California Department of Fish and Wildlife
Fisheries Restoration Grant Program
P.O. Box 944209
Sacramento, CA 94244-2090

SCH No. 2018092067
Project title: The 2018 Fisheries Habitat Restoration Project

Mitigated Negative Declaration Adoption
(Pursuant to the California Environmental Quality Act, Article 6, Section 15074)

These projects use grant funds approved by the California Legislature to initiate activities that are designed to restore salmon and steelhead habitat in coastal streams and watersheds. Years of poor land management within California's watersheds, combined with natural events have altered native habitats. These impacts have limited the ability of fish to survive and successfully reproduce in coastal streams that historically produced large populations of salmon and steelhead. These proposed projects are designed to increase populations of wild anadromous fish in coastal streams by restoring their habitat.

The projects objectives are to improve spawning success for adult salmon and steelhead as well as to increase survival for eggs, embryos, and rearing juvenile salmonids. Bank erosion and riparian enhancement treatments improve spawning conditions and embryo survival by reducing sediment yield to streams. Upslope road decommissioning or upgrading also help address these widespread problems. The replacement of migration barriers at stream crossings with bridges or natural stream bottom culverts allow adult and juvenile salmonids access to additional spawning and rearing habitats. The installation of instream habitat improvement structures recruit and sort spawning gravel for adult salmon and steelhead, and create summer rearing pool and over-wintering habitat for juveniles.

Location and custodian of the mitigated negative declaration (MND) documents:

California Department of Fish and Wildlife,
Fisheries Restoration Grant Program
1700 9th Street
Sacramento, CA 95814

Attention: Timothy Chorey
Office: (916) 327-8842
Fax: (916) 327-8854

Determination:
Initial study, mitigation measures, and MND documents have been prepared by the California Department of Fish and Wildlife (CDFW), Fisheries Restoration Grant Program (FRGP). On the basis of this study, it is determined these proposed actions with the incorporation of the identified mitigation measures will not have a significant (negative) effect on the environment for the following reasons:

The Finding:
Although these projects may have the potential to cause minor short-term impacts on soil, vegetation, wildlife, water quality, and aquatic life, the measures that shall be incorporated into the project will diminish impacts to insignificant level (see initial study and environmental checklist).

Basis for the Finding:
Based on the initial study, it was determined that there would not be significant adverse environmental effects resulting from implementing the proposed project. In addition, these projects are expected to achieve a net benefit to the environment by enhancing and maintaining quality salmonid spawning and rearing habitat in the eleven-county project area.

The CDFW finds that implementing these proposed projects will not have a significant environmental impact.

This MND consists of all of the following:

- Introduction - Project Description and Background Information
- Initial Study Environmental Checklist Form
- Explanation of Response to Initial Study Environmental Checklist Form
- Appendix A.
    - Table of Non-physical and Action Items
    - State-wide Action Items Location Maps
- Appendix B. Mitigation Measures, Monitoring and Reporting Program For the 2018 Fisheries Restoration Grant Program, the Steelhead Report and Restoration Card Program, and the Forest Land Anadromous Restoration projects
- Appendix C. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities
- Appendix D. Procedure for the Programmatic Evaluation of Paleontological Resources for the Fisheries Restoration Grant Program
- Appendix E. Procedure for the Programmatic Evaluation of Archaeological Resources for the Fisheries Restoration Grant Program

Monitoring Plan:
Project monitoring is considered an important element in the activity development and implementation process. The monitoring process provides performance control during the activity and also helps provide a measure of the benefits, insight, and guidance for future projects.

Activity during implementation is overseen by a CDFW grant manager and is geared to ensure that all regulatory environmental issues are strictly addressed including air, water, and avoiding impacts to sensitive plant and animal species. During implementation, activities are carefully monitored to make sure plans are followed and that the correct materials and techniques are used so that the objectives of the activities are met while protecting the environment.

Post-activity monitoring begins with information collected immediately after the activity is completed and documents whether the project was completed as designed and according the grant specifications. This information includes documenting the exact location where the activity has occurred with reference points and survey marks. Final project reports should contain "as-built" descriptions with design drawings and photographs (both before and after the activity) are collected. A complete activity description including the objectives of the activity must be retained.

The next phase of post-activity monitoring is designed to assess the efficacy of the project and shall occur within one to three years after an action item is complete. The CDFW shall randomly select 10 percent of the action items within each project work type for effectiveness/validation monitoring. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. This evaluation shall be recorded on standard project evaluation forms. Effectiveness monitoring addresses the physical response associated with an activity, while validation monitoring evaluates fish response to the project. Pre-treatment monitoring shall be preformed for newly selected projects, and post-treatment monitoring will be preformed within three years following project completion.

Complete monitoring specifications are included on the CDFW's web site, http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp. Additional details on monitoring and reporting requirements are presented in Appendix B.

Adoption Statement

Pursuant to Section 21082.1 of the California Environmental Quality Act (CEQA), the CDFW has independently reviewed and analyzed the Initial Study and Negative Declaration for these proposed projects and finds these documents reflect the independent judgment of the CDFW. The CDFW, as lead agency, also confirms the project mitigation measures and monitoring plan detailed in these documents are feasible and shall be implemented as stated in the MND. The CEQA initial study findings and the MND was adopted by:

Laura Valoppi Date: 11/28/18

Laura Valoppi, Branch Chief,
Watershed Restoration Grant Branch

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

November 14, 2018

Timothy Chorey
CDFW, Watershed Restoration Grants Branch
PO Box 944209
Sacramento, CA 94244-2090

Subject: The 2018 Fisheries Habitat Restoration Project
SCH#: 2018092067

Dear Timothy Chorey:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. The review period closed on November 13, 2018, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Document Details Report
State Clearinghouse Data Base

SCH# 2018092067
Project Title The 2018 Fisheries Habitat Restoration Project
Lead Agency Fish & Wildlife (HQ) Environmental Services

Type MND Mitigated Negative Declaration
Description Note: Extended Review per lead

This project uses grant funds approved by the California Legislature to initiate activities that are designed to restore salmon and steelhead trout habitat.

Lead Agency Contact

Name Timothy Chorey
Agency CDFW, Watershed Restoration Grants Branch
Phone 916-327-8842 **Fax**
email
Address PO Box 944209
City Sacramento **State** CA **Zip** 94244-2090

Project Location

County
City
Region
Lat / Long
Cross Streets
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways
Airports
Railways
Waterways
Schools
Land Use

Project Issues Other Issues

Reviewing Agencies Resources Agency; California Coastal Commission; Cal Fire; Office of Historic Preservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Caltrans, Division of Transportation Planning; State Water Resources Control Board, Divison of Financial Assistance; State Water Resources Control Board, Division of Water Quality; Native American Heritage Commission; Santa Monica Bay Restoration; State Lands Commission; San Diego River Conservancy

Date Received 09/28/2018 **Start of Review** 09/28/2018 **End of Review** 11/13/2018

Note: Blanks in data fields result from insufficient information provided by lead agency.

Notice of Determination

Appendix D

To:
☒ Office of Planning and Research

U.S. Mail:
P.O. Box 3044
Sacramento, CA 95812-3044

Street Address:
1400 Tenth St., Rm 113
Sacramento, CA 95814

☐ County Clerk
County of: _____
Address: _____

From:
Public Agency: Department of Fish and Wildlife
Address: P.O. Box 944209
Sacramento, CA 944209
Contact: Timothy Chorey
Phone: 916.327.8842

Lead Agency (if different from above):
_____
Address: _____
_____
Contact: _____
Phone: _____

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2018092067

Project Title: The 2018 Fisheries Habitat Restoration Project

Project Applicant: California Department of Fish and Wildlife

Project Location (include county): Various coastal counties

Project Description:
This project uses grant funds approved by the California Legislature to initiate activties that are designed to restore salmon and steelhead trout habitat.

This is to advise that the California Department of Fish and Wildlife (☒ Lead Agency or ☐ Responsible Agency) has approved the above described project on 11/27/2018 (date) and has made the following determinations regarding the above described project.

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.
6. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:
1700 9th Street, 2nd Floor Sacramento, CA 95811

Signature (Public Agency): [signature] Title: WRGB Branch Chief

Date: 11/28/18 Date Received for filing at OPR:

Governor's Office of Planning & Research
NOV 28 2018
STATE CLEARINGHOUSE

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH# 2018092067

Project Title: The 2018 Fisheries Habitat Restoration Project

Lead Agency: Dept. Fish & Wildlife, Watershed Restoration Grants Branch Contact Person: Timothy Chorey

Mailing Address: P.O. Box 944209 Phone: 916-327-8842

City: Sacramento Zip: 94244-2090 County: Sacramento

Project Location: County: Various Coastal Counties City/Nearest Community: Various coastal communities

Cross Streets: _____ Zip Code: _____

Longitude/Latitude (degrees, minutes and seconds): ____° ____′ ____″ N / ____° ____′ ____″ W Total Acres: _____

Assessor's Parcel No.: _____ Section: _____ Twp.: _____ Range: _____ Base: _____

Within 2 Miles: State Hwy #: _____ Waterways: _____

Airports: _____ Railways: _____ Schools: _____

Document Type:

CEQA: ☐ NOP ☐ Draft EIR NEPA: ☐ NOI Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☐ Neg Dec (Prior SCH No.) _____ ☐ Draft EIS ☐ Other: _____
☒ Mit Neg Dec Other: _____ ☐ FONSI

Governor's Office of Planning & Research
SEP 28 2018
STATE CLEARINGHOUSE

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☒ Other: Restoration

Development Type:

☐ Residential: Units _____ Acres _____
☐ Office: Sq.ft. _____ Acres _____ Employees _____
☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
☐ Educational: _____
☐ Recreational: _____
☐ Water Facilities: Type _____ MGD _____
☐ Transportation: Type _____
☐ Mining: Mineral _____
☐ Power: Type _____ MW _____
☐ Waste Treatment: Type _____ MGD _____
☐ Hazardous Waste: Type _____
☐ Other: _____

Project Issues Discussed in Document:

☐ Aesthetic/Visual ☐ Fiscal ☐ Recreation/Parks ☐ Vegetation
☐ Agricultural Land ☐ Flood Plain/Flooding ☐ Schools/Universities ☐ Water Quality
☐ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☐ Water Supply/Groundwater
☐ Archeological/Historical ☐ Geologic/Seismic ☐ Sewer Capacity ☐ Wetland/Riparian
☐ Biological Resources ☐ Minerals ☐ Soil Erosion/Compaction/Grading ☐ Growth Inducement
☐ Coastal Zone ☐ Noise ☐ Solid Waste ☐ Land Use
☐ Drainage/Absorption ☐ Population/Housing Balance ☐ Toxic/Hazardous ☐ Cumulative Effects
☐ Economic/Jobs ☐ Public Services/Facilities ☐ Traffic/Circulation ☒ Other: Watershed

Present Land Use/Zoning/General Plan Designation:

Project Description: *(please use a separate page if necessary)*

This project uses grant funds approved by the California Legislature to initiate activities that are designed to restore salmon and steelhead trout habitat.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

____	Air Resources Board	____	Office of Historic Preservation
____	Boating & Waterways, Department of	____	Office of Public School Construction
____	California Emergency Management Agency	X	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
X	Caltrans District # 1245	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	X	Regional WQCB # 1234
____	Caltrans Planning	____	Resources Agency
____	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
X	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	____	San Joaquin River Conservancy
____	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	____	State Lands Commission
____	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	X	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
____	Fish & Game Region # ____	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
X	Forestry and Fire Protection, Department of	____	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	____	Other: ____
____	Housing & Community Development	____	Other: ____
____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date _____ Ending Date _____

Lead Agency (Complete if applicable):

Consulting Firm: _____
Address: _____
City/State/Zip: _____
Contact: _____
Phone: _____

Applicant: Dept. Fish & Wildlife Watershed Restoration Grants Branch
Address: P.O. Box 944209
City/State/Zip: Sacramento, CA 94244-2090
Phone: 916-327-8842

Signature of Lead Agency Representative: Laura Cholodenko **Date:** 9/27/18

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

STATE OF CALIFORNIA

THE RESOURCES AGENCY

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

MITIGATED NEGATIVE DECLARATION

FOR

THE 2018 FISHERIES HABITAT RESTORATION PROJECT IN HUMBOLDT, MARIN, MENDOCINO, SANTA BARBARA, SISKIYOU, AND SONOMA COUNTIES AND REQUIRED AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

Prepared By:

Fisheries Restoration Grant Program

This Report Has Been Prepared Pursuant to the
California Environmental Quality Act of 1970
State of California
The Resources Agency
California Department of Fish and Wildlife

INITIAL STUDY
AND
MITIGATED NEGATIVE DECLARATION
FOR
THE 2018 FISHERIES HABITAT RESTORATION PROJECT
IN
HUMBOLDT, MARIN, MENDOCINO, SANTA BARBARA, SISKIYOU, AND SONOMA COUNTIES
AND
REQUIRED AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

The Project: This project uses grant funds approved by the California Legislature to initiate activities that are designed to restore, enhance, and protect salmon and steelhead trout (*Oncorhynchus mykiss*) habitat in coastal and central valley streams and watersheds. Years of poor land management within California's watersheds which combined with natural events has altered native habitats. This has limited the ability of fish to survive and successfully reproduce in coastal and central valley streams that historically produced large populations of salmon and steelhead trout. These proposed projects are designed to increase populations of wild anadromous fish in coastal and central valley streams by restoring ecological function to their habitat.

The project's objectives are to improve spawning success for adult salmon and steelhead trout as well as to increase survival for eggs, embryos, and rearing juvenile salmonids. Bank erosion and riparian enhancement treatments improve spawning conditions and embryo survival by reducing sediment yield to streams. Upslope road decommissioning or upgrading also help address these widespread problems. The replacement of migration barriers at stream crossings with bridges or natural stream bottom culverts allow adult and juvenile salmonids access to additional spawning and rearing habitats. The installation of instream habitat improvement structures recruit and sort spawning gravel for adult salmon and steelhead trout, and create summer rearing pool and over-wintering habitat for juveniles.

The Finding: Although the projects may have the potential to cause minor short-term impacts on soil, vegetation, wildlife, water quality, and aquatic life, the measures that shall be incorporated into the project will lessen such impacts to a level that is less than significant (see initial study and environmental checklist).

Basis for the Finding: Based on the initial study, it was determined there would be no significant adverse environmental effects resulting from implementing the proposed project. In addition, the project is expected to achieve a net benefit to

the environment by enhancing and maintaining quality salmonid spawning and rearing habitat in the six-county project area.

The California Department of Fish and Wildlife (CDFW) finds that implementing the proposed projects will have no significant environmental impact.

Therefore, this mitigated negative declaration is filed pursuant to the California Environmental Quality Act (CEQA), Public Resources Code § 21080 (c2) and Title 14 CCR § 763. This proposed mitigated negative declaration consists of all of the following:

- **Introduction - Project Description and Background Information**
- **Initial Study Environmental Checklist Form**
- **Explanation of Response to Initial Study Environmental Checklist Form**
- **Appendix A.**
    - **Non-physical Items**
    - **Action Items**
    - **State-wide Action Items Location Maps**
- **Appendix B. Mitigation Measures, Monitoring and Reporting Program For the 2018 Fisheries Habitat Restoration Project**
- **Appendix C. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities**
- **Appendix D. Procedure for the Programmatic Evaluation of Paleontological Resources for the Fisheries Habitat Restoration Project**
- **Appendix E. Procedure for the Programmatic Evaluation of Archaeological Resources for the Fisheries Habitat Restoration Project**

DETAILED PROJECT DESCRIPTION AND BACKGROUND INFORMATION

FOR

THE 2018 FISHERIES HABITAT RESTORATION PROJECT
IN
HUMBOLDT, MARIN, MENDOCINO, SANTA BARBARA, SISKIYOU, AND SONOMA COUNTIES
AND
REQUIRED AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

INTRODUCTION

The 2018 Fisheries Habitat Restoration (FHR) project is awarding Fisheries Restoration Grant (FRGP), Steelhead Report and Restoration Card (SHRRC) Program, and Forest Land Anadromous Restoration (FLAR) grants for projects in Humboldt, Marin, Mendocino, Santa Barbara, Siskiyou, and Sonoma counties. These projects are subject to review under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). CDFW received 94applications in response to its 2018 FHR Proposal Solicitation Notice. For some of those applications, a lead agency has already prepared an environmental impact report or negative declaration for its approval of the project proposed in the application. Accordingly, the projects proposed in such applications are not included in this Initial Study and MND.

CDFW conducted administrative reviews on all applications it received in response to its 2018 FHR Proposal Solicitation Notice and technical reviews on all applications that passed administrative review. Based on those reviews, CDFW is considering funding, in whole or in part, up to 58 habitat restoration items that are included in this Initial Study and MND: 22 action items and 36 non-physical items. At the time this document is being prepared, CDFW has not made final funding decisions on these items. Therefore, some of the items described in this document may not receive funding from the CDFW. This analysis includes all 58 habitat restoration items in order to disclose the greatest possible potential impacts that could result from CDFW's implementation of the FHR project.

The 22 action items, which are discussed in detail in the environmental analysis that follows (listed in Appendix A, Action Items) are the principal focus of the environmental analysis set forth below.

The 36 non-physical items are proposed to be carried out within various counties of the California. These non-physical items involve activities such as watershed evaluation, assessment, project planning, technical training, monitoring, and public involvement. Each of these non-physical items are identified in Appendix A, Non-Physical Items. If reviewed individually, these items would likely be appropriate for categorical exemptions such as CEQA Guidelines § 15262 (Feasibility and Planning Studies), § 15306 (Information Collection), and § 15313 (Acquisition of

Lands for Wildlife Conservation Purposes). However, as part of the FHR project, these items are included within the analysis of this Initial Study and MND. Because these items are limited to non-physical activities that would not be anticipated to result in any environmental impacts or result in significant impacts due to unusual circumstances, they would not incrementally add to any potentially significant impacts that may result from the non-physical Items. Therefore, these non-physical items are not discussed further in the analysis.

The initial study and MND also serve to address potential environmental impacts that may occur to the extent an individual restoration activity requires a Lake and Streambed Alteration Agreement (LSA) from the CDFW (See Fish and Game Code, § 1600 et seq.). Construction of all or a portion of some of the individual restoration activities may actually occur in subsequent years, depending on the terms for each individual FHR grant awarded by CDFW.

PROJECT GOAL AND OBJECTIVES

The primary goal of the FHR project is to maintain and restore natural watershed and river processes that create habitat characteristics favorable to salmonids.

The objectives of the FHR action items are to enhance the capability of streams to produce wild anadromous salmonids by maintaining, restoring, and improving stream function essential to salmonid production.

Finally, it is the CDFW's objective to implement this project while not causing a significant adverse effect on the environment, or reducing the number or restricting the range of an endangered, threatened, or rare species.

BACKGROUND

The CDFW may grant funds for habitat restoration to public and nonprofit organizations and Native American tribes. Sections 1501 and 1501.5 of the Fish and Game Code and section 6217.1 of the Public Resources Code pertain to activities funded by the CDFW.

