 4.3 |
| Wilson Valley | <i>Astragalus rattanii</i> var. <i>jepsonianus</i> | Jepson's milk-vetch | None | None | - | 1B.2 |
| Wilson Valley | <i>California macrophylla</i> | round-leaved filaree | None | None | - | 1B.2 |
| Wilson Valley | <i>Fritillaria pluriflora</i> | adobe-lily | None | None | - | 1B.2 |
| Wilson Valley | <i>Hesperolinon drymarioides</i> | drymaria-like western flax | None | None | - | 1B.2 |
| Wilson Valley | <i>Castilleja rubicundula</i> var. <i>rubicundula</i> | pink creamsacs | None | None | - | 1B.2 |
| Wilson Valley | <i>Antirrhinum virga</i> | twig-like snapdragon | None | None | - | 4.3 |
| Wilson Valley | <i>Collomia diversifolia</i> | serpentine collomia | None | None | - | 4.3 |
| Wilson Valley | <i>Navarretia jepsonii</i> | Jepson's navarretia | None | None | - | 4.3 |
| Wilson Valley | <i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i> | adobe navarretia | None | None | - | 4.2 |
| Wilson Valley | <i>Eriogonum nervulosum</i> | Snow Mountain buckwheat | None | None | - | 1B.2 |
| Wilson Valley | <i>Delphinium uliginosum</i> | swamp larkspur | None | None | - | 4.2 |

Key for Appendix C:

- 1B.1 = Rare, threatened, or endangered in California and elsewhere; seriously threatened in California*
1B.2 = Rare, threatened, or endangered in California and elsewhere; fairly threatened in California
1B.3 = Rare, threatened, or endangered in California and elsewhere; not very threatened in California
2A = Presumed extinct in California, but extant elsewhere
2B.1 = Rare, threatened, or endangered in Calif., but more common elsewhere; seriously threatened in Calif.
2B.2 = Rare, threatened, or endangered in Calif., but more common elsewhere; fairly threatened in Calif.
2B.3 = Rare, threatened, or endangered in Calif., but more common elsewhere; not very threatened in Calif.
3 = Plants about which we need more information (Review List)
3.1 = Plants about which we need more information (Review List); seriously threatened in California
3.2 = Plants about which we need more information (Review List); fairly threatened in California
3.3 = Plants about which we need more information (Review List); not very threatened in California
4.2 = Plants of limited distribution (watch list); fairly threatened in California
4.3 = Plants of limited distribution (watch list); not very threatened in California

SE/ST/SD=State Endangered/Threatened/Delisted

SC/SCD=State Candidate for Listing/Delisting

SSC=CDFW Species of Special Concern

SFP=State Fully Protected

WL=CDFW Watch List

FE/FT/FD=Federal Endangered/Threatened/Delisted

FPE/FPT/FPD/FP=Federal Proposed Endangered/Threatened/Delisting

FC=Federal Candidate

Thrt=Threatened

End=Endangered

Cand=Candidate

Prop=Proposed

Appendix D Permitted Construction Dates for Mitigating Impacts to Sensitive Wildlife

| Species | Project Activity | Restricted Dates | Permitted Dates |
|--|--|---|--|
| Western pond turtle; Foothill yellow-legged frog | Work at the bridge crossing of North Fork Cache Creek. Exception: Work is permitted if mitigation has been carried out as described in Sections 4.3.2.4 and 4.3.3.4. | All unless mitigation is implemented | None without mitigation (see exception) |
| Bald eagle; White-tailed kite | Construction or clearing work within 100 feet of an active nest within the PIA. Exception: Restriction dates do not apply if mitigation described in the mitigation Section 4.3.4.4 and 4.3.5.4 provided for these species is implemented and survey results are negative. | February 15 – August 31 | September 1- February 14 |
| Yellow warbler; Yellow-breasted chat | Construction or clearing work within 100 feet of the willow thicket communities along North Fork Cache Creek. Exception: Restriction dates do not apply if mitigation described in the mitigation Section 4.3.6.4 provided for these species is implemented and survey results are negative. | February 15 – August 31 | September 1- February 14 |
| Pallid bat | Any proposed tree removal within PIA + 50-foot buffer. Exception: Restriction dates do not apply if mitigation described in the mitigation Section 4.3.7.4 provided for these species is implemented and survey results are negative. | April 2- September 14; October 16- February 14 | September 15- October 15, or February 15- April 1 |
| North American river otter | Any proposed tree removal within PIA + 50-foot buffer. Exception: Restriction dates do not apply if mitigation described in the mitigation Section 4.3.8.4 provided for these species is implemented and survey results are negative. | December 1- April 30 | May 1- November 30 |

Appendix E Periods During Which Construction May Not Take Place Without Mitigation

| Species | PERIODS DURING WHICH CONSTRUCTION MAY NOT TAKE PLACE WITHOUT MITIGATION | | | | | | | | | | | |
|--------------------------------------|---|-------------|-----------------------------|--------------------|------------|------|-----------------------------------|---|------------------|------------------|------------|----------|
| | January | February | March | April | May | June | July | August | September | October | November | December |
| Foothill yellow-legged frog | Survey for frogs | | Survey for frogs and larvae | | | | 15 th Survey for frogs | | | | | |
| Western pond turtle | Nest and turtle Survey | | | Survey for Turtles | | | | 15 th Nest and turtle Survey | | | | |
| Bald Eagle, White-tailed kite | 15 th | Nest Survey | | | | | | | | | | |
| Yellow warbler, Yellow-breasted chat | 15 th | Nest Survey | | | | | | | | | | |
| Pallid bat | Bat Survey | | | | Bat Survey | | | | 15 th | 15 th | Bat Survey | |
| North American river otter | Survey for Active Den Sites | | | | | | | | | | | |

Appendix F Results of Valley Elderberry Longhorn Beetle Survey

See following pages.

**SURVEY FOR VALLEY ELDERBERRY LONGHORN BEETLE
AT THE NORTH FORK OF CACHE CREEK BRIDGE
AT CHALK MOUNTAIN ROAD
BRIDGE # 14C-0048
LAKE COUNTY, CALIFORNIA**

August 1, 2016

Prepared for: Drake Haglan & Associates
11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670
(916) 363-4210

Prepared by: Northwest Biosurvey
P.O. Box 191
Cobb, CA 95426
(707) 928-1985

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| 3.0 Conclusions | 2 |

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| Figure 3 Vegetation Types | 6 |

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|---------------------|------------------------------------|
| Attachment A | VELB Status Letter for Lake County |
| Attachment B | VELB Survey Form |
| Attachment C | Photos of Surveyed Elderberry |

1.0 Project Description and Location

This Valley Elderberry Longhorn Beetle (VELB) survey covers replacement of the North Fork of Cache Creek at Chalk Mountain Road (Bridge 14C-0048) in Lake County, California. The location of this bridge is shown in the Vicinity Map provided in **Figure 1**. A location map for each project is provided in **Figure 2**.

It is important to note that based on a July 14, 2016 Memorandum from District 1 of the Department of Transportation (**Attachment A**), Caltrans staff reports that:

“Caltrans Local Assistance received verbal confirmation in 2015 (from the U.S. Fish and Wildlife Service) that VELB was no longer considered to occur at elevations above 1,000 feet in Lake County.”

The Cache Creek Bridge is located at an elevation of 1,160 feet msl. Caltrans Local Assistance Staff states in the July 14, 2016 memo that they will consider other Lake County bridges on a case-by-case basis.

The survey area included the entire Project Impact Area (PIA), which comprised all areas potentially disturbed either by construction activities or as construction lay-down areas including all areas either permanently or temporarily impacted. In addition to the PIA, a 250-foot survey buffer was added and defined as the Biological Study Area (BSA). All surveys were conducted in a manner consistent with the most current USFWS VELB survey protocol.

2.0 Survey Results

Four elderberry shrubs were observed and surveyed within the PIA of the proposed bridge replacement project in May, 2016. Three of these shrubs are located within the riparian vegetation zone of the North Fork of Cache Creek. A single exit hole was found in shrub number 3. However, this does not have the characteristics of a VELB exit hole (**see Photo 2**). The locations of these shrubs are mapped in **Figure 3**. The VELB survey form is provided in **Attachment B** and photos are provided in **Attachment C**.