The FRGP was established in 1981 and is administered by the CDFW. This program was initiated by the precipitous drop in the population of fish in coastal streams, mainly salmon and steelhead trout. This program was developed as a mechanism to administer grant funds designated for the restoration of fish populations. Through the past several decades to the present time, funds allocated by the California Legislature have been used in this grant program in an effort to rebuild fish populations (see Fish and Game Code § 6900 et seq.). Initially, grants were awarded in three categories: stream restoration, fish rearing, and education. Since 1997, a more holistic restoration approach has been emphasized that facilitates habitat enhancement throughout the watershed.

There are many factors responsible for the decline of California salmon and steelhead trout stocks. One important factor is the degradation of stream habitats. Activities in watersheds including logging, mining, road building, livestock grazing, water diversions, urban sprawl and dam construction have seriously impacted the ability of fish to survive and reproduce. For example, excessive fine-sediment has reduced egg and fry survival, removal of riparian vegetation has contributed to increased water temperatures, habitats have been impaired by water diversions, and culverts and dams have blocked fish passage. Habitat destruction has been instrumental in drastically reducing native anadromous fish populations. Natural events such as wildfire, drought, and floods have exacerbated these problems and accelerated the alteration of habitat further. The resulting decline in fish populations has caused extreme financial hardship to a once thriving commercial fishery and drastically reduced, or in some cases eliminated, a very popular sport fishery. Poor ocean conditions resulting in the collapse of the marine food chain along with the various factors stated above has culminated in the population crash of the Central Valley Chinook Salmon (*Oncorhynchus tshawytscha*) in 2008 and 2009. This event prompted the closure of recreational and commercial ocean salmon season in 2008 and 2009. Most stocks have been reduced to the point where listing under the Federal and State Endangered Species Acts has become necessary.

The FRGP was instituted because the critical need to restore salmon and steelhead trout habitat was recognized. Guided by the *California Salmonid Stream Habitat Restoration Manual* 4th Edition (Flosi et al., 2010), hundreds of habitat restoration actions funded by the FRGP have been completed by government agencies, Indian Tribes and nonprofit groups. Activities have included revegetation with livestock exclusion fencing, riparian planting, removal of barriers to fish passage, bank stabilization and other bank protection structures, decommissioning of roads, and improving drainage systems on existing roads. Instream structures such as boulder clusters, wing deflectors, and log cover have also been used. Road crossings that have impeded fish migration have been replaced with bridges or culverts with natural stream bottoms allowing fish to access additional stream reaches. Finally, other watershed improvement activities include installation of fish screens to prevent entrainment of juvenile salmon and steelhead trout. These actions create spawning and nursery habitat, provide escape cover and prevent fine sediments from entering streams. Project monitoring has shown significant habitat improvements in streams where this work has taken place. A gradual rebuilding of salmon and steelhead trout populations is expected as this program continues.

The SHRRC program gathers angler information, which is used by CDFW to make fisheries management and regulatory decisions as well as track angling trends. Funds generated from Report Card sales support the program and are also used to fund restoration projects that help conserve, monitor, and recover steelhead troutpopulations statewide. Since SHRRC funds are generated by anglers, restoration projects must benefit steelhead trout and have either a direct or an indirect benefit to anglers.

The FLAR funds projects in forested watersheds to restore conditions beneficial to State and/or federally listed Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon, or steelhead trout. FLAR projects are funded by the Timber Regulation and Forest Restoration Fund. FLAR projects must address legacy impacts of forest management such as impeded fish passage at forest road stream crossings, sediment discharge from old forest roads and landings, and lack of in-stream large woody debris providing rearing habitat.

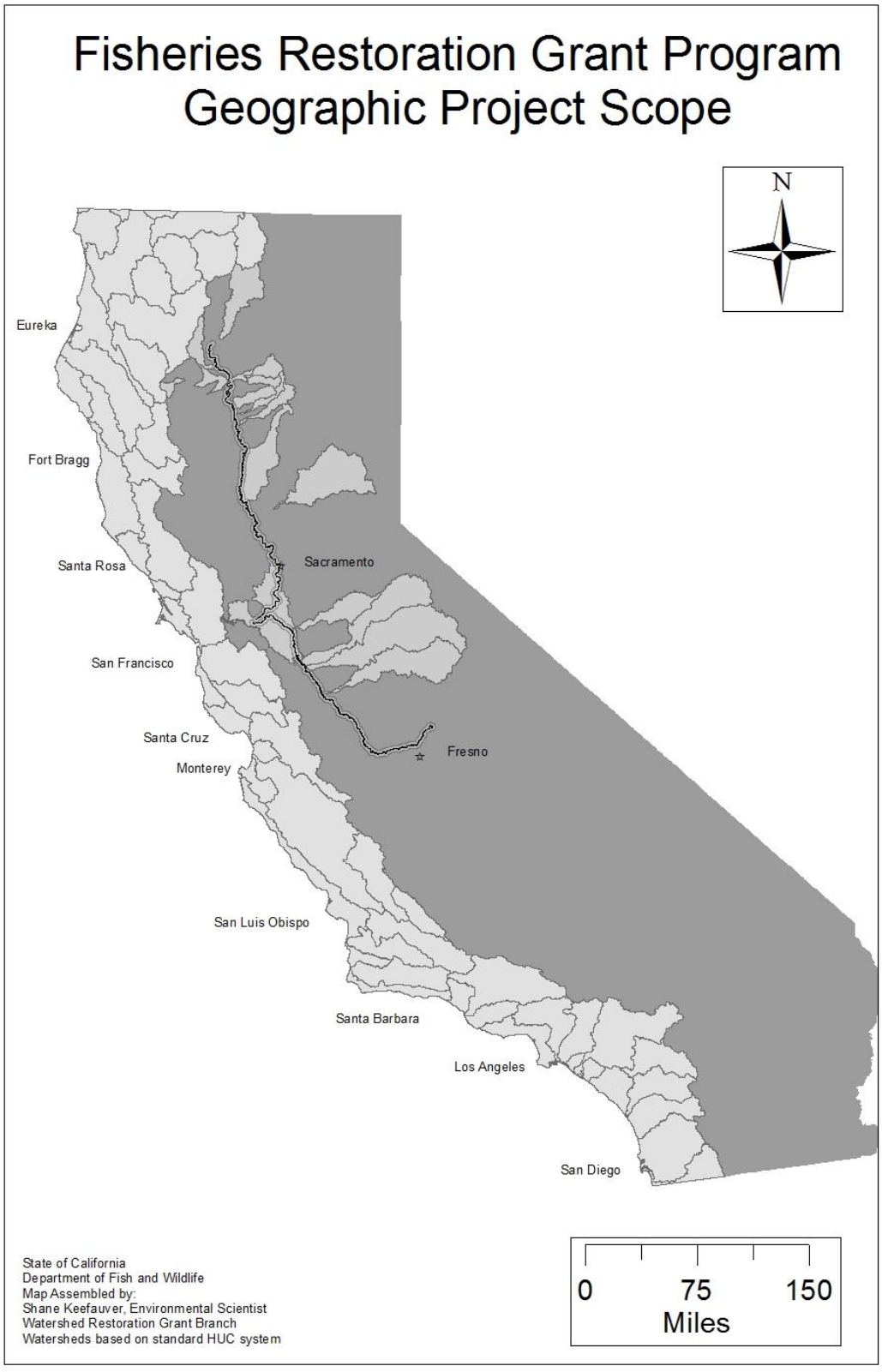
PROJECT LOCATION

Activities performed in the FHR occur in watersheds that have been subjected to significant levels of logging, road building, mining, grazing, and other activities that have reduced the quality and quantity of stream habitat available for native anadromous fish.

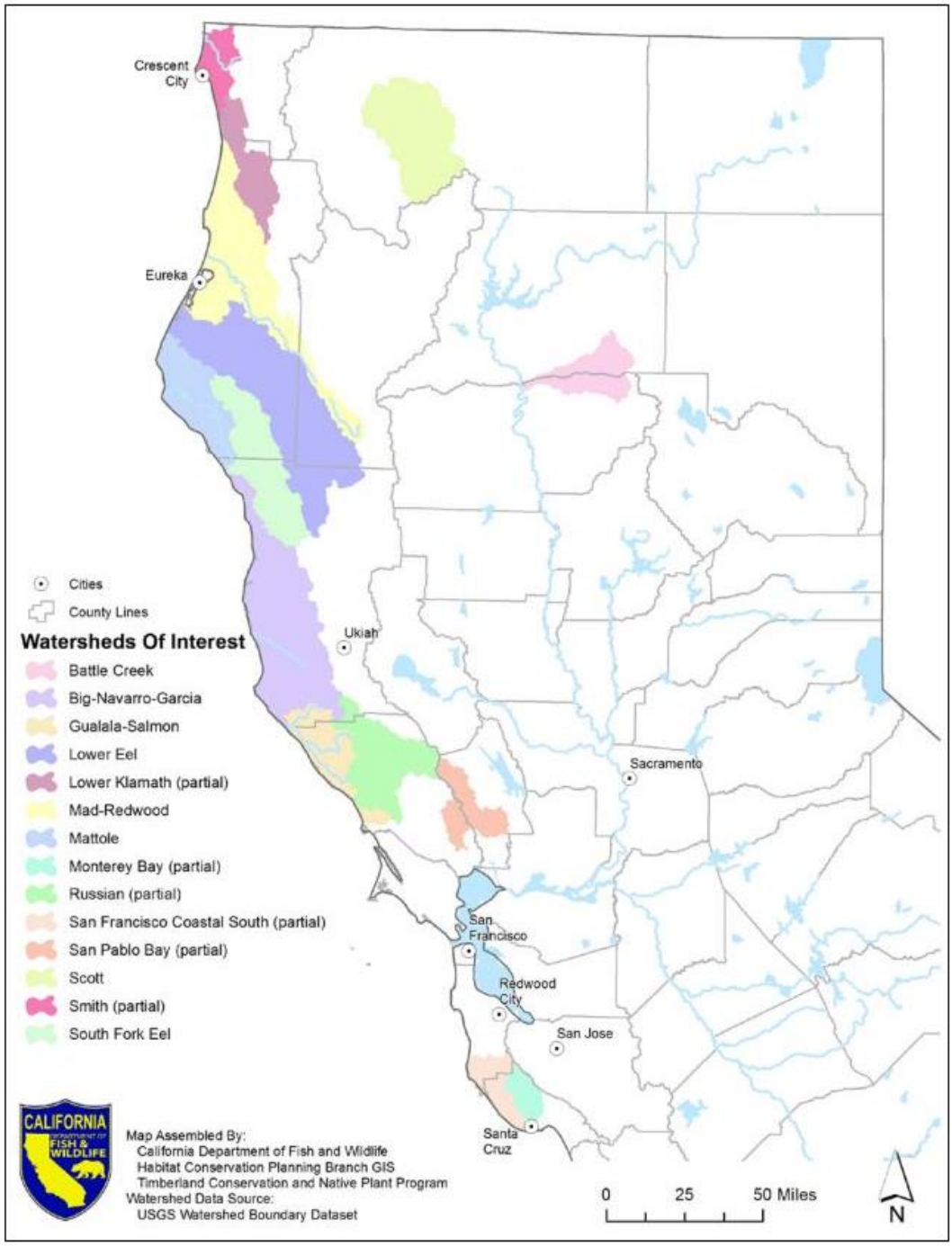
Coastal watersheds previously dominated by mature redwood and Douglas fir forests, contain extensive road and skid trail systems from tractor logging. These previous mature, forested areas can now be found in various seral stages of vegetative recovery and are predominate in the coastal FRGP region. Action items are implemented within the stream course to improve fish habitat. Upslope restoration actions improve fish habitat by reducing the input of fine sediment to the stream environment.

Inland locations are usually in watersheds dominated by pine and fir forests, often with steep unstable terrain; some inland locations are in valley areas in agricultural use. Most restoration activities are intended to reduce sediment delivery to streams, and provide spawning and rearing habitat in the streams. Streams flowing through valley areas will be treated to stabilize stream banks and increase riparian vegetation.

Map 1 illustrates the FRGP geographic range, which include the coastal limits of anadromy and the inland range of anadromy in the Central Valley. Map 2 illustrates the FLAR geographic range; FLAR projects focus on restoring habitat impacted by forest management on private and nonfederal public forests.



Map 1: Area covered by FRGP



Map 2: Area covered by Forest Land Anadromous Restoration

SCHEDULE

The activities carried out in the FHR project will typically occur during the annual period of dry weather. Stream work is normally confined to the period of June 15 through November 1 or the first significant fall rainfall, whichever comes first. This is to take advantage of low stream flows and is outside the spawning and egg/alevin incubation period of salmon and steelhead trout.

Generally, upslope work occurs during the same approximate period. Road decommissioning and other sediment reduction activities are dependent on soil moisture content. Equipment access on dirt roads and the ability of equipment to move soil is inhibited by wet conditions. The scheduling of upslope work may also be affected by the avoidance of nesting or breeding seasons of birds and terrestrial animals.

Some activities may continue after November 1, but the extent of such activities is limited through grant conditions and compliance with any required permit. Post-November 1 activities are generally limited to hand planting of tree seedlings, which typically does not begin until December 1 and may continue until the end of March. Planting during the wet season is necessary to ensure the best survival of seedlings.

PROJECT DESCRIPTION

The CDFW releases an annual FHR Proposal Solicitation Notice (Solicitation) for proposals to fund fishery restoration, watershed assessment, and planning work throughout California. CDFW received 94 applications in response to its 2018 FHR Proposal Solicitation Notice. For some of those applications, a lead agency has already prepared an environmental impact report or negative declaration for its approval of the project proposed in the application. Accordingly, the projects proposed in such applications are not included in this Initial Study and MND. CDFW conducted administrative reviews on all applications it received in response to its 2018 FHR Proposal Solicitation Notice and technical reviews on all applications that passed administrative review. That process involved consideration of benefits to the fishery resources; the benefit for targeted species; project costs; potential environmental impacts of proposed projects; and the need for work in particular drainages or sites, which utilized various watershed assessment and planning work done by CDFW and others, including work previously funded through the FHR. Based on those reviews, CDFW is considering funding up to 58 habitat restoration items that are included in this Initial Study and MND: 22 action items and 36 non-physical items. Those 58 habitat restoration items include funding proposals for projects in Humboldt, Marin, Mendocino, Santa Barbara, Siskiyou, and Sonoma counties. Prior to making final funding decisions, the Director of CDFW will consider the recommendations of the FHR Technical Review Team and this MND together

with any comments received during the public review process for this MND. CDFW will then develop and execute grant agreements for the non-physical and action items selected for funding.

FHR operates under two Regional General Permits (RGP) issued by the U.S. Army Corps of Engineers (USACE). These permits cover most of the action items in the FHR project. RGP12 (file number: 2003-27922N) was issued in 2010 and renewed in 2016 by the USACE San Francisco District and covers action items implemented within the regulatory boundaries of the San Francisco District. RGP78 (file number: SPL-2003-01123-BAH) was issued in 2009 and re-issued in 2014 by the USACE Los Angeles District and covers action items implemented within the regulatory boundaries of the Los Angeles District. The RGPs allow the CDFW, grantees, and other individuals and groups to conduct fishery habitat restoration activities using methods described in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al 2010) that have been evaluated by CDFW biologists. The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service (USFWS) have issued biological opinions, which are incorporated into the corresponding RGPs. The biological opinions address the impacts of the FHR project and stipulate the mitigations that shall be implemented to avoid and/or minimize impacts to listed species.

CDFW will submit an application for a programmatic Section 401 Water Quality Certificate to the State Water Resources Control Board for the 2018 FHR project items covered by the RGP12 and RGP78. That application will include a description of project work and methods to prevent impacts to water quality.

The CDFW's Lake and Streambed Alteration Agreement process (Fish and Game Code § 1600 et seq.) is an integral part of stream restoration planning and implementation. An agreement is developed for each action item, which defines required measures to minimize disturbance to the stream environment. Procedures to accomplish this task are contained in the CDFW Lake and Streambed Alteration Program (1600) webpage https://www.wildlife.ca.gov/Conservation/LSA. Activities such as installing replacement culverts to provide fish passage, operating equipment in or near streams, and installing bank stabilizing structures are all discussed in the context of minimizing impacts, and all required measures for species protection discussed in this document are incorporated into the agreement for each project.

All features of this project requiring CEQA review are being provided in sufficient detail to facilitate public review and clearly define the environmental evaluation. In order to achieve this goal, the FHR project items are considered to fall into two categories corresponding to similar activities and requirements for CEQA review. These two categories of items are as follows.

Public Involvement, Planning, Research, Monitoring, and Habitat Acquisition – Non-physical Items

Non-physical items in this category include watershed evaluation, assessment, planning, habitat acquisition, and monitoring projects. The 36 non-physical items are listed in Appendix A, Non-physical Items. The non-physical items are all appropriate

for either statutory or categorical exemptions under CEQA Guidelines § 15262 (Feasibility and Planning Studies), § 15306 (Information Collection), § 15313 (Acquisition of Lands for Wildlife Conservation Purposes), and § 15321 (Enforcement Actions by Regulatory Agencies). These non-physical items will not have a significant effect on physical conditions including land, air, water, minerals, plants, animals, ambient noise, historic sites, or aesthetics. Accordingly, these types of non-physical items will not be discussed further in this document.

Restoration Element - Major Action Items

There is a notable difference in the level of activity found under this category. The names of the 22 major action items (action items) in this category are presented in a list in Appendix A, Action Items. The location of each action item is illustrated on a statewide and on CDFW regional level maps in Appendix A. A detailed description of each action item in this element is also located in Appendix A, sorted by county.

Stream bank stabilization may include the use of boulder and cobble armoring of eroding banks, log cribbing, willow mattresses, or willow siltation baffles. Revegetation of riparian habitat normally involves the use of willow sprigs or willow or alder seedlings or transplants to stabilize banks and slopes, promote long-term shade and channel stability, and enhance large-wood recruitment. Indigenous stocks (when available) shall be used for all planting projects. Upslope earthmoving and culvert replacement require large size material and increased volumes to be moved by heavy equipment and, in so doing, involve certain limited construction activities. The techniques that are used for these action items have proven successful on many coastal streams and are detailed in the current version of the *California Salmonid Stream Habitat Restoration Manual* 4th edition. This manual describes in detail how the work shall be performed in the field.

Typically, these stream habitat restoration activities use dump trucks to deliver logs, root wads, or quarry rock to staging areas, and front-end loaders to deliver material to restoration sites. Existing stream crossings are used to access the stream in most cases. If stream crossings do not exist, the least damaging access points are selected based upon the size, type, and density of riparian vegetation. Where use of such access points is necessary, riparian vegetation can be affected, particularly the upper part of plants may be damaged, with the roots and lower parts receiving minimal damage. Plants damaged in this way usually re-sprout and recover. Access to restoration activity sites are identified before implementation of the action item and shall not create bank erosion or cause the removal of riparian trees. Staging areas at the activity sites are set up on dry stream banks where there is a minimum, and less than significant, impact to vegetation. Disturbed or bare mineral soils resulting from work activities, which are subject to surface erosion, are seeded and straw mulched.