The survey results are summarized in **Table 1** below:

TABLE 1. SUMMARY OF VELB SURVEY RESULTS

| Bridge Site & No. | Shrub # | Distance From PIA (in feet) | # Stems In Size Class | | | Photo No. | Riparian | Exit Holes |
|---|---------|-----------------------------|-----------------------|--------|-----|-----------|----------|------------|
| | | | >1”<3” | >3”<5” | >5” | | | |
| North Fork Cache Creek at Chalk Mt. Road #14C-0048 | 1 | In PIA | 3 | 3 | 2 | 1 | Yes | no |
| | 2 | In PIA | 7 | - | - | - | Yes | no |
| | 3 | In PIA | 11 | - | - | 2 | yes | yes |
| | 4 | In PIA | - | - | 4 | - | no | no |

3.0 Conclusions

The following information is provided in conformance with the September 19, 1996, Sacramento Fish and Wildlife Office advisory letter for *Programmatic Formal Consultation Permitting Projects with Relatively Small Effects on the Valley Elderberry Longhorn Beetle Within Jurisdiction of the Sacramento Field Office* (COE):

1. No designated critical habitat will be affected.
2. Fewer than 25 elderberry plants exist within the action area.
3. Fewer than 200 elderberry stems measuring 1-inch or greater are within the action area.
4. Less than 250 linear feet of undeveloped watercourse exists within the action area.
5. **Figure 3** provides an aerial photo based map showing the boundaries of the project area.
6. **Figure 3** also provides a 1”=100’ map of vegetation communities within the action area.
7. Acreage of PIA within 50 feet of elderberry plants = **0.50 acres**.
Acreage of PIA outside of riparian habitat but within 50 feet of elderberry plants + **0.21 acres**.
8. **Figure 3** provides a 1”=100’ map of elderberry locations within the project action area.
9. **Table 1** provides data on the number of elderberry plants present, the number of stems greater than 1-inch in diameter, and observes the absence of VELB exit holes.
10. Habitat within 2,000 feet upstream and downstream of the bridge replacement site is described below:

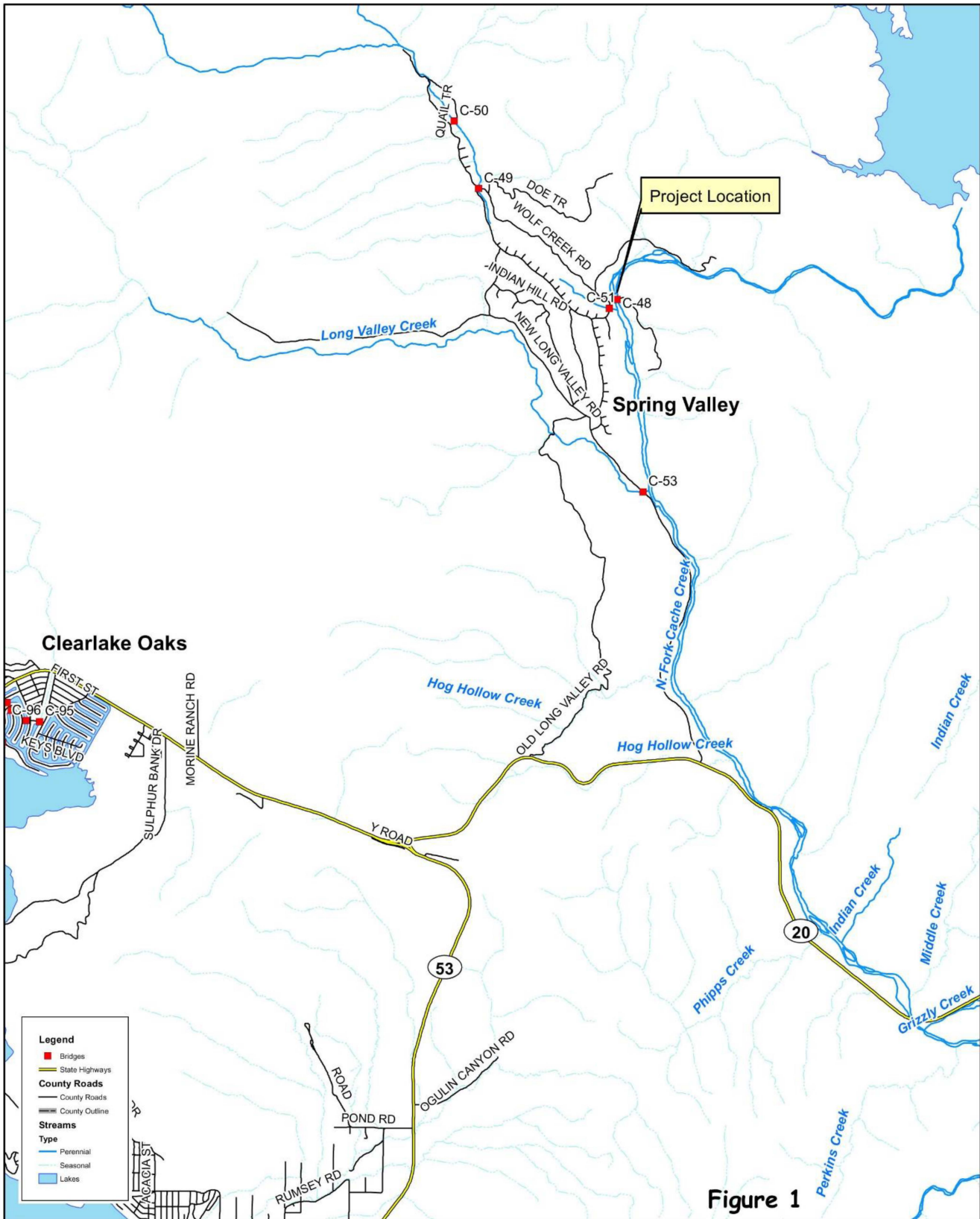
Riparian habitat for a distance of 2,000 feet upstream and downstream of the Chalk Mountain Road Bridge consists of a structural mix of dense woodlands, shrub communities, and exposed gravel bars. The habitat is dominated by segments of dense, multi-canopied riparian forest of mature red willow, California valley oak, and Fremont

cottonwood with a dense understory of shrubby red willow, narrow-leaved willow, and white alder. In openings, and channel edges this community supports a shrub layer of Himalayan blackberry and poison oak. Blue elderberry is uncommon to absent in these dense riparian woodlands.

The more open shrub communities are dominated by narrow-leaved willow, supporting mule fat and white sweet clover along community edges. Blue elderberry is largely excluded from these communities. The same is true for the segments of exposed gravel bar.

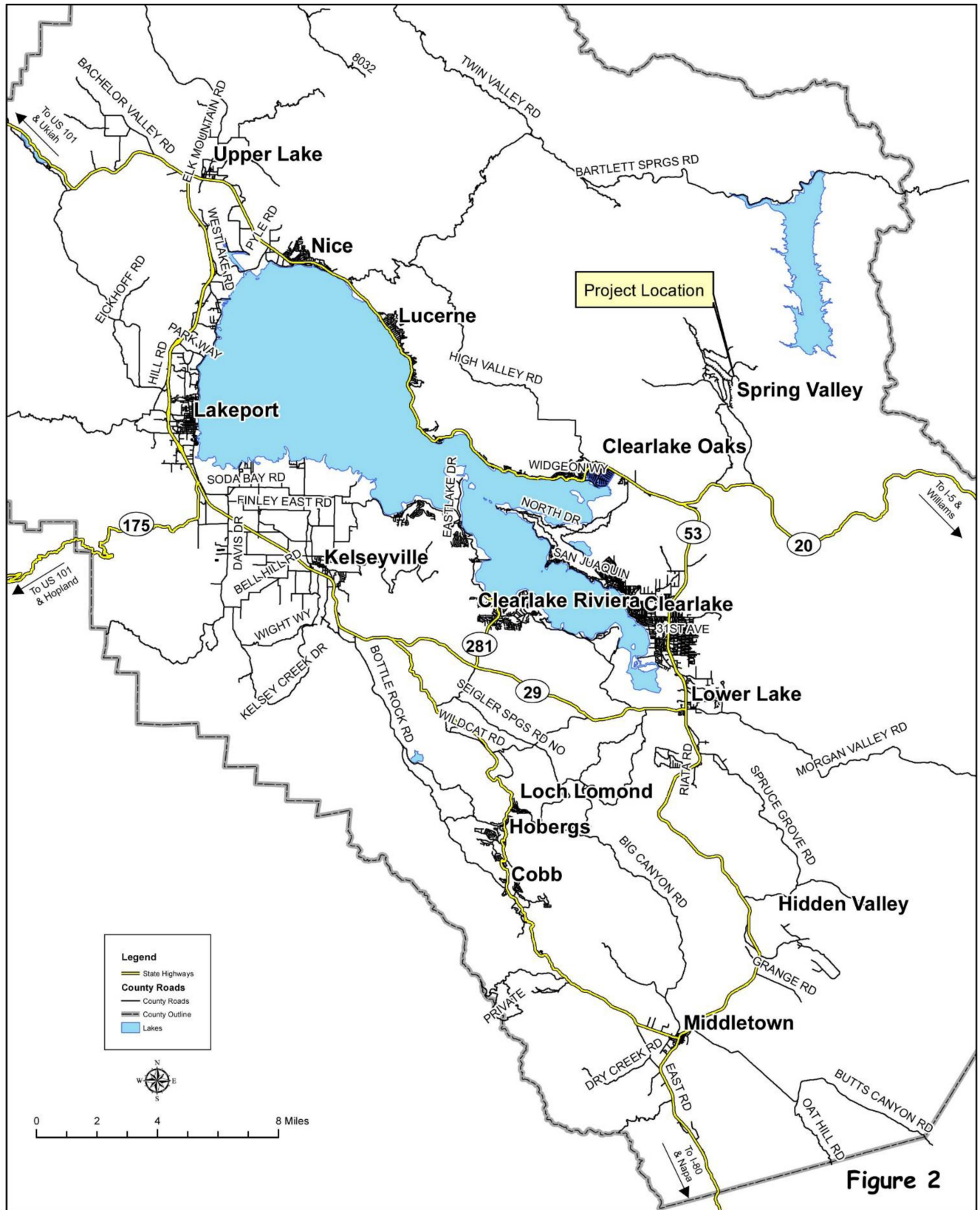
Blue elderberry along the North Fork of Cache Creek are primarily associated with adjacent terraces on the very margins of the riparian habitats. These plants are well established where they occur but many are decadent and all appear to have become established under a different hydrologic regime than currently exists along this stretch of the creek. Summer and fall flows along this creek consist of regulated agricultural releases from Indian Valley Reservoir. The channel would otherwise cease flowing during the summer and fall months.