Hydraulic excavators or backhoes may be used to excavate trenches or keyways in stream banks to anchor logs or boulder structures. Excavators are used to place materials, construct instream structures, and stabilize stream banks with boulders and logs. Willow cuttings are usually placed into the keyway trenches around the logs or boulders and then the trench is backfilled with cobble and native

soil. This procedure anchors the structure into the stream bank, accelerates the establishment of willows around the structure, and prevents the stream from scouring around the newly placed structure.

Action items that stabilize stream banks or small stream-side landslides shall armor and buttress the landslide or stream bank using boulders, logs, root wads, and loose rock revetment. Revetments are designed with logs, root wads, and boulders that extend into the stream to provide instream cover and velocity breaks for salmonids. Smooth riprap, however, which accelerates water velocities along the stream bank, is not permitted under this program. When practical, the bank will be sloped back to a minimum 1.5 to 1 slope. A toe trench will be excavated at the toe of the landslide or eroding bank. The excavated trench shall be backfilled with boulders and will extend up to the high-water mark. Rock from the toe trench, up to the high-water mark, shall be of a size that will withstand normal high flows. Revetment shall extend upstream and downstream of the unstable reach and shall be keyed into the stable banks.

Runoff from above the slide or eroding banks shall be diverted away from the area being stabilized. The slide face shall be re-vegetated using indigenous plants. Willow cuttings shall be placed in the toe trenches. Browse protectors shall be used on seedlings to prevent predation by browsing animals.

All work, except for the revegetation, shall take place during the summer and fall (low flow period) and shall be completed by November 1 or before the first significant seasonal rainfall, whichever comes first. Planting of seedlings takes place after December 1, or when sufficient rainfall has occurred, to ensure the best chance of survival of the seedlings, but in no case later than April 15. All habitat improvements shall be done in accordance with techniques described in the *California Salmonid Stream Habitat Restoration Manual* 4th edition.

Upslope action items upgrade or decommission roads by implementing all or part of the following tasks: road ripping or decompacting; installing or maintaining rolling dips (critical dips); installing or maintaining waterbars and crossroad drains; replacing, maintaining or cleaning culverts; outsloping roadbeds; re-vegetating work sites; and excavating stream crossings with spoils stored on site or end-hauled.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work shall be authorized under this category. Work shall not be authorized to improve aesthetic values only.

Removal of road and skid trails shall include retrieving unstable material sidecast during original road construction and excavation of stream crossings and other watercourse fill. Stream crossings shall be excavated to original width, depth, and slope to expose natural channel morphology and armor. Side slopes will generally match original contours above and below the road. Culverts that are replaced in fish bearing reaches of streams shall be done in a manner to allow for unimpeded upstream and downstream fish passage.

When fill material is placed on road benches for permanent storage, the road bench shall be ripped or decompacted first. The fill shall then be placed against the cutbank and shaped to blend with the surrounding topography that existed prior to

road construction. Outsloping of the roadbed will occur as needed, to reduce potential sediment delivery to the stream where there is insufficient fill available to recontour the site, or where there is evidence that the overall long-term stability of the site does not justify a full recontour treatment. Where practical, fill shall be compacted to the top of the filled cut to reduce the potential for fill cut failure. Spoil material shall be stored in stable locations where it will not erode. If stable spoils storage sites are not available within the project area, they will be end-hauled to a stable storage site outside of the project area. Areas chosen for this purpose shall be devoid of tree and shrub vegetation. Upon completion of each site, woody debris shall be scattered over the surface of the restored area as mulch.

Road crossing removal may involve some removal of vegetation that has grown in sediment that has been deposited upslope of road prisms. Most of this vegetation shall be used as coarse wood mulch on bare soils to reduce surface erosion. Some of the material shall be transplanted on-site as one component of the restoration action items. In all cases, disruption of existing vegetation shall be minimized.

Culvert replacement requires diverting stream flow around the project site and excavating the existing culvert with heavy equipment. Normally concrete footings are constructed to support a new bottomless culvert or bridge. If appropriate, grade control structures are incorporated into the project area to prevent excessive down-cutting of the stream. All work concerning culvert replacement shall be consistent with current CDFW and NOAA criteria concerning fish passage. Current NOAA fish passage guidelines can be found on the web at: http://www.westcoast.fisheries.noaa.gov/fish_passage/solutions/index.html. CDFW fish passage guidelines can be found in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual* 4th edition, available at http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

Fish screens are constructed within existing irrigation diversions to prevent entrainment of juvenile salmon and steelhead trout. Fish screens are often composed of a concrete foundation and walls. A steel framework supports perforated screen panels with a mechanical cleaning system. A stream flow bypass carries the fish back to the stream. Current NOAA and CDFW fish screen criteria can be found in Volume I, Appendix S of the *California Salmonid Stream Habitat Restoration Manual* 4th edition.

Appendix A contains a list of major action item titles, locations, and descriptions of work that shall be implemented at each site. The action item designs are reviewed by the CDFW and are implemented by grantees utilizing heavy equipment and some hand labor crews. During a pre-project inspection, the grantee and the CDFW will tour the entire activity area and identify the sites and techniques necessary to carry out the recommendations. The site-specific recommendations shall be listed in an inspection report which will be acknowledged by the grantee's signature, as a required element of the activity. The CDFW shall continue to inspect the work site during and after completion of the action item. All road upgrading or decommissioning shall be done in accordance with techniques described in Volume

II, Part X of the *California Salmonid Stream Habitat Restoration Manual 4th edition*, available at http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp. All culvert replacement projects shall be done in accordance with techniques and criteria consistent with current CDFW and NOAA guidelines concerning fish passage. Implementation of each major action item shall be conditioned and controlled to prevent any potentially significant impacts under CEQA.

Complete site plans and prescriptions for action and non-physical items located in Del Norte, Humboldt, Mendocino, Siskiyou, and Tehama counties are available for review at the California Department of Fish and Wildlife, Northern Regional Office at 1455 Sandy Prairie Court, Suite J, Fortuna, California 95540. For an appointment to view this information, contact Senior Environmental Scientist, Trevor Tollefson at (707) 725-1072, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for action and non-physical items located in Marin, San Mateo, Santa Cruz, and Sonoma counties are available for review at the California Department of Fish and Wildlife, Bay Delta Region, office of Senior Environmental Scientist, Manfred Kittel, 3633 Westwind Blvd., Santa Rosa, California 95403. Appointments may be made by telephoning (707) 944-5522, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for non-physical items located in Stanislaus county are available for review at the California Department of Fish and Wildlife, Central Region, office of Senior Environmental Scientist, Margaret Paul, 20 Lower Ragsdale Dr. Ste. 100, Monterey, California 93940. Appointments may be made by telephoning (831) 649-2882, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

Complete site plans and prescriptions for action and non-physical items in Santa Barbara, and Ventura counties are available for review at the California Department of Fish and Wildlife, South Coast Region, office of Senior Environmental Scientist, Mary Larson, 4665 Lampson Ave, Suite C, Los Alamitos, California 90720 and 1933 Cliff Drive, Suite 9, Santa Barbara, CA 93109. Appointments may be made by telephoning (562) 342-7186, Monday through Friday, between the hours of 9 a.m. and 4 p.m.

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Environmental Assessment of Each Major Action Item

Each action item is assigned to the appropriate category using the established criteria for each category. The work to be completed for each action item is carefully evaluated to make this determination. Once this evaluation process is completed, the action items described under the Restoration Element - Major Action Items section, are subjected to a systematic environmental analysis. This analysis ultimately prescribes site-specific conditions which must be applied in order to avoid potentially significant negative effects on the environment, including such effects on endangered, rare, or threatened species and their habitat.

First, all major action items listed in Appendix A shall comply with CDFW policies to protect rare, endangered, and listed animal species. A review of the CDFW's CNDDB for the entire six-county project location indicated which animal species found on a State or Federal special status list may be present at the work sites. This site specific information is also attached to each statement of work in Appendix A. Mitigation measures to avoid impacts to these species are presented along with other mitigation measures in Appendix B; Mitigation Measures, Monitoring and Reporting Program. In the absence of site-specific information, species identified as having potential to be affected at a work site shall be assumed present at the work site and mitigation measures to avoid impact to that species shall be implemented. Any site-specific surveys to confirm the presence, or absence, of a listed animal species at a work site will be performed by qualified biologists according to protocols described in Appendix B. Lake and Streambed Alteration Agreements and grants for each site shall be conditioned to avoid impacts to any special status species that could potentially be affected at that site. The CDFW shall ensure that the grantee or responsible party is aware of all specific conditions that apply to their work site. Also, the CDFW shall inspect the work site before, during, and after completion of the action item to ensure compliance with mitigation measures to avoid potential impacts to endangered, rare, or threatened species. Any violation of the specific recommendations shall be immediately rectified. Failure or inability to rectify a particular recommendation will cause all work to cease at that site until a remediation plan is developed.

Second, all major action items listed in Appendix A shall comply with CDFW policies to conduct rare plant surveys. A qualified botanist shall be contracted by the grantee to complete the surveys using standard protocols. Rare plant surveys shall be conducted following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (California Department of Fish and Wildlife, 2018), Appendix C. A review of the CDFW's current California Natural Diversity Data Base (CNDDB) for each project located in the entire six-county programmatic project area is attached to the statement of work for each major action item listed in Appendix A and indicates which plant species found on a State or Federal special status list that could potentially be affected at the work sites. Rare plant surveys shall be completed prior to any ground disturbing activities. If any potentially significant impact cannot be avoided, the action item shall not be implemented. Any site specific recommendations made by a CDFW biologist, or other qualified biological consultant, to avoid any potentially significant impacts shall become part of the work plan and incorporated into the measures required in the issued Lake and Streambed Alteration Agreement (Fish and Game Code § 1600 et seq.). The CDFW’s grant managers shall ensure that the grantee or responsible party is aware of, and implements, these site specific conditions during routine inspections. The CDFW shall inspect the work site before, during, and after completion of the action item. Any violation of the specific recommendations shall be immediately rectified. Failure, or inability, to rectify a particular recommendation shall cause all

work to cease until a remediation plan is developed that avoids the potentially significant impact.

Third, all major action items listed in Appendix A shall comply with CDFW policies to conduct cultural resource surveys, including archaeological or paleontological surveys (if necessary). A qualified cultural resource specialist(s) shall be contracted by the grantee to complete the surveys using standard protocols. Research shall be done on available cultural data repositories and a review of cultural resources with regional experts to identify possible areas of importance within the ten-county programmatic project area will occur. Site specific detailed research shall be done for projects sites deemed likely to encounter cultural resources (Appendix C & D). Review of cultural surveys shall be completed prior to any ground disturbing activities. If any potentially significant impact cannot be avoided, the action item shall not be implemented. Any site specific recommendations made by a qualified cultural specialist, to avoid any potentially significant impacts shall become part of the work plan and incorporated into the measures required in the issued Lake and Streambed Alteration Agreement (Fish and Game Code § 1600 et seq.). The CDFW's grant managers shall ensure that the grantee or responsible party is aware of, and implements, these site specific conditions during routine inspections. The CDFW shall inspect the work site before, during, and after completion of the action item. Any violation of the specific recommendations shall be immediately rectified. Failure, or inability, to rectify a particular recommendation shall cause all work to cease until a remediation plan is developed that avoids the potentially significant impact.

Through careful design, scheduling, and monitoring, any and all potentially significant impacts associated with the action items shall be avoided or mitigated to below a level of significance under CEQA. To ensure that each action item adheres to avoidance and mitigation measures, a CDFW grant manager is assigned to each action item. Additional details regarding implementation of action items, including required mitigation measures, are detailed in the environmental checklist section below.

Monitoring

Project monitoring is considered an important element in the activity development and implementation process. The monitoring process provides performance control during the activity and also helps provide a measure of the benefits, insight, and guidance for future projects.

Activity during implementation is overseen by a CDFW grant manager and is geared to ensure that all regulatory environmental issues are strictly addressed including air, water, and avoiding impacts to sensitive plant and animal species. During implementation, activities are carefully monitored to make sure plans are followed and that the correct materials and techniques are used so that the objectives of the activities are met while protecting the environment.

Post-activity monitoring begins with information collected immediately after the activity is completed and documents whether the project was completed as designed

and according to grant specifications. This information includes documenting the exact location where the activity has occurred with reference points and survey marks. Final project reports should contain "as-built" descriptions with design drawings and photographs (both before and after the activity) are collected. A complete activity description including the objectives of the activity must be retained.

The next phase of post-activity monitoring is designed to assess the efficacy of the project and shall occur within one to three years after an action item is complete. The CDFW shall randomly select ten percent of the action items within each project work type for effectiveness/validation monitoring. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. This evaluation shall be recorded on standard project evaluation forms. Effectiveness monitoring addresses the physical response associated with an activity, while validation monitoring evaluates fish response to the project. Pre-treatment monitoring shall be performed for newly selected projects, and post-treatment monitoring shall be performed within three years following project completion.

Complete monitoring specifications can be found in Volume I, Part VIII of the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al 2010) (http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp). Additional details on monitoring and reporting requirements are presented in Appendix B.

REFERENCES

California Department of Fish and Game. Lake and Streambed Alteration Program (1600) webpage https://www.wildlife.ca.gov/Conservation/LSA

California Department of Fish and Game. 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities. The Resources Agency, State of California, Sacramento, CA.

Flosi, G, S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 1998, 2009, 2010. *California Salmonid Stream Habitat Restoration Manual*. Fourth Edition. Calif. Fish and Game. The most current version of the manual is available at: http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

Flosi, G, S. Downie, M. Bird, R. Coey, and B. Collins. 2003, 2006, 2009, 2010. *California Salmonid Stream Habitat Restoration Manual*. Volume II, Fourth Edition. Calif. Fish and Game. The most current version of the manual is available at: http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

Hagans and Weaver. 1994. Handbook for Forest and Ranch Roads. 161 p. Prepared by William E. Weaver, Ph.D. and Danny K. Hagans, Pacific Watershed Associates for the Mendocino County Resource Conservation District, 405 Orchard Ave., Ukiah, CA 95482.

ENVIRONMENTAL CHECKLIST FORM

1. Project Title: The 2018 Fisheries Habitat Restoration Project in Humboldt, Marin, Mendocino, Santa Barbara, Siskiyou, and Sonoma Counties.

2. Lead Agency Name and Address:

   State of California
   Department of Fish and Wildlife
   Watershed Restoration Grants Branch
   P.O. Box 944209
   Sacramento, CA 94244-2090

3. Contact People and Phone Numbers:

   Timothy Chorey
   (916) 327-8842
   Watershed Restoration Grants Branch, Fisheries Restoration Grant Program
   1416 9th Street, Room 1266
   Sacramento, CA 95814

   Trevor Tollefson
   (707) 725-1072
   Northern Region
   1455 Sandy Prairie Ct. Suite J
   Fortuna, CA 95540

   Manfred Kittel
   (707) 576-2813
   Bay Delta Region
   7329 Silverado Trail
   Napa, CA 94558

   Margaret Paul
   (831) 649-2882
   Central Region
   20 Lower Ragsdale Dr. Ste. 100
   Monterey, CA 93940

   Mary Larson
   (562) 342-7186
   South Coast Region
   4665 Lampson Ave.
   Los Alamitos, CA 90720

4. Project Location: Various sites in Humboldt, Marin, Mendocino, Santa Barbara, Siskiyou, and Sonoma Counties (Appendix A).

5. Project Sponsor's Name and Address:

   California Department of Fish and Wildlife
   Fisheries Restoration Grant Program Headquarters
   Watershed Restoration Grants Branch
   P.O. Box 944209
   Sacramento, CA 94244-2090

6. General Plan Designation: Various

7. Zoning: Various

8. Description of Project: Implementation of 22 action items for restoration of anadromous salmonid habitat (Appendix A). These action items include measures to improve anadromous fish passage, reduce erosion and sedimentation, enhance instream habitat, improve water quality and improve juvenile survival.

9. Surrounding Land Uses and Setting: Briefly describe the project's surroundings: Action items will be surrounded by lands consisting of agriculture, private holdings, forests used for timber production as well as national, state, and county parks.

10. Other Public Agencies Whose Approval Is Required: U.S Army Corps of Engineers, North Coast Regional Water Quality Control Board, San Francisco Bay Regional Water Quality Control Board, and Central Coast Regional Water Quality Control Board, Los Angeles Regional Water Quality Control Board, and Central Valley Regional Water Quality Control Board.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? CDFW reached out to traditionally and culturally affiliated California Native American tribes, if consultation is requested FRGP staff will begin consultation pursuant to Public Resources Code §21080.3.1 immediately.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards and Hazardous Materials	☐	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population/Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities/Service Systems	☐	Mandatory Findings of Significance

This project will not have a “Potential Significant Impact” on any of the environmental factors listed above; therefore, no boxes are checked.

DETERMINATION:

On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required

Laura Valoppi 9/27/18

Laura Valoppi, Chief, **Date**
Watershed Restoration Grants Branch

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒	☐	☐
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES.				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVIII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

EXPLANATION OF RESPONSES TO INITIAL STUDY ENVIRONMENTAL CHECKLIST

I. AESTHETICS

a) The project will not have an adverse effect on a scenic vista. Such an impact will not occur because the project will stabilize, restore, and revegetate damaged and eroded sites to produce a more natural and aesthetically pleasing appearance.

b) The project will not damage scenic resources such as trees, rock outcroppings, and historic buildings. Such an impact will not occur because the project will not disturb large trees or other scenic features in the process of restoring damaged sites.

c) The project will not substantially degrade the existing visual character or quality of the work sites and their surroundings. Such an impact will not occur because in most cases the restoration project will restore the natural character of disturbed sites. Where non-natural structures (such as fish screens) are constructed, they will be of small size and compatible with the appearance of their surroundings.

d) The project will not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area of the worksites. Such an impact will not occur because none of the action items for restoration style projects requires installation of artificial lighting.

II. AGRICULTURE AND FOREST RESOURCES

a) The project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to non-agricultural use. Such an impact will not occur because most project worksites are located away from FMMP designated farmland. Project actions associated with farmland (such as fish screens) are designed to allow continued use of farmland with reduced impacts to anadromous salmonids.

b) The project will not conflict with existing zoning for agricultural use or a Williamson Act contract. Fisheries habitat restoration actions will not change existing land use.

c) The project will not conflict with existing zoning for, or cause rezoning of, forestland, timberland, or timber zoned Timberland Production. Fisheries habitat restoration actions will not change existing land use.

d) There will be no loss of forestland and the project will not result in the conversion of forestland to non-forest use. Road decommissioning projects in forestland will reduce fine sediment delivery to the streams while restoring forestland by planting with native vegetation.

e) The project will not involve other changes in the existing environment, which due to their location or nature, could not result in conversion of farmland to non-agricultural use. Fisheries habitat restoration actions either are away from, or are compatible with, existing agricultural uses.

III. AIR QUALITY

a) The project will not conflict with or obstruct implementation of the applicable air quality plan. Such an impact will not occur because implementation of the project does not create any features that would be a source of air pollution.

   The work window for restoration activities is generally limited from June 15 to November 1. Under a worst-case scenario, the most work that a project can have in a single field season is eighteen weeks and the most number of years a project has to be completed is four years. Based on the worst-case scenario, the CDFW finds that each restoration activity will not likely adversely affect air quality plans with the use of vehicle and heavy equipment because of the short duration of each restoration activity. For most projects, work does not occur for the entire eighteen-week field season and most restoration activities do not take four years to implement. In addition, projects do not need to be implemented in consecutive years. Thus, the amount of time it takes to complete a restoration activity varies. Additionally, not all projects require the use of heavy equipment (although heavy equipment may be used to transport materials to the work site) and not all projects occur simultaneously. Calculating the emissions from a single restoration activity to use as an example would not be representative of the other restoration activities in Appendix A for the reasons listed above.

b) The project will not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Such an impact will not occur because of the limited scope of construction activities and the fact that work sites are located in rural areas that are in overall attainment of air quality standards.

c) The project will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Such an impact will not occur because the project involves no ongoing sources of air pollution.

d) The project will not expose sensitive receptors to substantial pollutant concentrations. Such an impact will not occur because the project will not significantly increase pollutant concentrations.

e) The project will not create objectionable odors affecting a substantial number of people. Project actions are designed to restore natural habitat conditions for salmonids, and will not create any stagnant water that might produce objectionable odors.

IV. BIOLOGICAL RESOURCES

a) The project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special

status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW), National Oceanic and Atmospheric Administration (NOAA) or U. S. Fish and Wildlife Service (USFWS). Such an impact will not occur because project activities are designed to improve and restore stream habitat, to provide a long-term benefit to both anadromous salmonids and other fish and wildlife. The project will be implemented in a manner that will avoid short-term adverse impacts to rare plants and animals and cultural resources during construction; the mitigation measures that will be implemented to avoid short-term impacts to rare plants and animals and cultural resources are described in Appendices B, C, D, and E. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance. In addition,

Species Impacts for the following species include (mitigation measures are included in Appendix B):

i. Arroyo Toad (*Anaxyrus californicus*)

The arroyo toad was federally listed as endangered in 1994. Typically found in coastal areas, the toad ranges from Salinas River Basin in Monterey and San Luis Obispo Counties south to Arroyo San Simón in northern Baja California, México. The preferred habitat for arroyo toad during breeding season (February–July) includes low gradient sections of slow moving streams which have adjacent stream terraces, sandbars, and shallow pools. In non-breeding months, this species can be found in a variety of upland habitats such as coastal sage scrub, chaparral, sycamore-cottonwood woodlands, oak, woodlands and grasslands.

During the implementation of a project, activities such as (but not limited to) channel dewatering, unscreened pumping, heavy equipment usage, work with hand tools, removal of riparian vegetation, spills from refueling vehicles, and introduction of non-native species into streams may have the potential to impact arroyo toad—this does not result in habitat removal and/or degradation. All impacts that occur are temporary and can be minimized to avoid take of the species. Furthermore, many of these projects involve restoring the riparian corridor that is absent.

ii. California Freshwater Shrimp (*Syncaris pacifica*)

In 1998, the US Fish and Wildlife Service listed California freshwater shrimp (CAFS) as endangered. The distribution of CAFS is limited to four drainage units in the California counties of Marin, Sonoma, and Napa: 1) tributary streams of the lower Russian River drainage, that flow westward to the Pacific Ocean, 2) coastal streams flowing westward directly into the Pacific Ocean, 3) streams draining into Tomales Bay, and 4) streams flowing southward into San Pablo Bay. California freshwater shrimp depend on the availability of slow

moving perennial water adjacent to continuous, stable, well-vegetated stream banks, or deep stable undercuts banks during winter high flows.

Salmonid restoration projects typically enhance or create habitat that is also suitable for CAFS. Although project activities in wetted stream habitats may directly affect individuals when present, project activities in dry stream habitats will not have a direct impact on individuals. Mitigation measures are implemented to avoid directly impacting individuals when present however, some short term direct and indirect impacts can occur.

iii. California Red-Legged Frog *(Rana draytonii)*

The California red-legged frog (CRLF) was listed as threatened in the Federal Registry in 1996. This species is the largest native frog in the western United States and is primarily found in streams and drainages along the California coast, ranging from southern Mendocino County south to northwestern Baja California. An eastern extension of this population can be found in the Sierra Nevada foothills, though a majority of the species is found in Monterey, San Louis Obispo, and Santa Barbara counties. Individuals found in coastal areas are active year round and those found farther inland are less active during the colder months. Breeding season is typically November through March, slightly earlier in southern regions. This species of frog prefers permanent quiet bodies of water but can be found in damp thickets and forest as well as along riparian corridors.

Impacts to the CRLF have the potential to occur during project implementation activities such as (but not limited to) channel dewatering, degradation of water quality, heavy equipment usage, work with hand tools, removal of riparian vegetation, spills from refueling vehicles, and introduction of non-native species into stream. All impacts that occur are temporary and can be minimized to avoid take of the species and does not result in habitat removal and/or degradation. Furthermore, many of these projects involve restoring the riparian corridor that is absent.

iv. California Tiger Salamander (*Ambystoma californiense)*

The Central California population of California tiger salamander was federally listed as threatened in 2004 but had been endangered in Santa Barbara County since 2000 and in Sonoma County since 2002. The state of California listed the entire population as threatened in 2010. The salamander can be found coastally from Sonoma to Santa Barbara counties as well as in the Central Valley and surrounding foothills—primarily in grassland or open woodland areas from Alameda County south to Monterey County and east to Merced and Madera counties. This nocturnal salamander breeds during the rainy season (November – May) depositing egg masses in standing water. Outside of estivation, the California tiger salamander spends a majority of its time underground finding refuge in animal burrows.

Impacts to the species are highly unlikely as most implementation projects occur in or near the stream and riparian corridor. Upslope projects are typically limited to road upgrading and decommissioning in areas that are steep, eroding, and often in areas vegetated with trees and shrubs. The species uses ponds and vernal pools for breeding and grassland habitat for estivation, both of which are usually not in proximity to anadromous fish-bearing streams.

v. Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*Oncorhynchus kisutch*), Steelhead Trout (*Oncorhynchus mykiss*), and Coastal Cutthroat Trout (*Oncorhynchus clarki clarki*)

Winter-run Chinook Salmon have been listed as endangered by the state since 1989 and federally since 1994. Spring-run Chinook Salmon were listed in 1999 as threatened by both the state of California and USFWS. Depending on the evolutionary significant unit (ESU) of the Coho Salmon, the species is listed either as threatened or endangered; federally since 1996 and by the state since 2005. In 1997, USFWS listed the distinct population segment (DPS) of the Southern California steelhead trout as endangered. The four other DPS of steelhead trout (south central, central, Central Valley, and northern) have been federally listed as threatened as early as 1997. Although, Coastal Cutthroat Trout are not listed as threaten or endangered, they are listed as a species of special concern.

Salmonids can be found throughout the coastal and inland river systems of Northern and Central California. The salmonid lifecycle involves adults maturing in the ocean, migrating back to their natal streams to spawn, embryos incubate within redds, alevins hatching, fry emerging from redds, juveniles growing, and smolts migrating to the estuary to acclimate to saltwater before migrating to the ocean.

Habitat loss and modification are believed to be the major factors determining the current status of salmonid populations. Conservation and recovery of salmonid depend on having diverse habitats with connections among those habitats. While all of the work proposed under this program will enhance habitat for one or more of these species, impacts to the species have the potential to occur during project implementation activities such as, but not limited to, channel dewatering, disturbance of banks, and fish relocation. All impacts are temporary and can be minimized to avoid take of the species.

vi. Foothill Yellow-Legged Frog (*Rana Boylii*)

The foothill yellow-legged frog (FYLF) is a candidate species for state listing as threatened and inhabits lower elevation creeks, streams, and rivers. The species may be found in the project area. They breed in the spring and tadpoles emerge in the summer. The FYLF require flowing water, are not found in standing water, and will stay close to streams during breeding season.

Impacts to the FYLF have the potential to occur during project implementation activities such as, but not limited to, channel dewatering, degradation of water quality, heavy equipment usage, work with hand tools, removal of riparian

vegetation, spills from refueling vehicles, and introduction of non-native species into stream. All impacts that may occur are temporary, can be minimized to avoid take of the species, and do not result in habitat removal and/or degradation. Furthermore, many of these projects involve restoring the riparian corridor that is absent or degraded.

vii. Least Bell's Vireo (*Vireo bellii pusillus)*

The Least Bell's Vireo was listed as endangered federally in 1986 and by the state in 1980. The breeding season distribution of these small, monogamous, territorial birds range from coastal southern California east to the foothill Central Valley with the majority of the population found in San Diego County (March – September). In colder, non-breeding months, the Least Bell's Vireo migrates south into Baja California. Many return to their same lowland riparian territory to breed, with some building nests in the same scrub used the previous year.

Impacts to the species have the potential to occur as a result of removal of riparian vegetation (willows and low scrub) during the spring and summer or from disturbance within a 0.25 mile radius of the sites. Typically removal of riparian vegetation for the purpose of implementing a project does not occur, but is minimal when it does. Many projects involve restoring the riparian corridor that is absent. Removal of willow branches for revegetation at restoration sites has the potential to degrade existing Least Bell's Vireo habitat. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. All impacts are temporary and can be minimized to avoid take of the species.

viii. Marbled Murrelet (*Brachyramphus marmoratus*)

In 1992, the Marbled Murrelet was federally listed as threatened and as endangered by the State. As coastal birds that range from Alaska to Santa Barbara County, CA, they can be found nesting and brooding along the California coastline in old growth or mature forests from April to September and possibly using the same nest in successive years. In the winter, they can be found using the same habitat for roosting and courtship.

Noise from heavy equipment has the potential to cause nesting birds to abandon nests. Limiting such work (e.g. culvert removal or placement of large woody debris) to the fall and winter months will greatly reduce adverse effects. Projects will not remove or degrade suitable habitat, only restore and protect habitat.

ix. Northern Spotted Owl (*Strix occidentalis caurina*)

The Northern Spotted Owl has been federally listed threatened since 1990 and has recently (2013) been listed as a threatened species candidate by the state of California. Old growth and mature forests of northwestern California and Pacific Northwest are the preferred habitat for these monogamous, territorial, medium-sized birds of prey. A pair of owls can occupy up to a 40 sq. km territory, nesting in hollow trees and cliff crevices from February to June.

Noise from heavy equipment has the potential to cause nesting birds to abandon nests. Preventing such work (e.g. culvert removal or placement of large woody debris) from occurring during February to July will greatly reduce adverse effects. Projects will not remove or degrade suitable habitat, only restore and protect habitat.

x. Point Arena Mountain Beaver (*Aplodontia rufa nigra*)

In 1991, the US Fish and Wildlife listed the Point Arena mountain beaver (PAMB) as an endangered species. This beaver is a burrowing rodent found in coastal Mendocino County, in an area of approximately 24 square miles (from about 2 miles north of Bridgeport Landing south to about 5 miles south of the town of Point Arena, and from the coast to about 5 miles inland). Mountain beaver inhabit underground burrow systems, associated with moist areas with well-drained soils and lush herbaceous vegetation. Populations of PAMB are typically found in riparian, coastal scrub or dune scrub habitats; however, they may occur in any habitat with brushy or herbaceous cover. The presence of PAMB is evaluated by surveying for burrows of characteristic size and shape, with signs of recent activity.

Potential impacts to PAMB from salmonid habitat improvement projects include disruption of nesting or other activities due to equipment noise; collapse or damage to burrows from heavy equipment, riparian planting, or foot traffic; and removal of vegetation (such removal is usually temporary, but may nonetheless impact PAMB).

xi. San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*)

The San Francisco garter snake (SFGS) was federally listed as endangered in 1967 and by the State in 1970. The SFGS is listed as a fully protected species under Fish and Game Code Section 5050. Endemic to California, this multi-colored garter snake is only found from southern San Francisco County south to San Mateo County in grasslands or wetlands near ponds, marshes, and sloughs. Breeding season starts in spring. Females bare live young from June to September. Typically found in densely vegetative ponds nears hills however, the San Francisco garter snake will find animal burrows when ponds dry up in the summer months and will go into a dormant state.

Due to the fully protected status of the SFGS, potential for take of the SFGS will be avoided through the implementation of the avoidance measures listed in Appendix B: Mitigation measures, monitoring and reporting program for the 2018 Fisheries Habitat Restoration Project. “Take” is defined in Section 86 of the Fish and Game Code as catch, pursue, capture or attempt to catch, pursue and capture.

xii. Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

The Southwestern Willow Flycatcher (a sub species of the Willow Flycatcher, *Empidonax traillii*) was placed on the federal species list in 1995 as endangered. Extirpated from most of its California range, this small migratory

bird has been reported to return to various river systems in southern California during breeding season. Breeding season is from May to September, with a majority of breeders returning to the same sites in areas of dense mature riparian woodlands along streams and rivers. Native vegetation is preferable for nesting, but this bird will also nest in thickets of non-native species (e.g. tamarisk and Russian olive).

Impacts to the Southwestern Willow Flycatcher have the potential to occur as a result of removal of riparian vegetation (willows and low scrub) during the spring and summer or from disturbance within a 0.25 mile radius of the sites. Typically, removal of riparian vegetation for the purpose of implementing a project does not occur, but is minimal when it does. Many projects involve restoring the riparian corridor that is absent. Removal of willow branches for revegetation at restoration sites has the potential to degrade existing Southwestern Willow Flycatcher habitat. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. All impacts are temporary and can be minimized to avoid take of the species.

xiii. Tidewater Goby (*Eucyclogobius newberryi*)

Listed by the state of California for protection in 1987, and federally listed in 1994, the tidewater goby, which is endemic to California, are typically found in coastal lagoons, estuaries, and marshes with relatively low salinities. Tidewater gobies can withstand a range of habitat conditions: they have been documented in waters with salinity levels from 0 to 42 parts per thousands, temperatures from 8 to 25^{o}C, depths from 25 to 200cm, and dissolved oxygen levels of less than one milligram per liter. Reproduction occurs from late April or May to July and as late as November or December, depending on the seasonal temperature and rainfall.

Measures to reduce impacts to tidewater goby habitat will include adjusting the timing of projects to avoid disruption to breeding activities, the use of silt fencing to reduce sediment loads and as barricades around project sites, and installing cofferdams above and below project sites. Additional measures include, moving individual tidewater gobies found within the enclosures prior to dewatering, minimizing project areas, and requiring qualified biologists to oversee project activities.

xiv. Willow Flycatcher (*Empidonax trailli*)

The Willow Flycatcher was listed as endangered by the State of California in 1991. This small migratory bird can be seen during their summer migration throughout a majority of northern and western US. In California, the Willow Flycatcher can be found primarily in dense moist willow thickets and riparian woodlands in northern California and along the western side of the Sierras. During spring (May to June), adults can be seen in north central California counties during the spring migration to their breeding sites farther north. Fall migration occurs primarily in August as the travel to the winter habitats in Central and South America.

Impacts to the Willow Flycatcher have the potential to occur as a result of removal of riparian vegetation (willows and low scrub) during the spring and summer or from disturbance within a 0.25 mile radius of the sites. Typically removal of riparian vegetation for the purpose of implementing a project does not occur, but is minimal when it does. Many projects involve restoring the riparian corridor that is absent. Removal of willow branches for revegetation at restoration sites has the potential to degrade existing Willow Flycatcher habitat. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. All impacts are temporary and can be minimized to avoid take of the species.

b) The project will not have a substantial adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies and regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service. Such an impact will not occur because the project actions are designed to correct past habitat degradation and restore and enhance riparian habitat and associated upland habitats. In accordance with the Regional General Permits 12, 78, and the § 401 Water Quality Certification, construction of action items is allowed during the summer dry season (generally June 15-November 1) to avoid impacts to aquatic habitats. Work that is permitted after November 1 is limited to hand planting of seedlings. Planting of seedlings generally occurs after December 1, or when there is sufficient rainfall to ensure the best survival chance of the seedlings. Mitigation measures to avoid impacts to riparian habitat are found in Appendix B: Mitigation measures, monitoring, and reporting program for the 2018 Fisheries Restoration Grant Program (§ IV subsection C).

   Furthermore, the CDFW LSAs include project-specific terms and conditions that set out reasonable measures determined by CDFW to be necessary to protect fish and wildlife resources that may be affected by the project.

c) The project will not have a substantial adverse effect on federally protected wetlands as defined by § 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. The project actions will have either no effect on wetlands or will be beneficial to wetlands.

d) The project will not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. The project will enhance the movement of anadromous fish by the replacement or removal of culverts and bridges that are barriers to fish migration.

e) The project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Such an impact will not occur because project actions are designed to restore and enhance biological resources. Some minor disturbance of grasses and shrubs will occur where stream structures are keyed into the stream banks. Care will be taken not to disturb any mature trees. Riparian vegetation will be reestablished where construction activities

disturb existing plants, and additional native plants will be planted to enhance the riparian vegetation.

f) The project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. Such a conflict will not occur because the project restoration actions will not have a significant adverse impact on any species or habitat. Project actions are designed to restore the natural character of the fish and wildlife habitat at the project work sites. The project specifically supports the California Salmon, Steelhead Trout and Anadromous Fisheries Program Act (Fish and Game Code § 6900 et. seq.)

V. CULTURAL RESOURCES

a) The project will not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines § 15064.5. While ground disturbance will be required to implement the project at some work sites that have the potential to affect historical resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program and Appendix E, Procedure for the Programmatic Evaluation of Archaeological Resources for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

b) The project will not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines § 15064.5. While ground disturbance will be required to implement the project at some work sites that have the potential to affect archaeological resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

c) The project will not directly or indirectly destroy any unique paleontological resources or sites, or unique geologic features. While ground disturbance to implement the project at some work sites has the potential to affect these resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program and Appendix D, Procedure for the Programmatic Evaluation of Paleontological Resources for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

d) The project will not disturb any human remains, including those interred outside of formal cemeteries. While ground disturbance will be required to implement the project at some work sites that have the potential to affect these resources, this potential impact will be avoided through implementation of the protective measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program for all work sites. Resources identified during site-specific surveys will be protected before ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

VI. GEOLOGY AND SOILS

a) The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence of a known fault. Such an impact will not occur because the project does not create any structures for human habitation.

    i. The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Such an impact will not occur because the project does not create any structures for human habitation.

    ii. The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Such an impact will not occur because the project does not create any structures for human habitation.

    iii. The project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Such an impact will not occur because the project does not create any structures for human habitation.

b) The project will not result in substantial soil erosion or the loss of topsoil. Such an impact will not occur because implementation of the restoration project is designed to contribute to an overall reduction in erosion and sedimentation. Existing roads will be used to access work sites. Ground disturbance at most work sites will be minimal, except for road improvements or decommissioning. Road improvements and decommissioning will involve moving large quantities of soil from road fills and stream crossings to restore historic land surface profiles and prevent chronic erosion and sediment delivery to streams. The potential for substantial soil loss associated with road improvement and decommissioning will be avoided through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will

ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

c) Some project worksites are on unstable soils; however, the project will not increase the risk of landslides, lateral spreading, subsidence, liquefaction, or collapse. The project actions are designed to stabilize conditions at these sites in order to reduce sediment delivery to salmonid habitat. Actions implemented to stabilize sites may not be successful in all cases, but site instability will not be increased when compared to existing conditions.

d) Some project work sites will be located on expansive soil; however, the project will not create substantial risks to life or property. Such an impact will not occur because the project will create no habitations, and the majority of the restoration actions will not create rigid structures that could be damaged by expansive soils. The few rigid structures to be created by the project (such as fish screens) will be engineered to withstand expansive soils, if they are present.

e) The project will not create any sources of waste water requiring a septic system.