11. As discussed in detail in the Biological Assessment accompanying this survey, Lake County is well outside of the known range for VELB; the closest known account being 32 miles to the southeast along the western foothills of the Sacramento Valley. None of the elderberry shrubs inspected contained exit holes resembling those produced by VELB although the site is well within the range of CELB (California Elderberry Longhorn Beetles), which produce exit holes identical to those of VELB. **We believe that this project is unlikely to have an adverse effect on Valley elderberry longhorn beetle.**



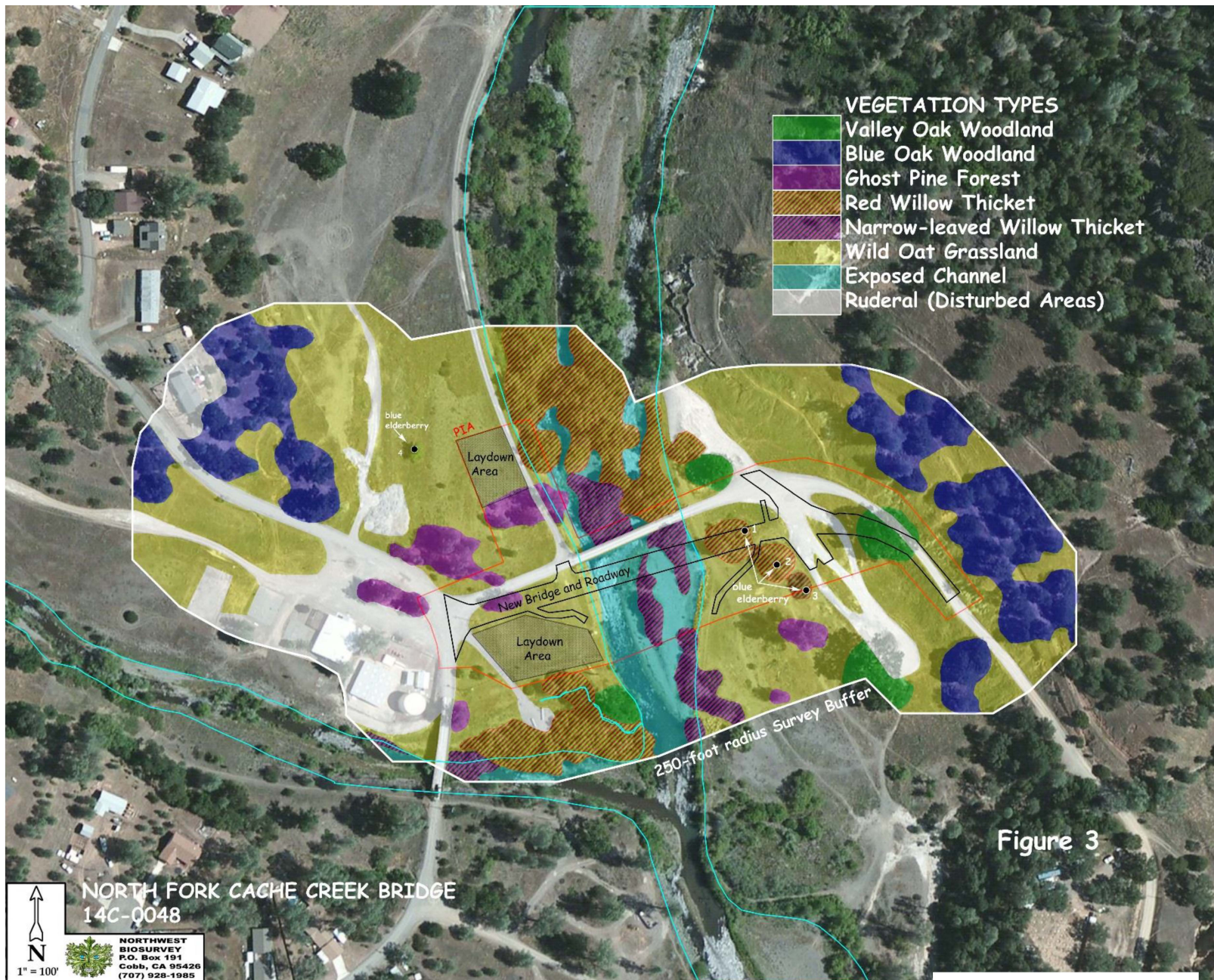
**Chalk Mountain Rd at Cache Creek (14C-0048)
Bridge Replacement Project- Vicinity Map**

Reference Scale: 1 inch = 5,000 feet (1:60,000)
Projection: California State Plane Zone II - NAD 83 - Feet



**Chalk Mountain Rd at Cache Creek (14C-0048)
Bridge Replacement Project- Location Map**

Reference Scale: 1 inch = 4 miles (1:253,440)
Projection: California State Plane Zone II - NAD 83 - Feet



ATTACHMENT A

VELB STATUS LETTER FOR LAKE COUNTY

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

M e m o r a n d u m

To: File

Date: July 14, 2016

File No.: 01-Lak-CR-0
BRLO-5914 (070)

From: DEPARTMENT OF TRANSPORTATION – District 1
Michael Kelly, Biologist

Subject: Change in Valley Elderberry Longhorn Beetle Status at Harbin Springs Road Bridge

The U.S. Fish and Wildlife Service no longer considers the valley elderberry longhorn beetle (VELB) to be present at the Harbin Springs Road Bridge project location. Caltrans Local Assistance received verbal confirmation in 2015 that VELB was no longer considered to occur at elevations above 1000 feet in Lake County – the project location is at 1500 feet. And as of July 2016, VELB does not appear on the latest USFWS species list at that location. Additionally, the site burned during the Valley Fire in 2015, so the shrubs in question may no longer be viable.

Therefore, project design changes that were made to preserve the elderberry shrubs at the site are no longer necessary. The original design of Alternative 1 for placement of the temporary bridge can proceed. If the original Alternative 1 is implemented, there will be no effect on VELB or its habitat.

Caltrans Local Assistance will consider any requested changes to other projects in Lake County with VELB avoidance measures on a case-by-case basis.

ATTACHMENT B

VELB SURVEY FORMS

5/4/16 N-fork Cache Cr. Bridge 14C-0048 Zalusky

ELDERBERRY SHRUB DATA SHEETS, Page 2

| | |
|-----------------------------|---------------------------|
| SHRUB # (MAP REFERENCE #): | Site # 1 |
| PHOTO # | Photo 1 |
| RIPARIAN: (Y) / N | 39° 04.199' 122° 35.008' |
| EXIT HOLES PRESENT: Y / (N) | |
| SIZE CLASS: | NUMBER OF STEMS IN CLASS: |
| >1" <3" | 3 |
| >3" <5" | 3 |
| >5" | 2 |

| | |
|-----------------------------|---------------------------|
| SHRUB # (MAP REFERENCE #): | Site # 2 |
| PHOTO # | |
| RIPARIAN: Y / N | 39° 04.190' 122° 34.997' |
| EXIT HOLES PRESENT: Y / (N) | |
| SIZE CLASS: | NUMBER OF STEMS IN CLASS: |
| >1" <3" | 7 |
| >3" <5" | |
| >5" | |

| | |
|-----------------------------|---------------------------|
| SHRUB # (MAP REFERENCE #): | Site 3 |
| PHOTO # | Photo 2 |
| RIPARIAN: (Y) / N | 39° 04.183' 122° 34.987' |
| EXIT HOLES PRESENT: (Y) / N | |
| SIZE CLASS: | NUMBER OF STEMS IN CLASS: |
| >1" <3" | 11 |
| >3" <5" | |
| >5" | |

| | |
|-----------------------------|---------------------------|
| SHRUB # (MAP REFERENCE #): | Site 4 |
| PHOTO # | |
| RIPARIAN: Y / (N) | 39° 04.220' 122° 35.120' |
| EXIT HOLES PRESENT: Y / (N) | |
| SIZE CLASS: | NUMBER OF STEMS IN CLASS: |
| >1" <3" | 4 |
| >3" <5" | |
| >5" | |

| | |
|----------------------------|---------------------------|
| SHRUB # (MAP REFERENCE #): | |
| PHOTO # | |
| RIPARIAN: Y / N | |
| EXIT HOLES PRESENT: Y / N | |
| SIZE CLASS: | NUMBER OF STEMS IN CLASS: |
| >1" <3" | |
| >3" <5" | |
| >5" | |