VII. GREENHOUSE GAS EMISSIONS

The project will emit greenhouse gases (GHG) through the use of fuel to operate vehicles and heavy equipment. The work window for restoration activities is generally limited from June 15 to November 1. Construction is limited to at most eighteen weeks during that window, and work must be completed within four years. However, for most projects, work does not occur for the entire eighteen-week field season and most restoration activities do not take four years to implement. Some action items do not require heavy equipment use at the restoration site, but may use vehicles to transport materials. Furthermore, for an individual restoration action, GHG emissions may fluctuate during the implementation, as vehicles and equipment will be necessary to varying degrees. Watershed restoration projects often require more time to construct (six to twelve weeks) then other action items. Projects may be completed in a single year of construction, or may require several years. Thus, the amount of time it takes to complete a restoration activity and the use of heavy equipment varies greatly among the actions. Although the project construction schedules and details are constrained by permit and grant conditions, the exact details cannot be specifically stated at this time. However, based on the short duration and small scale of the action items, the project will not generate a significant increase in GHG emissions above existing baseline levels because action items are discrete, limited in scope and implemented during a short time period.

a) Additionally, some action items involve decommissioning of existing paved or dirt roads in forested landscapes. The decommissioned roads are re-planted with native conifer tree species. Additionally, when plants are removed to implement the restoration activity, the replanting ratio is 1:2 (for every plant removed, two native plants are planted). Once established native habitat restoration requires little to no

maintenance and therefore little to no GHG emissions and will increase the presence of native plant species that sequester carbon dioxide.

b) Due to each action item's short duration, small scale, and minimal on-going maintenance, the project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG. The short term impacts to the GHG levels are less than significant. Furthermore, the long term impacts to the GHG levels from re-vegetation actions will aid in decreasing the GHG levels by reforesting areas where roads have been removed and where restoration work has been done.

VIII. HAZARDS AND HAZARDOUS MATERIALS

a) The project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Any potential significant hazard associated with the accidental release of coolant and petroleum products used with equipment during construction will be avoided through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

b) The project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. At work sites requiring the use of heavy equipment, there is a small risk of an accident upsetting the machine and releasing fuel, oil, and coolant. The potential for accidental release will be reduced to a less than significant level through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

c) The project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Such impact is avoided because the project will not create any feature that will emit hazardous substances.

d) The project worksites are not located on any site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) No project work site is located within an airport land use plan or within two miles of a public airport or public use airport.

f) No project work site is located within the vicinity of a private airstrip.

g) The project will not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. Except for the case of road decommissioning, the project has no effect on access. The planned decommissioning of selected unused wild land roads will not have a significant impact on emergency vehicle access.

h) The project will not expose people or structures to a significant risk of loss, injury, or death involving wild land fires. At work sites requiring the use of heavy equipment, there is a small risk of an accidental spark from equipment igniting a fire. The potential for accidental fire will be reduced to a less than significant level through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

IX. HYDROLOGY AND WATER QUALITY

a) The project will not violate any water quality standards or waste discharge requirements. There is the potential for minor short-term increase in turbidity during installation of instream structures or culvert removal, however the mitigation measures described in Appendix B Mitigation, Monitoring and Reporting will assure that the project actions are in compliance with water quality standards. As a result, mitigation measures will ensure that any potentially significant short-term impacts are avoided or mitigated to below a level of significance.

b) The project will not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. Upslope restoration activities will return drainage to historic patterns thereby decreasing surface runoff and increasing infiltration to the ground water.

c) The project will not substantially alter the existing drainage pattern of the work sites in a manner that would result in substantial erosion or siltation on- or off-site. Such an impact will not occur because the project actions are designed to produce decreased erosion overall. Instream habitat structures, such as boulder weirs or flow deflectors, will produce local redistribution of sediments. These structures will produce a local redistribution of bed load, facilitating the deposition of spawning gravel in riffles, and improving scour to maintain pools for juvenile fish habitat. This local redistribution of bed load will not produce a net increase of erosion.

d) The project will not substantially alter the existing drainage pattern of the work sites, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. The project will decrease the risk of flooding through upslope restoration activities that will return drainage to historic patterns, thereby increasing infiltration and decreasing surface runoff.

e) The project will not create or contribute runoff water that would exceed the capacity of existing or planned storm-water drainage systems, or provide substantial additional sources of polluted runoff. Such an impact will not occur because upslope restoration activities will stabilize slopes and return drainage to historic patterns, thereby decreasing surface runoff and decreasing the silt load delivered to streams in the area of the project.

f) The project will not substantially degrade water quality. During placement of stream habitat structures and culvert replacement, some minor turbidity may be generated. The potential for degradation of water quality will be reduced to a less than significant level through implementation of the mitigation measures presented in Appendix B, Mitigation Measures, Monitoring and Reporting Program. Some short-term minor increase in turbidity may also occur as the streambed around instream structures adjusts during the first high stream flow following activity completion. However, this is not expected to produce a significant increase over background turbidity. As a result, mitigation measures will ensure that any potentially significant short-term impacts to water quality are avoided or mitigated to below a level of significance.

g) The project will not place housing within a 100-year flood hazard area as mapped on any flood hazard delineation map. No housing will be created as part of this project.

h) The project will not place within a 100-year flood hazard area structures which would significantly impede or redirect flood flows. Culvert removal and replacement to be done as part of the project will remove existing impediments to flood flows. Instream habitat structures, such as boulder weirs, deflectors, and bank armor, are built to change the direction and velocity of stream flow. However, these structures are small (sized to affect conditions in the low flow channel) and will not impede flood flows.

i) The project will not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. Such an impact will be avoided because all instream structures to be created are small and will not significantly impede flood flows.

j) The project will not expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow. Such an impact will not occur because project actions are designed to improve or stabilize conditions at the work sites. Upslope restoration actions will reduce the chance of mudflow by stabilizing disturbed areas, and restoring natural drainage patterns. Project work sites are not located in areas at risk to inundation by seiche or tsunami.

X. LAND USE AND PLANNING

a) The project will not physically divide an established community. This impact will not occur because no culvert removal or road decommissioning is proposed in any established community.

b) The restoration activities that comprise this project do not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Such an impact will not occur because the project's restoration activities are designed to be compatible with local land use plans and ordinances.

c) The project will not conflict with any applicable habitat conservation plan or natural community conservation plan. Such an impact will not occur because project actions are designed to improve aquatic habitat conditions without adversely affecting any other species or their habitats.

XI. MINERAL RESOURCES

a) The project will not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Such an impact will not occur because project actions are only designed to stabilize and restore habitat and soils within the actions area.

b) The project will not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Such an impact will not occur because no mineral resource recovery sites occur at the project work sites.

XII. NOISE

a) The project will not result in exposure of persons to, or generation of noise levels in excess of, standards established in the local general plan or noise ordinance, or applicable standards of other agencies. There may be a minor temporary increase in noise levels at those work sites requiring the use of heavy equipment. While such short-term increase in noise will not produce a significant increase in the noise level in the general environment, there is a potential for equipment noise to affect workers in close proximity to equipment producing noise levels ≥85 dB, such as chainsaws or backhoes. However, such an impact will not occur because personnel operating noisy equipment will be required to wear hearing protection. As a result, mitigation measures will ensure that any potentially significant noise impacts are avoided or mitigated to below a level of significance.

b) The project will not result in exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels. Such an impact will not occur because only minor amounts of ground-borne vibration or noise will be generated short-term at those work sites requiring the use of heavy equipment.

c) The project will not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Such an impact will not occur because most project structures are passive (i.e., contain no moving parts). The only exceptions are the proposed fish screens, which will contain moving brushes to clean the screens. These brushes are driven by slow speed (10-15 RPM) water wheels and will not substantially increase ambient noise levels where installed.

d) The project will not result in a substantial temporary, or periodic, increase in ambient noise levels in the project vicinity above levels existing without the project. Such an impact will not occur because only minor amounts of noise will be generated temporarily at those work sites requiring the use of heavy equipment. At those sites near nesting or breeding sites for listed species, heavy equipment will only be used

outside the sensitive periods for nesting or breeding, as described in Appendix B, Mitigation Measures, Monitoring and Reporting Program. As a result, mitigation measures will ensure that any potentially significant noise impacts are avoided or mitigated to below a level of significance.

e) None of the project work sites are located within two miles of a public airport or public use airport.

f) None of the project work sites are located within the vicinity of a private airstrip.

XIII. POPULATION AND HOUSING

a) The project will not induce substantial population growth in an area, either directly or indirectly. Such an impact will not occur because the project will not construct any new homes, businesses, roads, or other human infrastructure.

b) The project will not displace any existing housing and will not necessitate the construction of replacement housing elsewhere.

c) The project will not displace any people and will not necessitate the construction of replacement housing elsewhere.

XIV. PUBLIC SERVICES

a) The project will not have any significant environmental impacts associated with new or physically altered governmental facilities. Issuance of restoration grants to government agencies could, in some cases, lead to minor increases in staffing to complete projects. Such increases will not lead to any significant adverse impacts, because the increases are short term, and no significant construction will be required to accommodate additional staff.

XV. RECREATION

a) The project would not increase the use of existing neighborhood and regional parks, or other recreational facilities. Such an impact will not occur because the project actions will restore anadromous fish habitat and do not significantly alter human use or facilities at existing parks or recreational facilities. Overall, the Restoration Program is expected to increase recreation opportunities by assisting in restoring populations of anadromous fish.

b) The project does not include recreational facilities and does not require the construction or expansion of recreational facilities.

XVI. TRANSPORTATION/TRAFFIC

a) The project will not conflict with any applicable plans, ordinances or policies that establish measures of effectiveness for the performance of the circulation systems. Such a conflict will not occur because the project will result in only minor temporary

increases in traffic to primarily wild land sites during implementation of habitat improvement measures.

b) The project will not conflict, either individually or cumulatively, with any applicable congestion program established by the county congestion management agency for designated roads or highways. Such an impact will not occur because the habitat improvement actions will not generate a significant amount of traffic at each individual work site and because the work sites are dispersed throughout the coastal counties.

c) The project will not result in any change in air traffic patterns.

d) The project will not alter roads in any way that will substantially increase hazards to transportation. The proposed project will reduce hazards to transportation, because the proposed project will correct and reduce landslide and erosion damage on the selected rural roads.

e) The project will not result in inadequate emergency access. Such an impact will not occur because during replacement of small road crossings, an alternate route for traffic will be provided around the construction.

f) The project will not significantly affect parking capacity or demand for parking.

g) The project will not conflict with adopted policies, plans, or programs supporting alternative transportation.

XVII. TRIBAL CULTURAL RESOURCES

a) The project will not cause substantial adverse change in the significance a of tribal cultural resource listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resource Code 5020.1(k). Although ground disturbance is required to implement the project, impacts to tribal cultural resources will be avoided through implementation of the protective measures presented in Appendix B: Mitigation Measures, Monitoring and Reporting Program; Appendix D: Procedures for the Programmatic Evaluation of Paleontological Resources; and Appendix E: Procedure for the Programmatic Evaluation of Archeological Resources for all work sites, where applicable. Resources identified during site-specific surveys will be protected before any ground-disturbing activities are permitted at a site. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

   On September 13, 2018, in compliance with PRC § 21080.3.1 and the CDFW Tribal Communication Policy, CDFW requested a list of Tribes potentially affected by the 2018 Fisheries Habitat Restoration (FHR) project from the Native American Heritage Commission. Upon receipt of the listed Tribes and their contacts, CDFW provided official notification, by letter, of the FHR project to those Tribal contacts. The CDFW Tribal Liaison will address requests for formal consultation on the FHR project.

b) The project will not cause substantial adverse change in the significance of a tribal

cultural resource determined by the CDFW to be significant pursuant to the criteria set forth in subdivision (c) of Public Resources Code section 5024.1. Restoration sites will consist mainly of cleanup and revegetation. The CDFW will apply the criteria set forth in subdivision (c) of the Public Resources Code section 5024.1 to potential tribal cultural resources identified during site-specific surveys and will consider the significance of the resource to California Native American tribes. Tribal cultural resources identified during site-specific surveys will be protected before any ground-disturbing activities are permitted at a site. Potential impacts to tribal cultural resources due to ground disturbance activities will be avoided through implementation of the protective measures presented in Appendix B: Mitigation Measures, Monitoring and Reporting Program; Appendix D: Procedures for the Programmatic Evaluation of Paleontological Resources; and Appendix E: Procedure for the Programmatic Evaluation of Archeological Resources for all work sites, where applicable. As a result, mitigation measures will ensure that any potentially significant impacts are avoided or mitigated to below a level of significance.

XVIII. UTILITIES AND SERVICE SYSTEMS

a) The project will not produce wastewater.

b) The project will not require, or result in the construction of, new water or wastewater treatment facilities or expansion of existing facilities. Such an impact will not occur because the project will not produce wastewater.

c) The project will not cause significant adverse environmental effects associated with the construction of new storm water drainage facilities or expansion of existing facilities.

d) The project will have sufficient water supplies available to serve the project from existing entitlements and resources.

e) The project will not produce wastewater.

f) The project will not generate solid waste requiring disposal in a landfill.

XIX. MANDATORY FINDINGS OF SIGNIFICANCE

a) The project does have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. However, the potential is reduced to less than significant by implementing the mitigation measures in Appendix B: Mitigation Measures, Monitoring and Reporting Program. The project shall be implemented in a manner that will avoid short-term adverse impacts to rare plants and animals, and cultural resources during construction. The project activities are designed to improve and restore stream habitat; thereby providing long-term benefits to both anadromous salmonids and other fish and wildlife.

b) The project does not have adverse impacts that are individually limited, but cumulatively considerable. Cumulative adverse impacts will not occur because potential adverse impacts of the project are only minor and temporary in nature. It is the goal of the project that the beneficial effects of habitat enhancement actions will be cumulative over time and contribute to the recovery of listed anadromous salmonids.

c) The project does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. The habitat enhancement measures implemented as part of this project will contribute to improved water quality, increased soil stability, and the recovery of listed salmonids, all of which will be beneficial to human beings.

Appendix A

Non-Physical Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725626	PI	214	Watershed Stewards Program - Year 26	California Conservation Corps - Watershed	All Counties	FRGP	ALL
725672	PL	354	Passage Assessment Database (PAD) 2019-2021	Pacific States Marine Fisheries Commission	All Counties	FRGP	ALL
725684	TE	285	2019 and 2020 Annual Coho Confabs	Salmonid Restoration Federation	All Counties	FRGP	ALL
725685	TE	325	38th and 39th Annual Salmonid Restoration Conference	Salmonid Restoration Federation	All Counties	FRGP	ALL
725674	MO	365	Central and South Coast Restoration Monitoring and Evaluation Program 2019-2021	Pacific States Marine Fisheries Commission	Several	FRGP	4,5
725692	PD	227	Upper Tryon Creek Stream Enhancement Design Project	Smith River Alliance	Del Norte	FRGP	1
725694	PD	345	Middle Stotenburg Creek Coho Habitat Enhancement Design Project	Smith River Alliance	Del Norte	FRGP	1

Appendix A

Non-Physical Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725695	PD	347	Smith River Estuary Backwater Habitat Enhancement Design Project - Tedsen Property	Smith River Alliance	Del Norte	FRGP	1
725650	MD	337	Prairie Creek Coho Salmon LCM 2019-2023	Humboldt State University Sponsored Programs	Humboldt	FRGP - CMP Projects	1
725651	MD	362	Redwood Creek Chinook Salmon Survival and Population Assessment	Humboldt State University Sponsored Programs	Humboldt	FRGP - CMP Projects	1
725705	PD	184	Cooper Mill Creek Coho Salmon Fish Passage Design Project	Trout Unlimited, Inc.	Humboldt	FRGP	1
725666	PD	296	Lindsay Creek In-Stream Coho Habitat Improvement Design	Pacific Coast Fish, Wildlife and Wetlands Restoration	Humboldt	FRGP	1
725630	PD	299	Feasibility Assessment and Intermediate (65%) Designs for Cannibal Island Restoration	California Trout, Inc.	Humboldt	FRGP	1
725632	PD	366	City of Eureka Humboldt Bay Tributary Restoration Feasibility Study	City of Eureka	Humboldt	FRGP	1
725667	PL	321	Little River Watershed Assessment/Planning Update Project	Pacific Coast Fish, Wildlife and Wetlands Restoration	Humboldt	FRGP	1
725668	MD	216	Coastal Mendocino Salmonid Life Cycle and Regional Monitoring Project	Pacific States Marine Fisheries Commission	Mendocino	FRGP - CMP Projects	1
725673	MD	358	South Fork Eel River Adult Salmonid Abundance Monitoring Project	Pacific States Marine Fisheries Commission	Mendocino	FRGP - CMP Projects	1

Appendix A

Non-Physical Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725704	PD	183	Dry Dock Gulch Fish Passage Design Project	Trout Unlimited, Inc.	Mendocino	FRGP	1
725675	MD	367	South-Central Steelhead ARIS Sonar Monitoring of Adult Steelhead Populations at San Carpoforo Creek, San Luis Obispo	Pacific States Marine Fisheries Commission	San Luis Obispo	SHRRC	4
725669	MD	249	Big Basin and Coastal San Mateo County Salmonid Monitoring Program	Pacific States Marine Fisheries Commission	San Mateo, Santa Cruz	FRGP - CMP Projects	3
725671	MD	329	Southern California Steelhead DIDSON and Life Cycle Monitoring	Pacific States Marine Fisheries Commission	Santa Barbara	FRGP - CMP Projects	5
725678	MD	239	Scott Creek Life Cycle Monitoring Station	Regents of the University of California, UC Santa Cruz	Santa Cruz	FRGP - CMP Projects	3
725687	MO	196	Effectiveness & Validation Monitoring of Scott River Beaver Dam Analogues	Scott River Watershed Council	Siskiyou	FRGP	1
725659	MO	351	Structural Monitoring of Constructed Off-Channel Habitats	Mid Klamath Watershed Council	Siskiyou	FRGP	1