ATTACHMENT C

PHOTOS OF SURVEYED ELDERBERRY



Appendix G USFWS Species List – North Fork Cache Creek Bridge Project

| Animal Scientific Name | Common Name | USFWS Status | General Habitat Description | Habitat Present/Absent | Rationale |
|---|----------------------------|--------------|---|------------------------|---|
| <i>Hypomesus transpacificus</i> | Delta smelt | T | Estuarine, dead-end sloughs, larger rivers, lagoons, and larger open channels surrounding San Francisco Bay. | A | Species is limited to mixed fresh and saline waters of the San Francisco delta region. |
| <i>Rana draytonii</i> | California red-legged frog | T | Generally ponded water or slow moving streams with dense bank vegetation and three or more feet of depth. | A | This portion of the creek does not contain ponded water and lacks suitable habitat for this species. Species has not been found in this region. |
| <i>Strix occidentalis caurina</i> | northern spotted owl | T | Old-growth forests or mixed stands of old-growth & mature trees; occasionally in younger forests with patches of big trees. | A | This site does not contain forest habitat required by this species. |
| No Critical Habitats occur at this location | | | | | |

T = Threatened

A = Absent



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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



In Reply Refer To:

May 15, 2018

Consultation Code: 08ESMF00-2017-SLI-2103

Event Code: 08ESMF00-2018-E-06203

Project Name: N. Fork Cache Creek Bridge Replacement Project

Subject: Updated 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(s):

- Official Species List

Official Species List

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

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2017-SLI-2103

Event Code: 08ESMF00-2018-E-06203

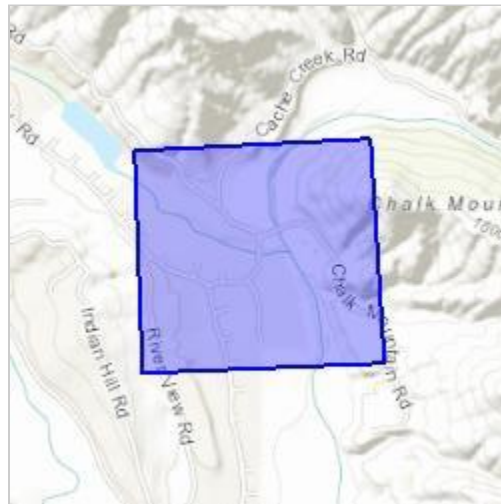
Project Name: N. Fork Cache Creek Bridge Replacement Project

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: N. Fork Cache Creek Bridge Replacement

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/39.068829665063646N122.58520017855787W>



Counties: Lake, CA

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Birds

| NAME | STATUS |
|---|------------|
| Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123 | Threatened |

Amphibians

| NAME | STATUS |
|---|------------|
| California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 | Threatened |

Fishes

| NAME | STATUS |
|--|------------|
| Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321 | Threatened |

Critical habitats

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

Appendix H Water Quality Technical Memo for the Chalk Mtn. Road Bridge Replacement Project

See following pages.



11060 White Rock Road, Suite 200
Rancho Cordova, CA 95670 ▪ Phone: (916) 363-4210 ▪ Fax: (916) 363-4230

Memorandum

To: Fred Pezeshk
Lake County Department of Public Works
255 N. Forbes Street, Room 309
Lakeport, CA 95453

Date: April 6, 2017

Subject: Water Quality Technical Memorandum: Chalk Mountain Road over North Fork Cache Creek Bridge (Bridge No.14C-0048) Replacement Project

Introduction

The purpose of this Water Quality Technical Memorandum is to provide an analysis of potential water quality degradation associated with the Chalk Mountain Road Bridge Replacement Project (Project) proposed by the County of Lake Department of Public Works (County). The project site is located east of the intersection of Wolf Creek Road and Chalk Mountain Road in eastern Lake County approximately 5 miles northeast of Clear Lake Oaks (**Figures 1 and 2**). The proposed project will replace the existing bridge, Bridge No. 14C-0048, where Chalk Mountain Road crosses North Fork Cache Creek.

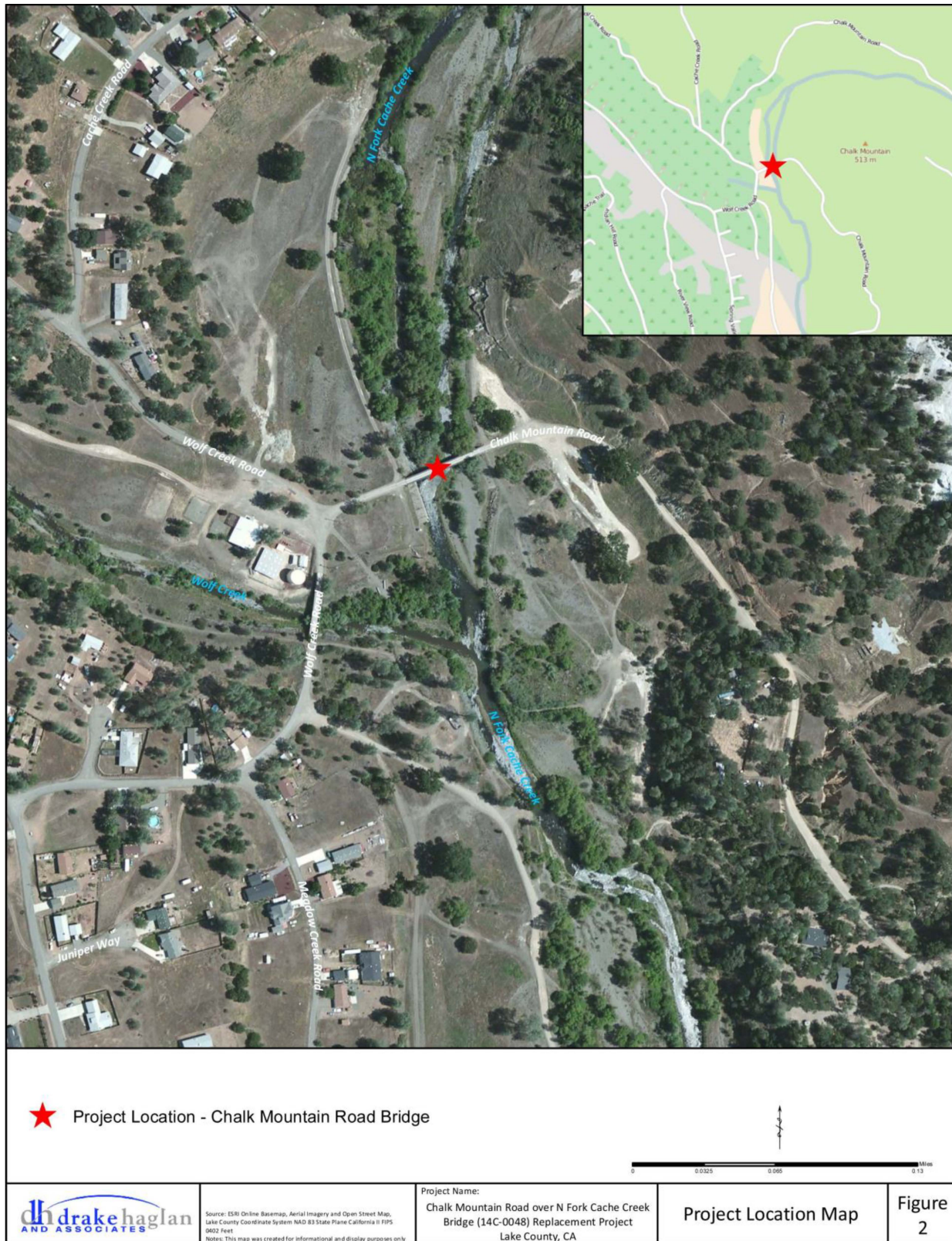
Project Purpose and Need

The existing bridge has been designated as structurally deficient per the Caltrans Structure Maintenance & Investigations, Local Agency Bridge List (April 2016). The purpose of the proposed project is to provide a replacement structure that is consistent with Caltrans structural design standards, is placed on a road alignment that meets appropriate AASHTO roadway geometry standards, and is hydraulically capable of passing and clearing the design storm events (50-year storm plus 2 feet of freeboard and 100-year storm).

Project Description

The replacement bridge will be wider to comply with current AASHTO standards for local rural roads, which will include at a minimum two 9-foot travel lanes and two 2-foot shoulders, plus crash-tested vehicular barriers. It is anticipated that deep foundations will be needed to support the replacement





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bridge. The proposed project may also potentially include a Class 1 multi use path on the replacement bridge.

Alternative 1: Constructing the Replacement Bridge on a Realigned Chalk Mountain Road

The realignment of the roadway allows the existing bridge to remain in place for public use during construction of the replacement bridge. The replacement bridge will be constructed first, while traffic remains on the existing bridge. Once the construction of the replacement bridge is complete, the roadway approaches will be reconstructed to conform from the existing road to the replacement bridge. The replacement structure will be approximately 230 feet long.

Alternative 2: Constructing the Replacement Bridge Using Staged Construction

Construction staging will allow the replacement bridge to be constructed on the existing road alignment while keeping a portion of the existing bridge open to public traffic during construction. Half of the replacement bridge would be constructed while the existing bridge remains open to traffic. Once construction of the first half of the replacement bridge is complete, public traffic would be redirected to the completed portion of the bridge, the existing bridge would be demolished, and the second half of the replacement bridge would be constructed. Construction staging will require the project to extend over two seasons (summer of 2019 and 2020). The proposed replacement structure will be approximately 210 feet long.