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Non-Physical Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725689	PI	198	Scott Watershed Informational Forum and Quarterly Exchanges	Scott River Watershed Council	Siskiyou	FRGP	1
725683	PL	352	Salmon River Spawning Habitat Assessment	Salmon River Restoration Council	Siskiyou	CSS	1
725622	PL	372	EcoTrust Lands Road Sourced Sediment Inventory for Scott River (CA) Tributaries	5 Counties Salmonid Conservation Program	Siskiyou	FRGP	1
725691	MD	346	Shasta and Scott Rivers Salmonid Outmigrant Monitoring	Shasta Valley Resource Conservation District	Siskiyou	FRGP - CMP Projects	1
725644	PD	234	Bruno Reach Habitat Restoration Design Project, Upper Green Valley Creek, Sonoma County, CA	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725645	PD	270	Iron Horse Diversion and Dempster Diversion Fish Screen Design Project	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725634	PD	260	Stanislaus River Salmonid Habitat Restoration Project at the Stanley Wakefield Wilderness Area	City of Oakdale	Stanislaus	FRGP	4
725679	PD	259	Dye Creek Fish Passage Improvement Project	Resource Conservation District of Tehama County	Tehama	SHRRC	1

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Non-Physical Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725670	MD	327	Ventura River Steelhead Abundance and PIT Tag Monitoring 2019-2021	Pacific States Marine Fisheries Commission	Ventura	FRGP - CMP Projects	5
725635	PD	224	Wheeler Gorge Campground Final Designs	Earth Island Institute	Ventura	FRGP	5
725643	PD	382	Sisar Creek Arizona Crossing Replacement 100% Design Project	Friends of the Santa Clara River	Ventura	FRGP	5
725629	PI	223	Santa Clara River Steelhead Coalition	California Trout, Inc.	Ventura	FRGP	5

Project Type:

MD: Monitoring Status
MO: Monitoring Watershed Restoration
PD: Project Design
PI: Public Involvement and Capacity Building (includes AmeriCorps projects)
PL: Watershed Evaluation, Assessment, and Planning
TE: Private Sector Technical Training and Education

Focus:

FRGP: Fisheries Restoration Grant Program
SHRRC: Steelhead Report and Restoration Card
FRGP-CMP Projects: Fisheries Restoration Grant Program - California Monitoring Plan Projects
CSS: California Salmon Stamp

Appendix A

Action Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725665	FP	232	Panther Creek Barrier Removal Project	Pacific Coast Fish, Wildlife and Wetlands Restoration	Humboldt	FRGP	1
725633	FP	357	Fish Passage Improvement Project at 12th Street	City of Fortuna	Humboldt	FRGP	1
725649	HB	297	Restoring Fish Passage from Salt River to Williams Creek	Humboldt County Resource Conservation	Humboldt	FRGP	1
725637	HI	236	Bioengineering and Large Wood Installation - Redwood Creek	Eel River Watershed Improvement Group	Humboldt	FRGP	1
725641	HI	290	Salmon Creek - Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR)	Eel River Watershed Improvement Group	Humboldt	FRGP	1
725653	HI	353	McGinnis Creek Instream Habitat Enhancement Project	Mattole Salmon Group	Humboldt	FRGP	1
725677	HU	238	Redwood Creek Habitat Protection Project	Redwood National Park	Humboldt	FRGP	1
725681	HB	241	Mid-Klamath Tributary Fish Passage Improvement Project	Salmon River Restoration Council	Humboldt, Siskiyou	FRGP	1

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Action Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725680	HI	314	Large Woody Debris and Stream Enhancement on San Geronimo Creek	Salmon Protection and Watershed Network	Marin	FRGP	3
725700	FP	179	Gulch C Coho Salmon Fish Passage Improvement Project	Trout Unlimited, Inc.	Mendocino	FRGP	1
725711	HI	192	Soldier Creek Instream Habitat Enhancement Project	Trout Unlimited, Inc.	Mendocino	FLAR	1
725638	HI	273	Moody Creek Instream Habitat Enhancement	Eel River Watershed Improvement Group	Mendocino	FRGP	1
725639	HI	274	Redwood Creek Watershed Key Piece LWD Project	Eel River Watershed Improvement Group	Mendocino	FRGP	1
725655	HI	208	Hare Creek and Bunker Gulch Coho Stream Habitat Enhancement Project	Mendocino Land Trust	Mendocino	FRGP	1
725708	HU	189	Dutch Charlie Creek Sediment Reduction and Fisheries Recovery Project	Trout Unlimited, Inc.	Mendocino	FRGP	1

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Action Items

Project ID	Project Type	Proposal Number	Title	Applicant	County	Focus	CDFW Region
725709	HU	190	Moody Creek Sediment Reduction and Coho Habitat Enhancement Project	Trout Unlimited, Inc.	Mendocino	FLAR	1
725710	HU	191	Soldier Creek Sediment Reduction and Salmonid Recovery Project	Trout Unlimited, Inc.	Mendocino	FLAR	1
725697	HU	222	Inman Creek Sediment Reduction Project	The Conservation Fund	Mendocino	FLAR	3
725625	FP	207	Fish Passage Improvement at Crossing 8, Quiota Creek	Cachuma Operation and Maintenance Board	Santa Barbara	FRGP	5
725688	HI	197	Scott River Habitat Enhancement & Restoration	Scott River Watershed Council	Siskiyou	FRGP	1
725646	HI	280	Tannery Creek Large Wood Recruitment Project 2018	Gold Ridge Resource Conservation District	Sonoma	FRGP	3
725647	HI	331	Dutch Bill Creek Winter Habitat Enhancement Project	Gold Ridge Resource Conservation District	Sonoma	FRGP	3

Project Type:
FP: Fish Passage at Stream Crossings
HB: Instream Barrier Modification for Fish Passage
HI: Instream Habitat Restoration
HU: Watershed Restoration (Upslope)

Focus:
FRGP: Fisheries Restoration Grant Program
FLAR: Forest Land Anadromous Restoration


California Department of Fish and Wildlife, 2018
Fisheries Habitat Restoration Projects, Mitigated Negative Declaration
State-Wide Action Items Location Map
Northern Region
Bay Delta Region
Central Coast Region
South Coast Region
Implementation Projects
FRGP Regions
County Boundary
0 25 50 100
Miles
DNT
SIS
MOD
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LAX
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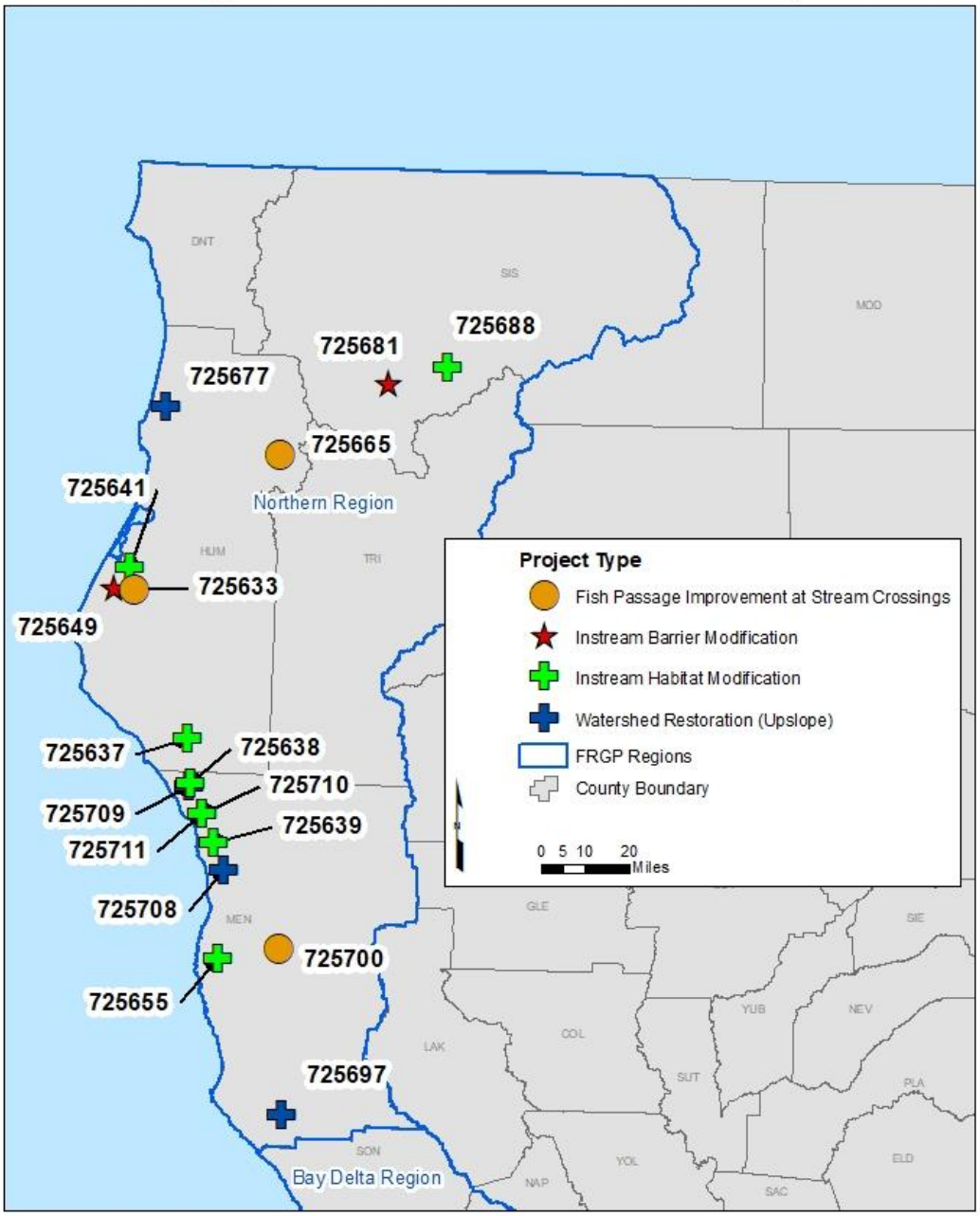
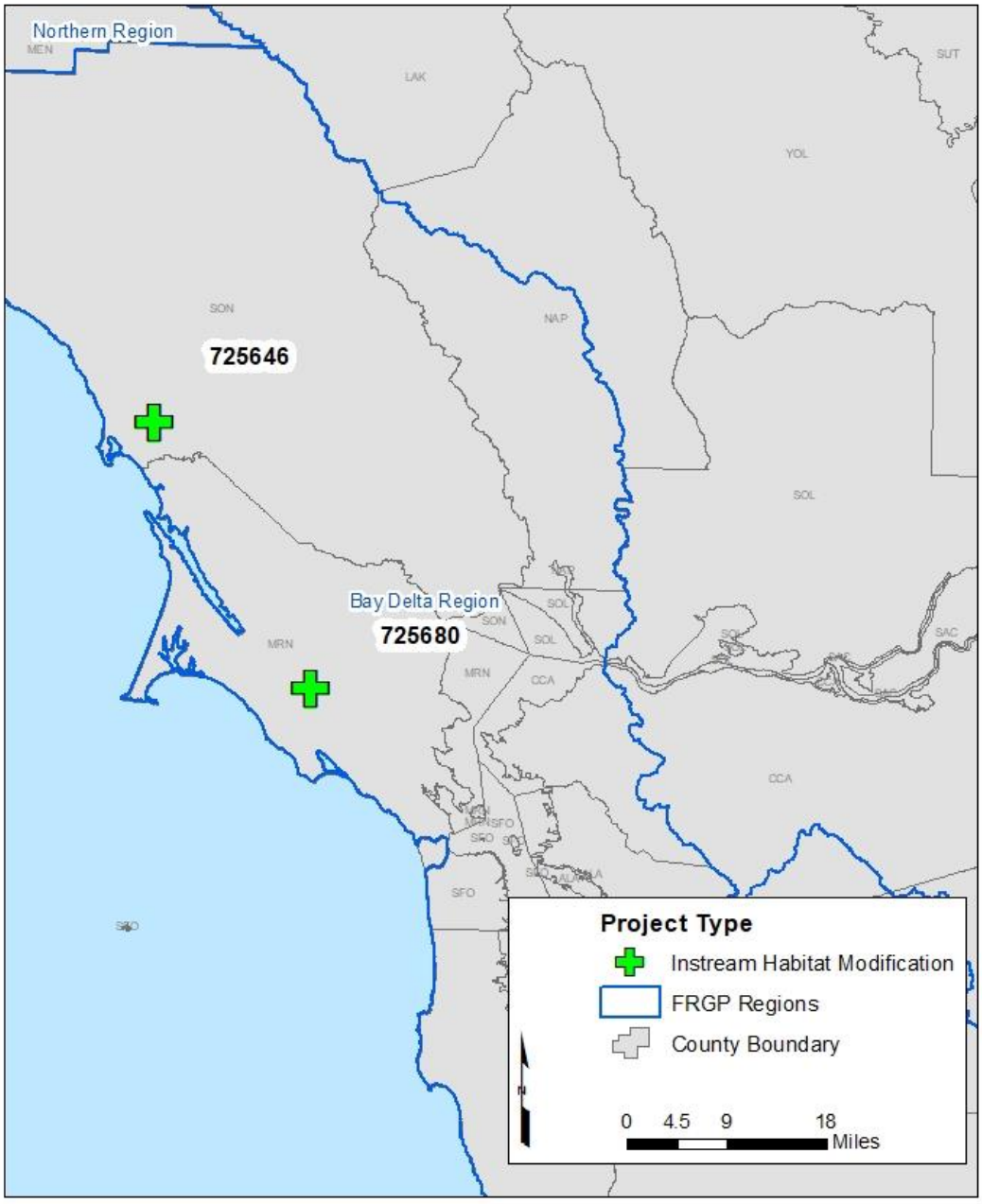
SDI
IMP

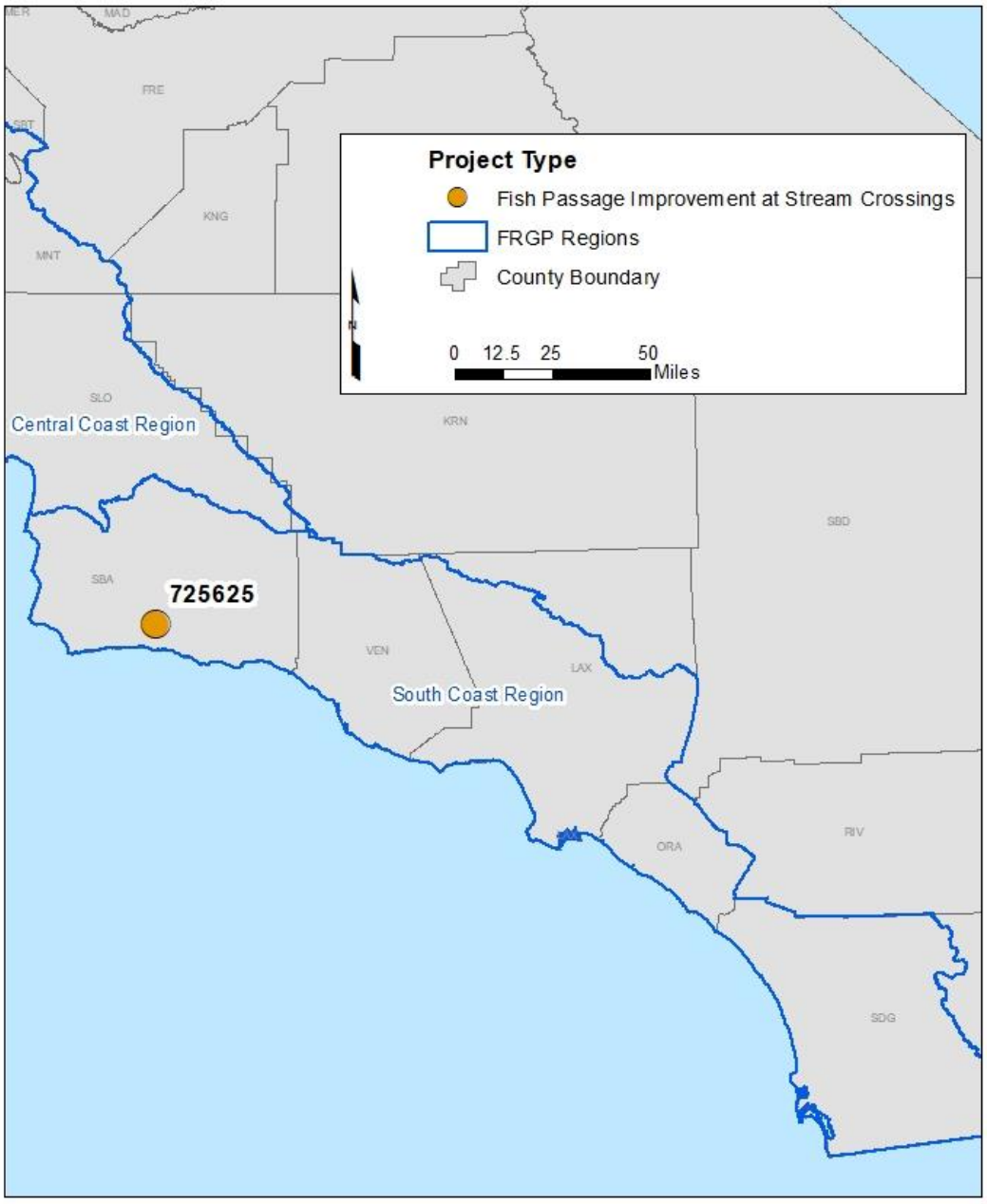
California Department of Fish and Wildlife, 2018 Fisheries Habitat Restoration Projects, Mitigated Negative Declaration
Region 1 Action Items Location Map



California Department of Fish and Wildlife, 2018
Fisheries Habitat Restoration Projects, Mitigated Negative Declaration
Region 3 Action Items Location Map



California Department of Fish and Wildlife, 2018 Fisheries Habitat Restoration Projects, Mitigated Negative Declaration
Region 5 Action Items Location Map



Introduction:

The City of Fortuna Public Works (Grantee) will implement the Fish Passage Improvement Project at 12th Street. The purpose of the project is to restore access to over 2.25 miles of upstream cold water habitat for all life stages of Coho Salmon (*Oncorhynchus kisutch*). The project is necessary because the existing 12th Street culvert has been determined to be a complete barrier to juvenile salmonids, a partial barrier to adult anadromous salmonids, and a complete barrier to adult resident salmonids at low and high flows. Salmonid recovery plans recommend removal of physical fish passage barriers in the lower Eel River Watershed.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, and Volume II, Part VII, X, XI and XII (Flosi et al 2002).

Objectives:

The objective of this project is to modify an existing crossing feature at the 12th Street crossing on Rohner Creek, remediating a complete barrier to all life stages of salmonids. Improvements will allow juvenile and adult salmonid access to 2.25 miles of cold water refugia including the recently constructed upstream floodplain improvements.

Project Description:

Location:

The project is located on Rohner Creek beginning approximately 1,300 feet upstream from the confluence with Strongs Creek, in Humboldt County, California. The project location is approximately 40.5908º north latitude, -124.1546º west longitude; Township 02 North, Range 01 West, and Section 02 of the Fortuna 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

Project Set Up:

The Grantee will provide all project oversight and administration. The subcontractor, GHD Inc., will provide construction management assistance throughout the construction of the project, including coordination and scheduling of Biologists, General Construction Contractor, Construction Observer, Grantee and other parties throughout the course of the project. GHD will conduct biological clearance surveys for presence/absence of nesting birds prior to construction disturbance and provide as-needed avian surveys and biological monitoring during construction activities. GHD will contract with a qualified, permitted sub-contractor to perform aquatic species relocation. Subcontractor, General Contractor, will perform all excavation work for stream bed material/rock for chute and pool, cut concrete, demolish, and dispose of the existing culvert.