Demolition

Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specifications modified to meet environmental permit requirements. The following specifications will apply:

13-4.03D(3) Concrete Waste: Prevent the discharge of concrete and asphalt concrete waste into storm drain systems and receiving waters. Collect concrete waste, including grout, dust and debris from demolition, saw cutting, coring, grinding, or grooving, simultaneously with the waste-producing activity.

13-4.03E(6) Structure Removal Over or Adjacent to Water: Do not allow demolished material to enter storm drain systems and receiving waters. Use authorized covers and platforms to collect debris. Use attachments on equipment to catch debris during small demolition activities. Empty debris-catching devices daily and handle debris under section 13-4.03D.

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

Construction Activities

Construction will consist of the following activities:

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- Removing trees, clearing, and grubbing to accommodate the removal of the existing bridge and roadway and the construction of the new bridge structure and road approach work
- Installing a temporary creek diversion system using temporary coffer dams and pipe culverts
- Removing the existing bridge
- Excavating for the new bridge abutment and pier wall foundations
- Constructing new abutments in the creek banks
- Constructing new pier walls within the creek channel
- Placing temporary falsework within the creek channel
- Constructing the new bridge superstructure
- Constructing road approaches, including excavating for and placing asphalt concrete.
- Placing rock slope protection along the creek banks in the vicinity of the new bridge abutments
- Placing post construction erosion control native grass seeds and mulch

The project will include the removal of a portion of the existing concrete slope pavement and the placement of rock slope protection (RSP). The RSP size will be 1 Ton Rock (D50) with a total blanket thickness of 4 feet-6 inches and a 6-foot by 6-foot key at the base of the slope. The RSP will extend from approximately 20 feet upstream of the existing bridge down to approximately 40 feet downstream of the replacement bridge at both banks of the creek. The RSP on the east bank of the creek will be tied into the existing RSP downstream of the bridge. The total limits of the RSP will be approximately 130 feet on the west bank and approximately 140 feet on the east bank. This equates to an approximate coverage area of 12,700 square feet and an approximate volume of 2500 cubic yards

Dewatering

The anticipated flow range in the N. Fork of Cache Creek during the construction period for the project is 200 to 600 cubic feet per second (cfs). The flow spread for each of this flow range has been modeled to determine the anticipated limits of flowing water within the N. Fork Cache Creek channel. The Yolo County Flood Control and Water Conservation District (YCFCWCD), who operates the Indian Valley Reservoir upstream of the Chalk Mountain Bridge, can lower the flow to 200 cfs for one month periods. The support pier for the replacement bridge will be constructed outside of the 200 cfs flow limits and within a 1 month period. The balance of the replacement bridge can be constructed when the flows in the N. Fork Cache Creek are up to 600 cfs by constructing a temporary berm system along the 600 cfs flow limits and doing some mine channel grading to keep water outside of the work zones. The approximate length of the diversion system will be 450 feet and impact approximately 16,200 square feet of waters of the U.S. As a result no pumping of surface water is anticipated. The operational timeline for the stream diversion will likely be June 1 to October 31, depending on the regulatory permit mitigation measures. Groundwater pumping, will most likely be required to construct the foundation of the west abutment and pier foundation. The pumped ground water would be treated and returned to the creek downstream of the project site.

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The creek diversion system, and subsequent site dewatering, will be designed in conformance with County specifications and regulations as required by the Central Valley Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (DFW).

Due to the length of the proposed bridge, construction of temporary falsework bents may be required within the creek channel

Staging Areas

The potential project staging areas are expected to be at the gravel area located to the southwest of the existing bridge near the intersection of Wolf Creek and Chalk Mountain Road and on the northwest side of the bridge (**Figure 3**). Staging of equipment and materials in either location will occur within the bounds of the project impact area.

Construction Schedule and Timing

Construction of the proposed project is anticipated to take between 4 to 8 months to complete, pending the scope of the final design and construction plans. Alternative 1 would take approximately 4 months to complete while Alternative 2 would take approximately 8 months to complete. Construction is anticipated for the spring of 2019. All work within the North Fork Cache Creek channel will be conducted in accordance with the regulatory agency permits.

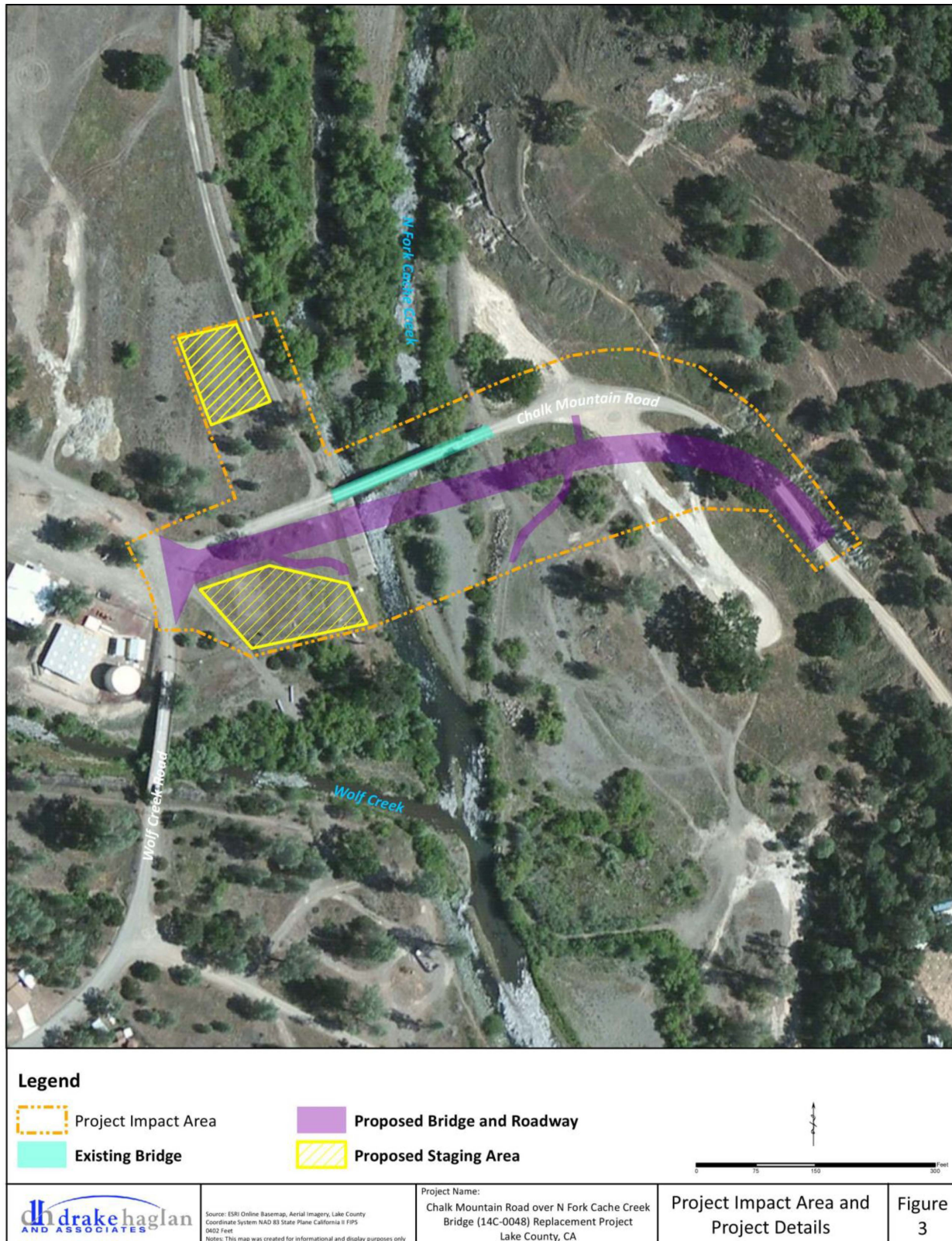
Regulatory Setting

Federal Laws and Requirements

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into “waters of the United States.” The act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

- Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.
- Section 402 regulates point- and nonpoint-source discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. In California, the State Water Resources Control Board (SWRCB) oversees the NPDES program, which is administered by the RWQCBs. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Anti-backsliding requirements provided for under CWA Sections 402(o)(2) and 303(d)(4) prohibit slackening of discharge requirements and regulations under revised NPDES permits. With isolated/limited exceptions, these regulations



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require effluent limitations in a reissued permit to be at least as stringent as those contained in the previous permit.

- Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry.

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The Corps issues two types of 404 permits: Standard permits and General permits. There are two types of General permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the Corps’ Standard permits. For Standard permits, the Corps decision to approve is based on compliance with US Environmental Protection Agency’s (EPA) Section 404 (b) (1) Guidelines (US EPA CFR 40 Part 230), and whether permit approval is in the public interest. The Section 404(b) (1) Guidelines were developed by the US EPA in conjunction with the Corps, and allow the discharge of dredged or fill material into the aquatic system (waters of the US) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the Corps may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have lesser effects on waters of the US, and not have any other adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the US. In addition, every permit from the Corps, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements (see 33 CFR 320.4).