Materials:

Project Materials are to be supplied by the awarded contractor and include: Gravel and fabric for temporary construction entrance/access, signs and notification materials for traffic control, temporary shoring, gravel, bags, piping and pump for dewatering, diversion and control of water to conduct instream work, clearing and grubbing equipment and hand tools for vegetation removal, concrete saw, streambed material/rock for step-pool roughened channel, native backfill for step-pool roughened channel and channel bank, 30 foot concrete pipe culvert (18-inch diameter) with flared end and trash rack to maintain existing drainage, structural backfill for structural support of culvert apron sections, structural concrete and reinforcement for culvert apron, outlet weirs, 1/2 ton rock slope protection (RSP) and geotextile fabric for culvert outlet scour protection 1/4 ton rock slope protection and geotextile fabric for bank protection, engineered streambed material for step-pool roughened channel, facing class rock slope protection, 3-inch minus for rock sills, biodegradable COIR mat for erosion control, seed/mulch for revegetation, container plants for revegetation, willow staking for bank revegetation.

Tasks:

Task 1. Construction Stakeout: Project stakeout will include establishment of elevation control and placement of stakes to denote the location and stationing of the project components as defined in the approved plan designs. Layout of temporary road and crossing alignment and disturbance limits will be defined for the contractor using flagging and paint.

Task 2. Stream Dewatering and Aquatic Species Relocation: Following the Fish Passage Improvement Project at 12th Street Design Plans, March 2018, temporary cofferdams and fish screens will be installed upstream of the existing inlet apron and downstream of the proposed step-pool roughened channel with a gravity diversion pipe (or optional sump pump) that will convey flow through the construction area, discharging downstream of the project area. All aquatic species will be relocated outside of the project reach. Once all aquatic species have been relocated, the project reach will be dewatered flowing the approved clear water diversion plan. All methods will follow according to the *California Salmonid Stream Habitat Restoration Manual*, Parts IV, IX and XII.

Task 3. Temporary Access Route: Following California Department of Fish and Wildlife (CDFW) approved design plans, General Construction Contractor will construct a temporary access route via Loni Drive or 12th Street in order to access the downstream project location and by constructing an access ramp along the south bank upstream of the culvert in order to access the upstream project location. Additional site access and staging areas will be identified by the City and additional areas secured with private land owners if needed.

Task 4. Fish Passage Improvement Construction: General Construction Contractor will implement the Fish Passage Improvement Project at 12th Street consistent with the 100% design plans dated March 2018.

Task 4.1. Outlet Weir and Roughened Channel Construction: Fish passage from the downstream channel would be provided using a combination of concrete weirs on the outlet apron and a step-pool roughened channel downstream of the crossing structure.

- Four concrete weirs will span the outlet apron. The upstream-most concrete weir is to be set at an elevation to backwater the culvert and inlet apron to provide adequate depth and low velocities for fish passage. The concrete weirs are to be spaced 7.0 feet apart and the drop from weir crest to crest is to be 0.5 feet. The upper three weirs are skewed at 20 degrees to create a "vortex weir" shape that concentrates the main flow towards the center of the apron while producing lower turbulent flow areas along the sides. The downstream most weir is straight and becomes fully backwatered by the downstream boulder weir at relatively low flows. The concrete weir crests are designed to have a 1-foot wide bottom width, a 4.5-foot section of 6H: 1V side slopes, an 8-foot section of 16H: 1V side slopes, a 0.5-foot step up and then flat to tie to the existing wing walls. The downstream-most weir is flat between the existing wing walls and 6H: 1V side slope section. To achieve a minimum 2-foot residual pool depth downstream of each concrete weir, portions of the downstream apron are to be lowered.

- The step-pool roughened channel design consists of a series of 9 channel spanning rock steps spaced 12.5 feet apart, with each creating 0.5-foot water surface drops, resulting in an overall slope of 4 percent. The overall length of the roughened channel is approximately 125 feet, with a 25-foot pool at the upstream extent. Each pool is to be constructed to provide approximately 2.5 feet of residual depth to provide enough pool volume to effectively dissipate energy. The step-pools are to be constructed of boulders approximately 2 to 4 feet in diameter positioned to form a v-shaped cross section with 8H: 1V cross slopes. Engineered streambed material (ESM) ranging in size from sand to 4-foot rock is to be used to form the armored pool bottoms and banks. The thickness of ESM varies between 3 and 4 feet.

  The channel bed and north bank are to be graded downstream of the crossing to create a uniform channel width to facilitate the step-pool installation and avoid constrictions. The south bank is to be filled with native streambed material excavated from the site and conform to the existing south bank. Several trees, mostly alder, less than 12 inches in diameter are to be removed to accommodate channel grading and fill. A half-ton rock slope protection (RSP) is to be placed at the finished grade immediately downstream of the notched culvert apron outfall. A quarter-ton RSP is to be placed along the north and south banks, at the end of the culvert apron and extending approximately 40 feet downstream. RSP is to be

placed above the ESM and up to elevation 43 feet (NAVD 88), 1 foot above the Rohner Creek 100 year BFE.

Task 4.2. Inlet Apron Modification: To notch the inlet apron, an 18-foot wide section of the inlet apron is to be removed and a new flat apron constructed. This apron extends across the width of the middle box culvert bay and 3 feet into the left and right bays to ensure an adequate passage corridor for fish existing from any of the three bays.

Task 5. Revegetation and Erosion Control: Native trees, shrubs and herbaceous vegetation will be planted and native seed placed consistent with the Habitat Mitigation and Monitoring Plan developed as a part of the larger Rohner Creek Project and approved by the resource agencies, to replace the vegetation removed and improve long-term diversity. All disturbed areas will be treated with native grass seed and straw mulch for erosion control.

Deliverables:

The Rohner Creek crossing at 12th Street will be retrofitted to allow year round passage to all life stages of Coho Salmon to over 2.25 miles of upstream cold water habitat.

Timelines:

June 15, 2020 through October 31, 2020, stream dewatering and aquatic species relocation.

June 15, 2020 through October 31, 2020, construction stakeout, temporary access route construction, and all fish passage improvement construction. Seed and straw mulch will be applied to all areas outside of the channel disturbed by construction.

December 1, 2020 through February 28, 2021, 236 native riparian plants will be planted and staked.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of California Department of Fish and Wildlife (CDFW).

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Project Manager on a form provided by CDFW.
- The Grantee will provide fish relocation data to CDFW on a form provided by CDFW.

The culvert design and modification will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the CDFW, for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or CDFW engineers prior to commencement of work.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fortuna (4012452) OR Ferndale (4012453) OR Cannibal Island (4012463) OR Fields Landing (4012462) OR McWhinney Creek (4012461) OR Hydesville (4012451) OR Scotia (4012441) OR Taylor Peak (4012442) OR Capetown (4012443))

Possible Species within the Fortuna quad and surrounding quads for 725633 Fish Passage Improvement Project at 12th Street, Humboldt County

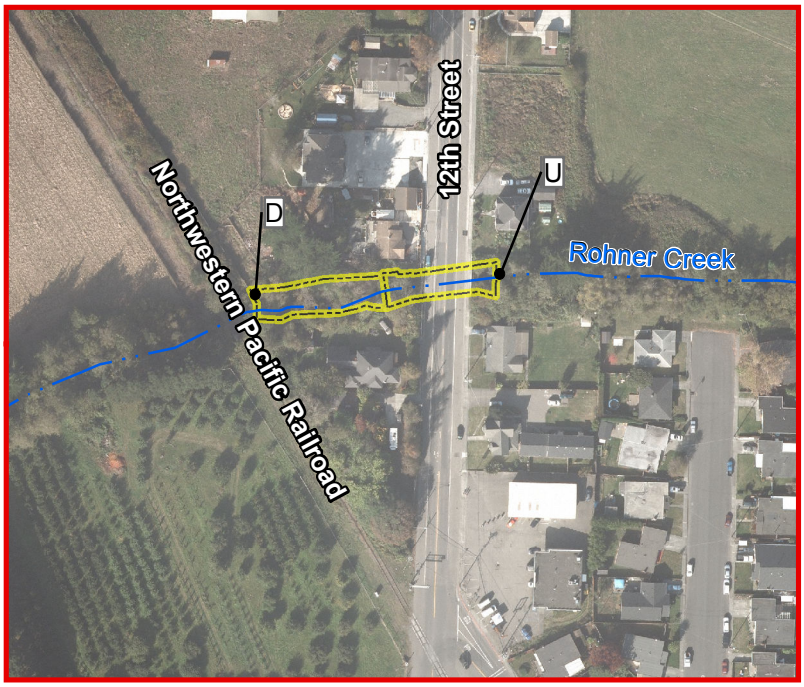
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Acipenser medirostris green sturgeon	AFCAA01030	Threatened	None	G3	S1S2	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	

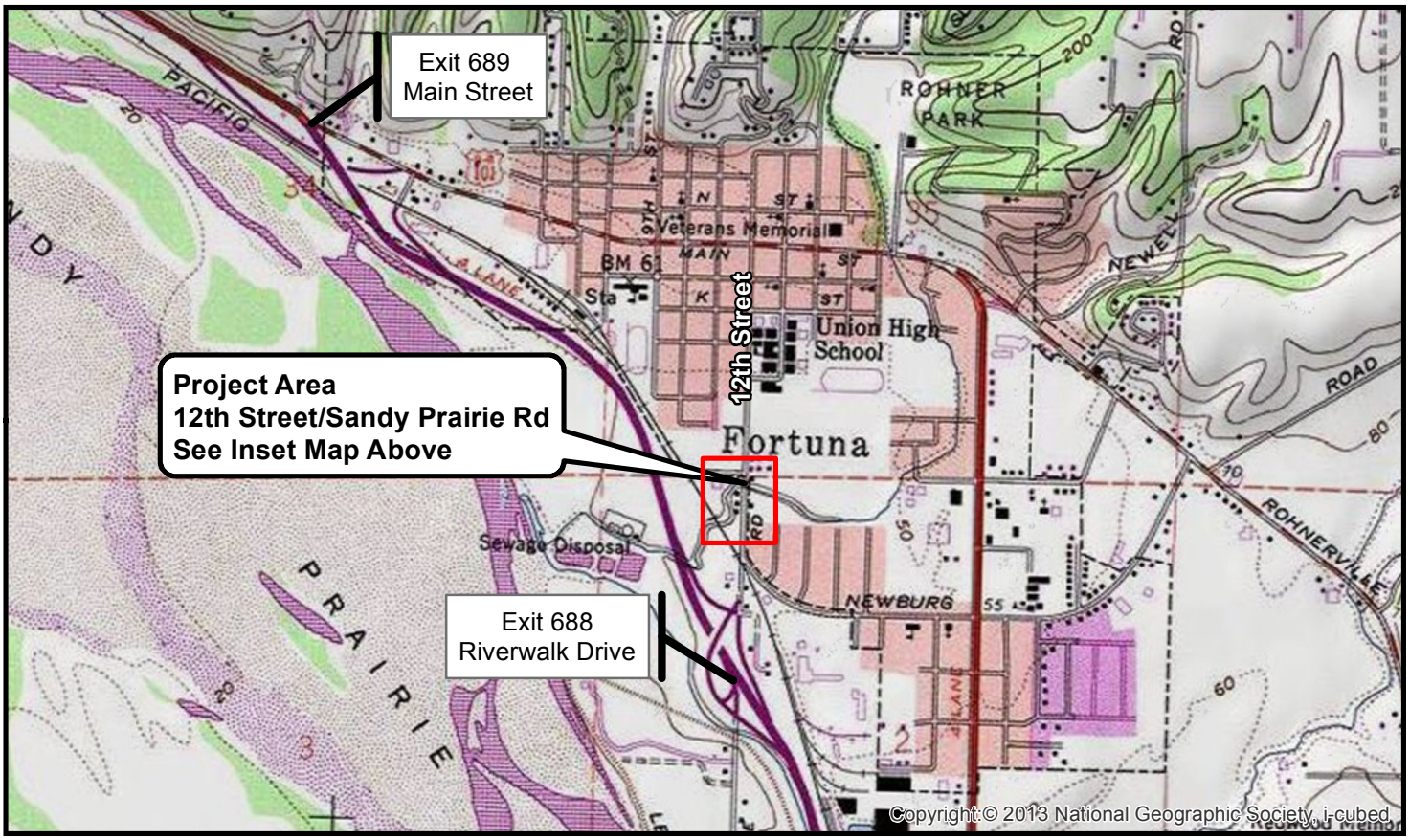
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Puccinellia pumila dwarf alkali grass	PMPOA531L0	None	None	G4?	SH	2B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Sisyrinchium hitchcockii Hitchcock's blue-eyed grass	PMIRI0D0S0	None	None	G2	S1	1B.1
Sitka Spruce Forest Sitka Spruce Forest	CTT82110CA	None	None	G1	S1.1	
Spergularia canadensis var. occidentalis western sand-spurrey	PDCAR0W032	None	None	G5T4	S1	2B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2

Record Count: 77





Creek

Work Site

Project Location Quadrangle (7.5 minute): Fortuna
S2 T2N R1W

Adjacent Quadrangles (7.5 minute): Cannibal Island (Northwest), Fields Landing (North), McWhinney Creek (Northeast), Hydesville (East), Scotia (Southeast), Taylor Park (South), Capetown (Southwest), Ferndale (West)

Paper Size 8.5" x 11" (ANSI A)

0 500 1,000 1,500 2,000 2,500

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

City of Fortuna
Fish Passage Improvement Project at 12th Street

Job Number 8411414-P
Revision A
Date 02 May 2017

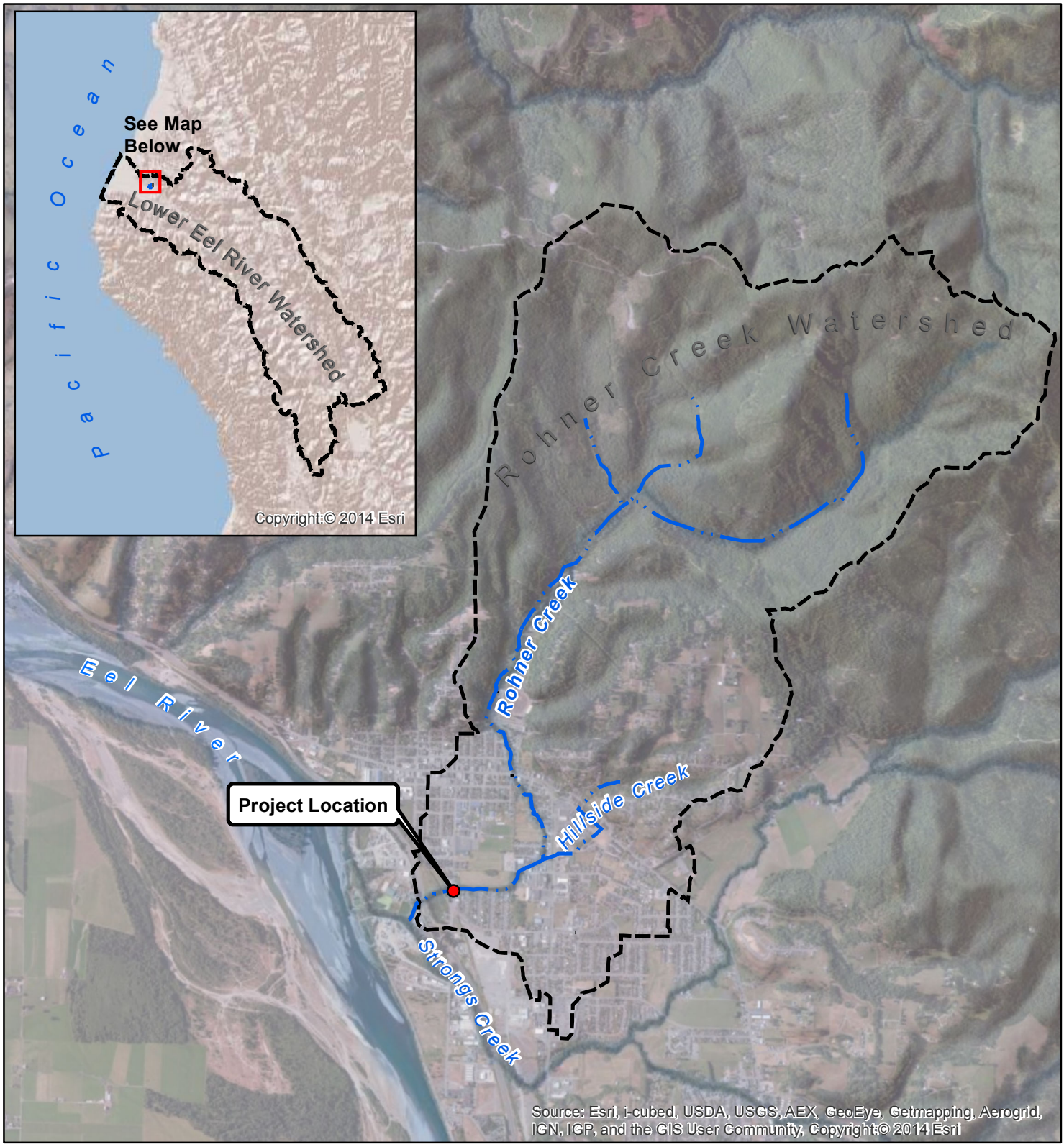
Project Location Topographic Map
2017 FRGP Application

Figure 1

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

\\ghdnet\ghd\US\Eureka\Projects\Legacy\Projects\01054 City of Fortuna\8411414 RohnerCreekFlood PH2\08-GIS\Maps\Figures\FRGP\Project_Location_Topo.mxd

Data source: National Geographic Society, Topographic Maps, 2011. StreetMap USA, Highways, States, Counties, 2010. Created by:bvivyan



Project Location

Creek

Watershed Boundary

Paper Size 8.5" x 11" (ANSI A)

0 1,000 2,000 3,000 4,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

City of Fortuna
Fish Passage Improvments at 12th Street

Job Number 8411414
Revision A
Date 28 Apr 2017

Watershed Map
2017 FRGP Application

Figure 2

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com

Data source: City of Fortuna/3Di West, Aerial Photogrammetry, 2010. GHD, Rohner Creek Flood Control, Seismic & Habitat Improvements, 2013. Created by:bvivyan

Introduction:

The Eel River Watershed Improvement Group (Grantee) will implement the Bioengineering and Large Wood Installation – Redwood Creek project. The lack of large wood in the stream channel has affected the quality and quantity of salmonid habitat within Redwood Creek by reducing the amount of large channel forming features and the loss of complex cover for salmonids. This project addresses recommendations from the California Department of Fish and Wildlife (CDFW), 2014 South Fork Eel River Basin Assessment Report to conduct restoration activities that will increase depth, area or shelter complexity in pools, by adding large wood or combinations of boulders and large wood and stabilize eroding stream banks appropriately designed structures and revegetation. A stream inventory report conducted in 2010 by the California Department of Fish and Game (CDFG) determined an insufficient amount of woody cover is present in pools and flatwater habitat units in Redwood Creek and adding high quality complexity with woody cover in the pools would be desirable. Additionally, bank stabilization and riparian improvement will completed through bioengineering, planting and strategic armoring of currently failing or susceptible bank material.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual*, 3rd Edition, Volumes I and II, Parts VII, XI, and XII (Flosi et al 1998 and 2002).