Clean Water Act Section 303(d) Impaired Waters List

Under Section 303(d) of the CWA, states are required to develop lists of water bodies that would not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that the state develop a Total Maximum Daily Load (TMDL) for each of the listed pollutants. The TMDL is the amount of loading that the water body can receive and still be in compliance with water quality objectives. After

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implementation of the TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated. In California, preparation and management of the Section 303(d) list is administered by the RWQCBs.

National Pollutant Discharge Elimination System Permit Program

The NPDES permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify the following:

- effluent and receiving-water limits on allowable concentrations and/or mass emissions of pollutants contained in the discharge;
- prohibitions on discharges not specifically allowed under the permit; and
- provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

State Laws and Requirements

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. It predates the CWA and regulates discharges to Waters of the State. Waters of the State include more than Waters of the US, such as groundwater and surface waters not considered Waters of the US. Additionally, the Porter-Cologne Act prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant". Discharges under the Porter-Cologne Act must be regulated by the Waste Discharge Requirements (WDRs) Program, which may regulate the project even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCB are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a study area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more components and the standards cannot be met through point source controls, the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

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State Water Resources Control Board and Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and RWQCB are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a study area are contained in the applicable RWQCB Basin Plan. States designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more components and the standards cannot be met through point source controls, the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

Central Valley Regional Water Quality Control Board

The project lies within Central Valley RWQCB Region 5. Region 5 has two Basin Plans covering the Region: one for the Tulare Lake Basin and one for the Sacramento River and San Joaquin River Basins. The Region 5 Basin Plans, like those in other regions, were originally adopted in 1975 and have been updated and revised since that time. The Basin plan currently applicable to the proposed Project is the Sacramento River and San Joaquin River Basin Plan updated in September of 1998 (fourth edition) and revised in October of 2011 (RWQCB 2011).

NPDES - Construction General Permit

Construction General Permit Order No. 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-006-DWQ) (CGP) became effective on July 17, 2012. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the SWRCB or RWQCB. A Notice of Intent (NOI) must be submitted to the SWRCB for approval before construction activities may commence. A completed Notice of Termination Form must be submitted to the SWRCB after the permitted construction is complete. For projects subject to the CGP, contractors are required to file a Notice of Intent (NOI) to be covered under the permit and discharges are required to:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) with BMPs that prevent construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off-site into receiving waters;
- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the U.S.; and
- Perform inspections of all BMPs.

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The CGP separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and pre- and post-construction aquatic biological assessments during specified seasonal windows.

One primary factor considered when determining Risk Level is the water quality of receiving water bodies. High risk receiving water bodies are listed on the 303(d) list for water bodies impaired for sediment, have a USEPA approved sediment-related TMDL or have beneficial uses of SPAWN, MIGRATORY and COLD.

Projects that include dewatering must comply with the General Waste Discharge Requirements/NPDES Permit for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 and NPDES Permit No. CAG995001). A NOI must be submitted to the CVRWQCB for approval before dewatering may commence. After dewatering is completed, a Notice of Termination Form must be submitted to the CVRWQCB.

Lake and Streambed Alteration Program

Fish and Game Code section 1602 requires an entity to notify DFW prior to commencing any activity that may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

Please note that "any river, stream or lake" includes those that are episodic (they are dry for periods of time) as well as those that are perennial (they flow year round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

DFW requires an LSA Agreement when it determines that the activity, as described in a complete LSA Notification, may substantially adversely affect existing fish or wildlife resources. An LSA Agreement includes measures necessary to protect existing fish and wildlife resources. DFW may suggest ways to modify your project that would eliminate or reduce harmful impacts to fish and wildlife resources. Before issuing an LSA Agreement, DFW must comply with the California Environmental Quality Act (CEQA).

Regional and Local Requirements

In recent years Lake County has taken a more collaborative approach to watershed management, understanding the relationship between each incorporated or unincorporated community within the

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County's watersheds. Storm water runoff, wastewater discharge, and ground and surface water contamination and supply are interconnected within the watersheds. To address the need to coordinate water related activities, cities and unincorporated communities within Lake County have partnered to draft regional, countywide plans and programs for watershed management. As provided in the Lake County General Plan Background Report (2008, p.11-11) the following is a description of the goals and policies established to protect water quality within Lake County.

Goal WR-2 To protect the quality of surface and groundwater resources to meet the needs of all beneficial users.

Policy WR-2.1 Protect Surface & Ground Water Quality.

All proposed land use and development plans should be evaluated as to their potential to create surface and groundwater contamination hazards from point and non-point sources. Effects include, but are not limited to: soil erosion; direct discharge of potentially harmful substances; ground leaching from storage of raw materials, petroleum products, or wastes; floating debris by runoff from the site.

Policy WR-2.2 NPDES Enforcement.

The County shall continue to monitor and enforce provisions to control non- point source water pollution contained in the United States Environmental Protection Agency NPDES program.

Policy WR-2.3 Construction Site Sediment Control

The County shall continue to enforce provisions to control erosion and sediment from construction sites.

Policy WR-2.4 Best Management Practices

The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect surface water and groundwater from the adverse effects of construction activities and urban runoff.

Policy WR-2.5 Storm Water Runoff

The County shall ensure the design of facilities and management of storm water runoff in a safe and environmentally sustainable manner. This will be accomplished through the proper siting, design and operation and maintenance of storm drainage collection and drainage facilities so as to protect the people, property and environment including the quality of runoff water and receiving water.

Policy WR-2.6 TMDL Implementation

The County shall evaluate land use and development plans for their potential to cause an exceedance of the municipal waste load allocation for any TMDL under implementation, and to the maximum extent possible shall ensure that projects do not cause or contribute to water quality impairment.

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Affected Environment

Topography

Lake County encompasses roughly 1,261 square miles (807,000 acres) of varied topography in the Coastal Range (USDA 1989). Clear Lake is the largest water body in the county, and has an approximate elevation of 1,320 feet above mean sea level (msl). The highest point in Lake County is Snow Mountain with an elevation of 7,038 feet, and the lowest elevation is 500 feet above msl in the southeastern portion of the county in the Cache Creek drainage. The project site lies at an elevation of approximately 1,137 feet above msl.

Hydrology

Regional Hydrology

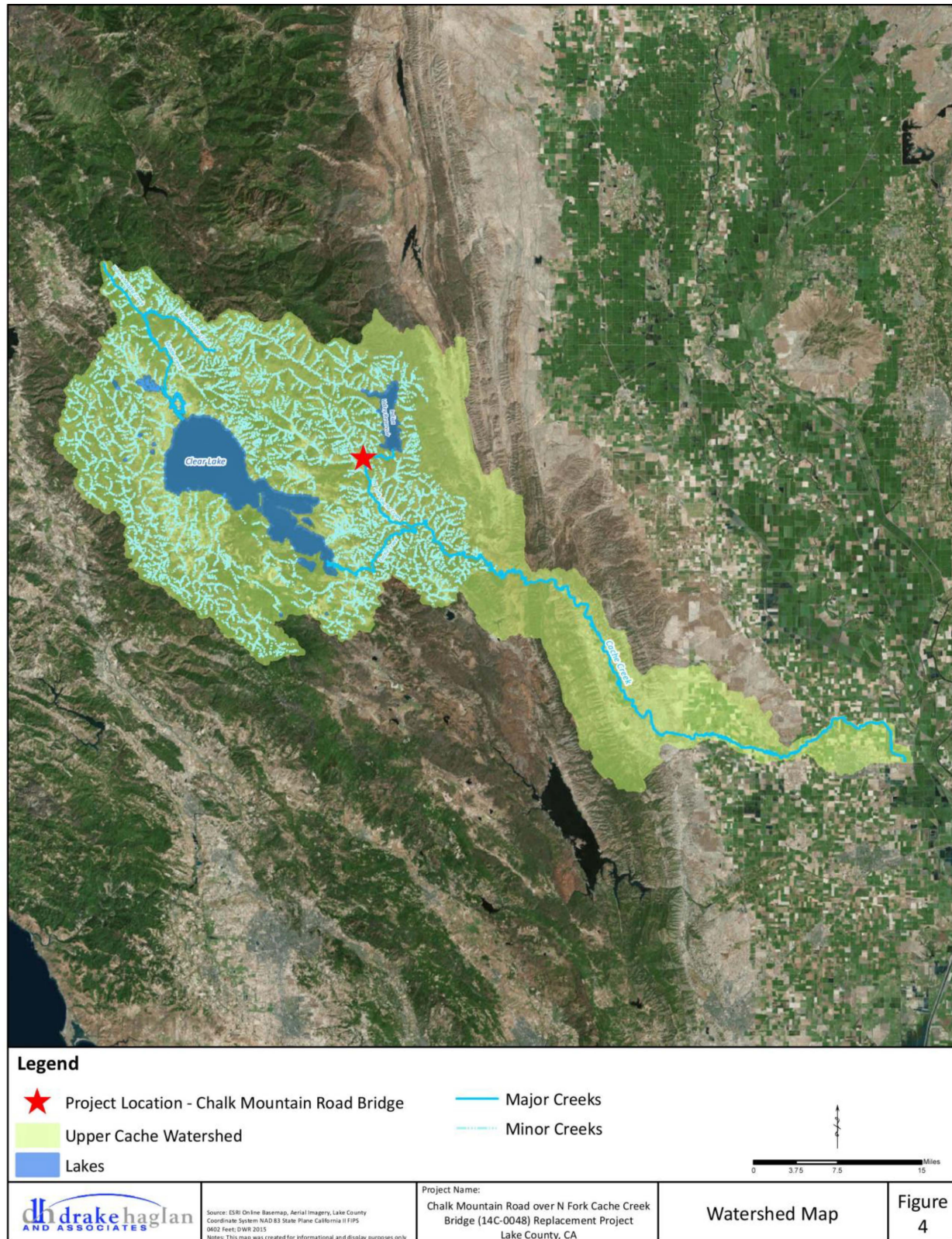
The project site is located within the Upper Cache Watershed (18020116) which is approximately 1,300 square miles with an average annual precipitation of 60 inches. There are numerous lakes, rivers, and streams within the watershed (**Figure 4**). For the purposes of this document only Cache Creek is discussed further.

Cache Creek originates from and is the sole outlet of Clear Lake, the largest natural freshwater lake located entirely in California and among the world's oldest lakes (SWRP, 2010). The creek winds its way through a predominantly agricultural setting before entering the Cache Creek Settling Basin, designed to capture sediment and enhance groundwater recharge before ultimately releasing water into the Yolo Bypass of the Sacramento River. The Cache Creek Dam on the main fork, located 5 miles downstream from Clear Lake, was built to increase Clear Lake's capacity and to regulate outflow for downstream users of Cache Creek water (SWRP, 2010). The dam later was modified to include a hydroelectric plant. The stream has a relatively small capacity—less than a quarter of the amount the dam is able to release.

Additionally, a rock ledge 1.5 miles downstream of Clear Lake called the Grigsby Riffle restricts the flow at that point, making it difficult for excess flows to drain from Clear Lake and increasing the chance of flooding for lakeside communities (SWRP, 2010). The Capay Diversion Dam, 49 miles downstream from the Cache Creek Dam, diverts water for distribution to agricultural users throughout Yolo County using a 200-mile network of canals. No minimum flow requirements have been set for Cache Creek below Capay Dam. Levees confine the stream channel in the lower 8 miles of Cache Creek until its terminus at the Cache Creek Settling Basin (SWRP, 2010).

Local Hydrology

Within the project site, the primary aquatic feature is North Fork Cache Creek. North Fork Cache Creek is a perennial creek and flows in a southerly direction through the project site. North Fork Cache Creek originates at Goat Mountain in the Mendocino National Forest and runs 16 miles before flowing into Indian Valley Reservoir. The North Fork joins the mainstream below Highway 20.



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Groundwater

The project site lies within the Clear Lake Cache Formation Groundwater Basin. The Clear Lake Cache Formation Groundwater Basin is east of Clear Lake and shares a boundary with the Burns Valley Groundwater Basin in the southwest (DWR, 2006). Lower Cretaceous marine and Mesozoic ultrabasic intrusive rocks line the southern portion of the basin, with the Franciscan Formation located to the north and west of the basin. The Cache Formation ranges in age from 1.6 to 1.8 million years old and is over 13,000 feet thick. The Cache Formation overlies the Franciscan Formation and Serpentine Ultramafic Rocks, and is the result of seismic and subsidence activity (DWR, 2006). There is only one water-bearing formation in the Clear Lake Cache Formation Groundwater Basin, the Cache Formation. The Cache Formation, generally of low porosity, is over 13,000 feet thick, and made up of sandstone, conglomerate, and gray sandstone. While groundwater levels have not been monitored in this formation, average-year agricultural demand is approximately 90 acre-feet per year (DWR, 2006).

Existing Water Quality

According to the Sacramento River Watershed Program (SRWP), the Cache Creek Watershed was a primary source of mercury used for gold mining in the Sierra and one half of all the mercury entering the Sacramento River system flows from the watershed. It is estimated that over 40 abandoned mines are found in the drainage (SRWP, 2010). The Sulphur Bank mine at Clearlake is a Superfund site undergoing clean-up and the Turkey Run-Abbott mine tailings have been restored. The BLM is currently working to clean up the Rathburn-Petrey Mine. In October 2005, the Central Valley RWQCB adopted a TMDL for mercury in Cache Creek (and tributaries Bear Creek, Sulphur Creek, and Harley Gulch) (SWRP, 2010). Cache Creek is also listed on the Clean Water Act Section 303(d) list as impaired for mercury toxicity.

Water Quality Objectives/Standards and Beneficial Uses

Beneficial uses are set in the Basin Plan for Cache Creek and include municipal and domestic supply; agricultural irrigation and stock watering; water contact recreation, and other noncontact recreation; warm and cold freshwater habitat; warm spawning habitat; and wildlife habitat (CVRWQCB, 2012).

Water quality objectives for surface waters in the region have been set for bacteria, bioaccumulation, biostimulatory substances, chemical components, mercury and methylmercury, color, dissolved oxygen (DO), floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, sulfide, tastes and odors, temperature, toxicity, and turbidity.

Water Quality Impacts

Construction-Related Impacts

Construction of the entire project is anticipated to take approximately one to two in water seasons depending on the alternative chosen. Alternative 1 will take one in-water season and alternative 2 will take approximately two in-water seasons.

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Construction activities would include the series of activities described above, under the Project Description, that would result in disturbance within and adjacent to North Fork Cache Creek. Proposed channel disturbance during construction, including grubbing and clearing, would result in a temporary increase in turbidity in and around the area of the in-channel construction footprint. In addition, the use of construction equipment and other vehicles could result in spills of oil, grease, gasoline, brake fluid, antifreeze, or other vehicle-related fluids and pollutants. Improper handling, storage, or disposal of fuels and materials or improper cleaning of machinery could cause surface water and groundwater quality degradation.

If dewatering is necessary, a temporary diversion system (described above) would be used to dewater the channel so that the proposed construction activities can occur. Short-term increases in turbidity are anticipated to occur during water diversion and dewatering activities, during the first flush of the stream channel when it is re-watered, and during the first rainstorms which may mobilize disturbed sediments within the project area. Turbidity increases could affect water quality up to 350-feet downstream of the diversion (NOAA Fisheries, 2014). Additionally, dewatering discharge could result in an adverse effect to water quality if the effluent contains chemical pollutants or high levels of sediment. While sediment is the primary pollutant of concern, all dewatering effluents such as nitrogen, oil and grease, total petroleum hydrocarbons, and sulfides could potentially impact water quality.

Large pieces of construction equipment may compress soil within the project work area, which could lead to a reduction in permeability and an increase in site runoff. However, this would not result in substantial alteration of site runoff or discharge, particularly due to the short construction period. In addition, there is the potential for some erosion to occur from the portions of the project site outside of the channel during project construction.

Potential impacts to water quality are limited to those discussed above and the proposed project would not otherwise substantially degrade water quality.

Operation-Related Impacts

Implementation of the proposed bridge replacement would not substantially modify the character of the project site in terms of sources of water pollutants. Vehicles traveling on Chalk Mountain Road would remain the primary sources of water pollutants at the project site. The project would not change the number of vehicles traveling on Chalk Mountain Road or alter other nearby land uses in the watershed.

Cumulative Impacts

NEPA and CEQA require that the direct, indirect, and cumulative impacts of proposed actions be assessed and disclosed. A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and future activities or actions. In the case of this Memorandum, water quality is the natural resource of primary concern. With preparation and implementation of BMPs as required under the SWPPP or WPCP and the avoidance and minimization

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measures discussed below, the proposed Project would not adversely affect water quality. There are no known concurrent projects within the vicinity of the project that would also contribute to water quality impacts to North Fork Cache Creek. In regards to future projects, smallscale recreation and rural residential are the types of projects that are most likely to occur in the vicinity of the Project. While future development within the watershed could result in water quality, erosion, and drainage impacts to the North Fork Cache Creek and surrounding waterways, the incremental effects of the proposed Project are not considerable when viewed in the context of effects from past projects and probable future projects. Future development within the watershed is subject to the federal, state, and local regulations described herein and would be required to implement BMPs to reduce water quality impacts to the extent practicable. Therefore, no adverse cumulative impacts are expected.

Avoidance and Minimization Measures

The proposed project is subject to Construction General Permit (Order No. 2009-0009-DWQ [as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ]) requirements, which requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The proposed project would comply with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit including preparing and implementing a SWPPP that identifies project specific Best Management Practices (BMPs) to protect water quality during project construction. These BMPs must meet the technical standards established by the permit related to conventional (e.g., sediment) and non-conventional (e.g., toxics) pollutants and must be designed and implemented to ensure the proposed project does not cause or contribute to a violation of water quality standards. The Caltrans Storm Water Quality Handbook has published a set of BMPs, which the proposed project must utilize in drafting the SWPPP. Through compliance with the NPDES program requirements and implementation of a SWPPP, water quality standards would not be violated during project construction. In addition, these measures shall conform to the provisions in Section 20-2 and 20-3 of the Caltrans Standard Specifications and the special provisions included in the contract for the Project. Erosion control measures to be included in the SWPPP or to be implemented by the County include the following:

Measure 1: Return Temporarily Disturbed Areas to Pre-Project Conditions

All temporarily disturbed areas will be returned to pre-Project conditions upon completion of construction. These areas will be properly protected from washout and erosion using appropriate erosion control devices including coir netting, hydroseeding, and revegetation. In sloped areas, additional erosion control measures would be applied including erosion control blankets and fiber rolls. If woody species (i.e., trees and large shrubs) are removed, these areas would be replanted with comparable native vegetation.

Measure 2: Develop and Implement Dewatering Plan

If dewatering is necessary, the contractor shall develop a dewatering plan describing the methods, materials, quantities, and locations of dewatering activities. All discharges from dewatering will adhere to the requirements of the General Waste Discharge Requirements/NPDES Permit for Dewatering and

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Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081/NPDES Permit No. CAG995001). A NOI shall be submitted to the CVRWQCB for approval before dewatering may commence. A completed Notice of Termination Form shall be submitted to the CVRWQCB after the permitted discharge is complete.

Measure 3: Develop Stormwater Pollution Prevention Plan and Implement Water Quality Best Management Practices

Before any ground-disturbing activities, the County shall prepare and implement a SWPPP (as required under the SWRCB's General Construction Permit Order 2009-0009-DWQ [and as amended by most current order(s)]) or a WPCP, as applicable, that includes erosion control measures and construction waste containment measures to ensure that waters of the state are protected during and after Project construction. The Plan (a SWPPP or WPCP) shall follow guidance in the current version of the Caltrans Stormwater Pollution Prevention Plan and the California Stormwater Quality Association (CASQA) BMP Handbook. The SWPPP shall include site design to minimize offsite storm water runoff that might otherwise affect adjacent lake or stream habitat.

The Plan (a SWPPP or WPCP) shall be prepared with the following objectives: (a) to identify pollutant sources, including sources of sediment, that may affect the quality of storm water discharges from the construction of the proposed Project; (b) to identify BMPs to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the Project during construction; (c) to outline and provide guidance for BMP monitoring; (d) to identify proposed Project discharge points and receiving waters; to address post-construction BMP implementation and monitoring; and (f) to address sedimentation, siltation, and turbidity.

The SWPPP shall require that the construction contractor implement BMPs to protect water quality within North Fork Cache Creek. Caltrans and CASQA have developed resources for preventing water pollution

during construction activities. Based on review of the Project, the following or similar BMPs may be used by the construction contractor when developing the SWPPP:

- Silt fence
- Hydraulic mulch
- Hydroseeding
- Fiber rolls
- Street sweeping
- Dewatering operations
- Pile driving operations (including CIDH piles)
- Material and equipment use over water
- Other spill control and prevention measures

Information on each proposed BMP is provided next, as excerpted from the Caltrans stormwater construction site BMP fact sheets (Caltrans 2003). In addition to the measures described below, the

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SWPPP will require that the Contractor cover or otherwise stabilize all exposed soil 48 hours prior to potential precipitation events of greater than 0.5 inch.

Best Management Practices

SC-1 and SC-5 Silt Fence and Fiber Rolls

The Contractor would install silt fencing, fiber rolls, or other equivalent erosion and sediment control measures between the designated work area and North Fork Cache Creek, as necessary, to ensure that construction debris and sediment does not inadvertently enter the waterway. Storage and stockpiling of earth materials near North Fork Cache Creek will be avoided if possible.

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site. For the Project, reinforced silt fencing anchored to keep the fence in place may be used to prevent debris and materials falling toward North Fork Cache Creek during demolition.

A fiber roll consists of wood excelsior, rice or wheat straw, or coconut fibers that is rolled or bonded into a tight tubular roll and placed on the toe and face slopes to intercept runoff, reduce its flow velocity, release the runoff as sheet flow; and provide removal of sediment from the runoff. For the Project, fiber rolls may be used at intervals on exposed slopes.

To ensure that wildlife are not trapped, tightly woven fiber netting (no monofilament netting) or similar material shall be used for erosion control or other purposes within the Project work limits. Coconut coir matting and burlap-contained fiber rolls are an example of acceptable erosion control materials.

SS-3 and SS-4 Hydraulic Mulch and Hydroseeding

Immediately after bridge construction is complete, all exposed soil shall be stabilized. Soil stabilization may include, but is not limited to, seeding with a native grass seed mix, planting native plants and placement of rock. Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix and a stabilizing emulsion or tackifier with hydroseeding equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind. Hydroseeding typically consists of applying a mixture of wood-fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects exposed soils from erosion by water and wind. Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established; or disturbed soil areas that must be re-disturbed following an extended period of inactivity.

The hydraulic mulch should be used in conjunction with a native seed mix applied to the disturbed soil. Disturbed soil areas and areas where existing pavement is removed would be reseeded using a California native plant seed blend. An erosion control seed mix (hydroseed) would be applied in

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disturbed soil area and on slopes flatter than 1:1. Erosion control (e.g., Bonded Fiber Matrix with a native plant seed blend) would be applied on all disturbed or cut slopes steeper than 1:1.

SC-7 Street Sweeping

Street sweeping and vacuuming is used to remove tracked sediment to prevent the sediment from entering a storm drain or watercourse. These practices would be implemented anywhere sediment is tracked from the Project area and staging area onto public or private paved roads, typically at points of ingress/egress. For the Project, street sweeping may be used along Chalk Mountain Road.

NS-2 Dewatering Operations

Dewatering Operations are practices that manage the discharge of pollutants when nonstormwater and accumulated precipitation (stormwater) must be removed from a work location so that construction work may be accomplished. Dewatering operations are used to manage removal of water from excavations, cofferdams, diversions, barges, and areas of ponding (accumulated precipitation). Proper dewatering management prevents discharge of pollutants from these operations to a storm drain or receiving waters. These practices are implemented for discharges of non-stormwater and stormwater (accumulated rain water) from construction sites. Non-stormwater includes groundwater, dewatering of piles, water from cofferdams, water diversions, and water used during construction activities that must be removed from a work area. Dewatering may be required during pile construction. Dewatering during pile construction activities will need to account for changes in pH associated with concrete contact water. High pH water (pH > 8.5) must be managed to prevent any discharges to receiving waters. Discharges of high pH water to land (upland disposal) must be approved by the RWQCB prior to disposal. These measures would be incorporated into the dewatering plan; see **Measure 2** above.

NS-11 Pile Driving Operations (including CIDH Piles)

Proper control and use of equipment, materials, and waste products from pile driving operations reduces the discharge of potential pollutants to the storm drain system or watercourses. Caltrans has identified procedures which apply to construction sites near or adjacent to a watercourse or groundwater where permanent and temporary pile driving operations (impact and vibratory) take place, including operations using pile shells for construction of cast-in-steel-shell and cast-in-drilled-hole piles. These procedures would be used during Project construction to address CIDH operations.

NS-13 Material and Equipment Use over Water

Caltrans has established procedures for the proper use, storage, and disposal of materials and equipment on barges, boats, temporary construction pads, or similar locations over or adjacent to a watercourse. These measures minimize or eliminate the discharge of potential pollutants to a watercourse.

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NS-15 Structural Demolition/Removal Over or Adjacent to Water

During bridge demolition and removal, measures will be used to protect North Fork Cache Creek from debris and waste associated with the demolition. These measures include using attachments on construction equipment, platforms, or other means to catch debris.

Other Spill Prevention and Control Measures

The SWPPP will include a waste management section that provides procedural and structural BMPs for collecting, handling, storing, and disposing of wastes generated by the construction project to prevent the accidental release of pollutants during construction. For example, no refueling, storage, servicing, or maintenance of equipment shall take place within 100 feet of aquatic habitat, and all machinery used during construction of the Project shall be properly maintained and cleaned to prevent spills and leaks that could contaminate soil or water. The SWPPP also includes measures to report, contain, and mitigate for any accidental spills during construction. Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.

Conclusion

Construction of the Project has the potential to impact water quality on a short-term, temporary basis. In order to protect the water quality of North Fork Cache Creek from construction-related impacts, the following agency coordination and regulatory permits are anticipated for the proposed project. All BMP's and other avoidance/minimization measures will be prepared in consultation with the project engineer, County of Lake, Central Valley RWQCB, and other appropriate agencies.

- The proposed project would require an NPDES General Construction Permit for Discharges of storm water associated with construction activities (Construction General Permit (Order No. 2009-0009-DWQ [as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ])). A SWPPP would also be developed and implemented as part of the Construction General Permit. In addition, the following NPDES permits may also be required:
 - State Water Resources Control Board Water Quality Order No. 2003-003-DWQ General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality
 - CVRWQCB Waiver of Reports of Waste Discharge within the Central Valley Region (Resolution R5-2013-0145).
- U.S. Army Corps of Engineers – Clean Water Act, Section 404, Nationwide Permit #14 (Linear Transportation Projects).
- California Department of Fish and Wildlife – California Endangered Species Act Section 1600-1602 Streambed Alteration Agreement.
- Regional Water Quality Control Board - Clean Water Act, Section 401 Water Quality Certification.

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Should you need additional information or have any questions, please do not hesitate to contact me at (916) 363-4210.

Very truly yours,

Drake Haglan & Associates



Lindsay Tisch, CPSWQ, QSD
Environmental Planner – Biologist

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