Objective(s):

The specific objective of this project is to improve the quality and quantity of spawning and rearing habitat for Coho Salmon (*Oncorhynchus kisutch*) by installing 25 log and boulder features at 11 individual locations, consisting of 59 pieces of large wood and 120 cubic yards of 2 to 3 ton boulders and 40 cubic yards of 0.5 ton boulders, for improving instream habitat and for stabilizing stream banks within a 2,000 foot section of Redwood Creek. These structures will enhance instream habitat through increased shelter and channel complexity, deepened pools, and gravel sorting. Bank stabilization and riparian improvement will completed through bioengineering, planting and strategic armoring of currently failing or susceptible bank material.

Project Description:

Location:

The project is located on Redwood Creek, located in the county of Humboldt, State of California. The project begins approximately five miles upstream from the confluence of the South Fork Eel River, 0.15 miles upstream of the confluence with Somerville Creek and continues upstream for approximately 2,000 feet. Project boundaries are 40.1077º north latitude, -123.8980º west longitude at the downstream end; 40.1062º north

latitude, -123.9017º west longitude at the upstream end; Township 04 South, Range 03 East, and Section 18 of the Briceland 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

Project Set Up:

Grantee staff will provide all project oversight and administration. The subcontractor, California Conservation Corps (CCC) will provide the hand labor for the installation of in-stream large wood features, planting and watering native trees and plants. Subcontractor, Licensed Excavator Operator and Licensed Timber Operator, will conduct heavy equipment operations, including transport of equipment, delivery of materials, construction of features and dewatering. Subcontractor, Paleontology survey crew will conduct pre-construction paleontological survey. Subcontractor, Humboldt State University Cultural Resources Facility staff will conduct sensitive plant and cultural resource surveys prior to construction.

Materials:

A total of 25 large wood features, consisting of 59 pieces of large wood, root wads and boulders, will be constructed and anchored with 1" threaded rebar, nuts, washers, 5/8" galvanized cable, cable clamps, and waterproof epoxy glue, 120 cubic yards of 2 to 3 ton boulders and 40 cubic yards of 0.5 ton boulders. Additionally, 300 willow cuttings, 3 red alders (*Alnus rubra)*, 3 red osier dogwoods (*Cornus sericea*), 2 Oregon ash (*Fraxinus latifolia)*, 3 California man root (*Marah fabaceous)*, 3 California blackberry (*Rubus ursinus)* will be planted and 7.5 pounds of mixed native grass seed will be used.

Tasks:

Task 1. Construction Stakeout: Project subcontractors will flag sites for wood delivery and installation, clear brush for equipment as needed, designate staging areas for equipment and wood along project reaches.

Task 2. Stream Dewatering and Fish Exclusion: Fish exclusion fencing will be installed upstream and downstream of the project reach. All aquatic species will be relocated outside of the project reach. Once all aquatic species have been relocated, the project reach will be dewatered following the clear water diversion plan. All methods will follow according to the *California Salmonid Stream Habitat Restoration Manual*, Volumes I and II, Parts IV, IX and XII.

Task 3. Install Instream Habitat and Bioengineered Features: Install 11 instream features within a 2,000 foot section of Redwood Creek, consisting of 59 pieces of large wood and 120 cubic yards of 2 to 3 ton boulders and 40 cubic yards of 0.5 ton boulders. Work will consist of the following:

- The grantee will construct instream log and boulder structures according to the site specific plans to be provided, using locally available logs or logs from other locations.
- Nuts, washers, plates, cable, glue and rebar will be ordered as applicable.
- One of the features will be a bioengineered willow, log and boulder structure. An excavator will be used to trench a planting area for the willow and the CCC will install the willow according to the project designs.
- Location of all project large wood will be documented.
- Various anchoring techniques, which will be approved by CDFW prior to the initiation of work, may be used to hold multiple logs together to form complex structures. Anchoring techniques will include wedging logs into existing rocks and logs along the riparian banks; anchoring to live mature trees growing on riparian banks; or anchoring to existing boulders. Anchoring materials will consist of 1" threaded rebar, cable, nuts and washers, and waterproof epoxy. Anchoring to boulders will involve DYWIDAG type connections and high strength epoxy.
- An excavator will be used to trench a planting area for the willow and the CCC will install the willow according to the project designs.
- Available slash and woody debris will be installed into structures after site completion to provide immediate cover for salmonids present at time of construction.

Task 4. Riparian Planting and Erosion Control: In the winter following completion of the large wood installation, native trees and plants will be planted in disturbed areas to add complexity to the riparian corridor and replace trees that were removed or damaged during project work. Willow will be watered after installation until winter rains begin. Native plant species will include red alder, red osier dogwoods, Oregon ash, California man root, and California blackberry.

Deliverables:

A total of 25 instream features at 11 locations will be constructed within a 2,000 foot section of Redwood Creek, consisting of 59 pieces of large wood. A total of 300 willow cuttings will be installed and 14 native riparian plants planted.

Timelines:

June 15 through October 31 of the years 2019, 2020, 2021, and 2022, construction stakeout, dewatering, and aquatic species relocation will take place prior to implementation of project features. Installation of large wood and boulder features will be installed within approved project reaches following the Redwood Creek Instream Habitat Improvement 65% Design – Gray & Neufeld. Erosion control will be installed as project features are completed.

December 1 through February 28 of 2019, 2020, 2021, and 2022, crews will conduct native riparian planting.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW Aquatic Invasive Species Decontamination Protocol.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Project Manager on a form provided by CDFW.
- The Grantee will provide fish relocation data to CDFW on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Project Managers.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Briceland (4012318) OR Shelter Cove (4012411) OR Honeydew (4012421) OR Ettersburg (4012328) OR Miranda (4012327) OR Garberville (4012317) OR Piercy (3912387) OR Bear Harbor (3912388))

Possible species within the Briceland quad and surrounding quads for 725637 Bioengineering and Large Wood Installation - Redwood Creek, Humboldt county

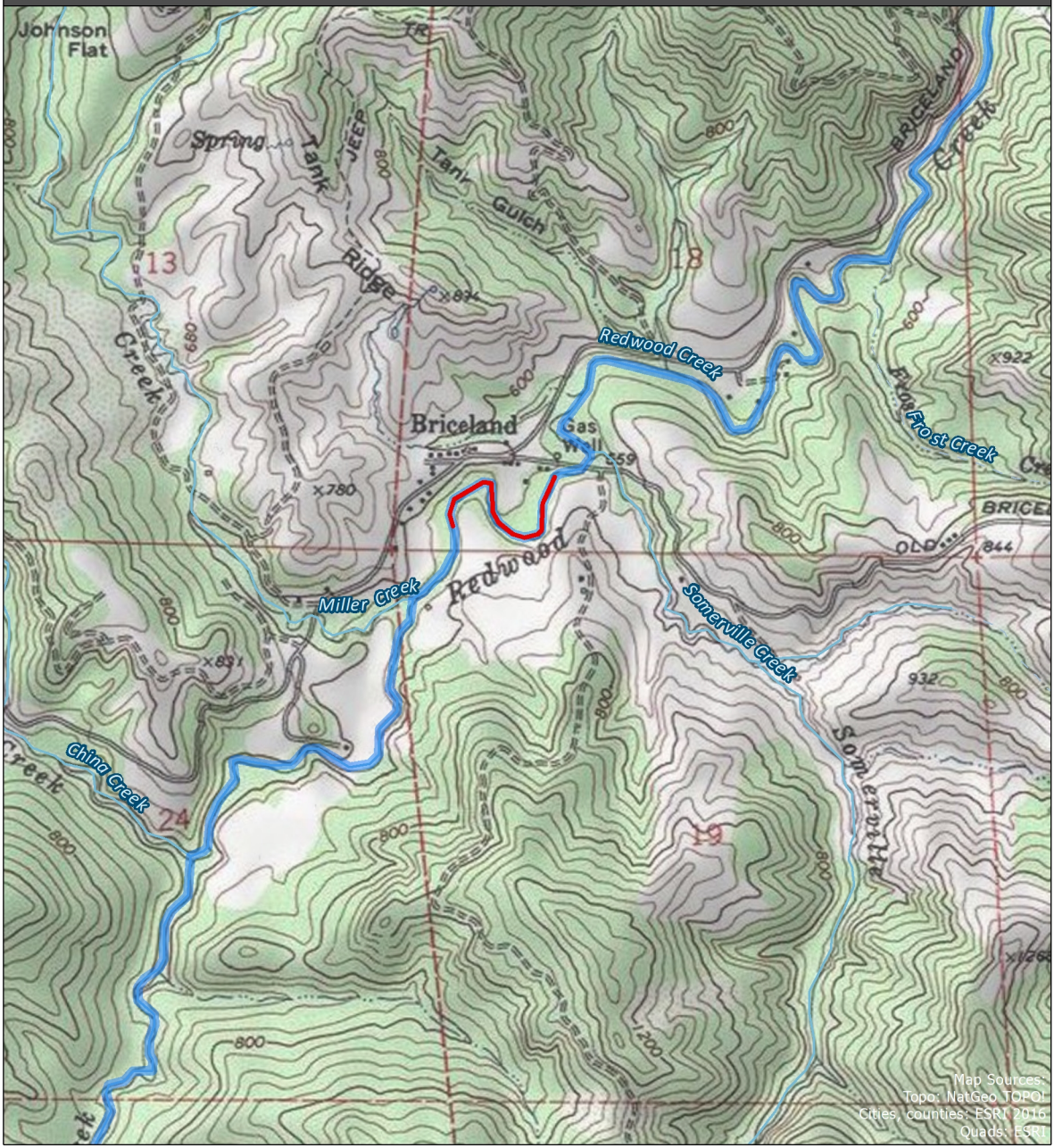
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Empidonax traillii brewsteri little willow flycatcher	ABPAE33041	None	Endangered	G5T3T4	S1S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Helminthoglypta arrosa monticola mountain shoulderband	IMGASC2035	None	None	G2G3T1	S1	
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Noyo intersessa Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Upland Douglas Fir Forest						
Usnea longissima	NLLEC5P420	None	None	G4	S4	4.2
Methuselah's beard lichen						

Record Count: 42

BIOENGINEERING AND LARGE WOOD INSTALLATION - REDWOOD CREEK



Project Location Topographic Map

Project reach

Redwood Creek

Grantee Name: Eel River Watershed Improvement Group

USGS Quad Name: Briceland

Stream Name: Redwood Creek

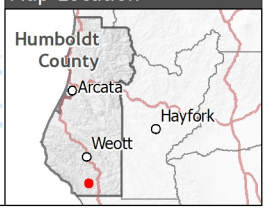
N

0 150 300 600 Meters

0 500 1,000 2,000 Feet

Stillwater Sciences

Map Location



Salmon Creek - Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR) 2018

Introduction:

The Eel River Watershed Improvement Group (Grantee) will create 19 instream features consisting of 36 logs within 1.1 miles of Salmon Creek. Salmon Creek is an important tributary to Humboldt Bay supporting Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), steelhead trout (*Oncorhynchus mykiss*) and Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*). This project is necessary because the stream channel has been damaged from historical land use. Recently the land use has improved and large scale restoration has taken place on the lowermost section of Salmon Creek. In the *Humboldt Bay Watershed Salmon and Steelhead Conservation Plan* (Humboldt Bay Watershed Advisory Committee and Redwood Community Action Agency 2005), three recommendations were listed that pertain to this project: Protect and maintain instream large woody debris (LWD), increase the amount of instream LWD where appropriate, and maintain and restore the long-term supply of LWD. In the *Final Recovery Plan for the Southern Oregon/ Northern California Coast Evolutionarily Significant Unit of Coho Salmon Recovery (*Oncorhynchus kisutch*)* (National Oceanic and Atmospheric Administration, 2014) one of the "highest priority recovery actions" for Humboldt Bay tributaries is to "Increase large woody debris (LWD), boulders, or other instream structure".

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, Part VII (CDFG 1998) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

This project will create 19 instream features consisting of 36 logs within 1.1 miles of Salmon Creek. These structures will enhance spawning and rearing habitats by increasing pool complexity, depth, and frequency, sorting spawning gravels, and providing velocity refugia. The end result will provide habitat for all four salmonid species that are found in Salmon Creek. Two hundred native conifers and 600 willow cuttings will also be planted where appropriate along the project reach.

Project Description:

Location:

Salmon Creek is the southernmost tributary to Humboldt Bay. The nearest city to Salmon Creek is Loleta, California. The Salmon Creek project reach contains multiple features starting approximately 4.0 miles upstream of the confluence of Salmon Creek and Hookton Slough and approximately 0.9 miles upstream of the confluence with Little Salmon Creek. Project coordinates are: 40.6604096 latitude, -124.1793727 longitude at the downstream end of the project reach.

Project Set Up:

Executive Director: Tasks 1 and 2. Agreement and Subcontract oversight and reporting will be conducted by the Executive Director with assistance from the Project Manager. Project Manager: Tasks 1, 2, 3, 4, 5, and 6. Will assist with Agreement and subcontract oversight, invoicing, and reporting. Will manage all aspects of project implementation.

Subcontractors:
California Conservation Corps (CCC). CCC Fish Habitat Assistant: Tasks 2, 3, and 5. Will participate in project preparation, implementation, and collecting metrics. Will provide logistical support to CCC Corpsmember crews ensuring tool and material needs are met without delay throughout the project duration. Additionally, the CCC Fish Habitat Assistant will provide onsite training and direction to CCC crews to ensure features meet the criteria set by the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). CCC Corpsmembers: Task 3. Under supervision of the CCC Conservationist 1 will anchor the structures according to design and anchoring specifications. CCC Corpsmembers will also move LWD into position using a come along. Tree planting crew: Task 4. Will plant willow cuttings and conifer trees.

Registered Professional Forester (RPF): Task 2. Will carefully select trees in the riparian zone to fall according to project design specifications and best forestry practices.

Licensed Timber Operator (LTO): Task 3. Will fall trees identified by the RPF for use in the project, will buck up trees into specified logs, and will remove branches if necessary.

Humboldt State University Cultural Resources Facility: Task 2. Will perform botanical and archeological surveys and research. Will prepare California Environmental Quality Act (CEQA) related reports.

Paleontology survey crew: Task 2. Will conduct paleontological surveys and prepare CEQA report.

Materials:

Materials to complete this project consist of:
Anchoring Materials: 10' by 1" threaded rod (rebar), steel nuts, and steel washers; Planning and Construction Materials: griphoists, band saw blades, extension cords, shear pins, ground fault interruptors, wrenches, straw,

miscellaneous gear; and logs >1' diameter, willow cuttings, and coniferous tree seedlings.

Tasks: The following list of tasks will be accomplished to complete the goals:

Task 1. Agreement and Subcontract Oversight:

Conduct Agreement and subcontract oversight. Communicate and coordinate with the landowner to obtain entry permits, coordinate implementation schedules, obtain wood donation, and assess project implementation details. Upon receipt of the Preliminary Notice to Proceed, submit *Notification of Lake or Streambed Alteration*, hire subcontractors, and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to Agreement and regulatory guidelines.

Task 2. Project Preparation:

Work with subcontractors to make sure all employees are trained on landowner concerns and protocols before they enter the property to begin project work. Work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when staging and placing large wood in the stream. With subcontractors, be aware of the status of roads within the project area and do not do anything that might cause significant impacts on the hydrology of decommissioned road segments. The Project Manager and the CCC Fish Habitat Assistant will finalize site specific designs based on channel morphology and LWD availability. They will submit designs for landowner and Grantor's Project Manager approval. Subcontractors will carry out paleontological, archeological and botanical surveys and background research and prepare reports for CEQA based on their findings. The Project Manager along with the CCC Fish Habitat Assistant will flag sites for wood selection, staging, and installation; clear brush as needed; and designate staging areas for wood along project reaches. The RPF will identify trees for falling. Pre-project photos and metrics will be collected. Tools and materials will be purchased prior to the start of implementation and on an as-needed basis throughout the project. Billing and invoicing will take place in a prompt manner.

Task 3. Project Implementation:

With approval from the Grantor's Project Manager and under the direction of the Project Manager and the CCC Fish Habitat Assistant, site construction on 19 LWD features will begin. Some features may involve cutting down trees in the riparian area to fall in to the creek. This will be accomplished by the LTO. When necessary, CCC members will move LWD into position using a come-along. Site construction, wood placement, and anchoring will be in accordance with the

California Salmonid Stream Habitat Restoration Manual, Part VII (Flosi et al. 1998). The project will utilize living riparian trees as anchors by wedging the logs between them, where feasible. CCC members under supervision of the CCC Conservationist 1 will anchor the sites according to design and anchoring specifications. CCC members will use one-inch threaded rebar to anchor logs to mature riparian trees and other logs. Holes will be drilled through the logs and their anchor trees using a drill, timber bit, and drill bit extensions, when necessary. One-inch rebar will be strung through the log and secured with nuts and washers. CCC members will be supervised by a CCC Conservationist 1, CCC Fish Habitat Assistant, and the Project Manager. Erosion control methods will be employed by the CCC as required at each structure to eliminate the possibility of sediment transport to the stream. Any tools that break down will be taken to a repair shop or replaced if necessary. To address concerns over invasive species this project will follow the Grantee's *Aquatic Invasive Species Decontamination Protocol*.

Task 4. Riparian Planting:

To promote riparian vegetation impacted by project implementation, increase canopy cover above the creek, and to establish wood for future instream recruitment, a CCC tree planting crew will return in the winter following project implementation to plant 200 conifer seedlings (*Sequoia sempervirens* and *Pseudotsuga menziesii*), with a primary focus in areas lacking sufficient conifer cover or riparian vegetation. Six-hundred willow cuttings will also be planted as stakes and fascines at predetermined planting areas.

Task 5. Post-Project Data and Photo Collection:

Following implementation, photos will be taken of the project and metrics will be collected which satisfy the Agreements Annual Report(s) and Final Report.

Task 6. Reporting:

Write and deliver Annual Report(s) and a Final Report to the Grantor's Project Manager.

Deliverables:

Task 1. Agreement and Subcontract Oversight. *Notification of Lake or Streambed Alteration*, subcontracts, Final Landowner Access Agreement, invoices, and invoice Progress Reports.

Task 2. Project Preparation. Finalized design plans, pre-project photos and metrics.

Task 3. Project Implementation. 19 LWD structures containing 36 pieces of LWD made up of redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) logs.

Task 4. Riparian Planting. Two-hundred planted coniferous trees and 600 planted willow cuttings.

Task 5. Post-Project Data and Photo Collection. Post-project photos and metrics.

Task 6. Reporting. Annual Reports, Final Report.

Timelines:

Task 1. Agreement and Subcontract Oversight. June 3, 2019 to March 31, 2021.

Task 2. Project Preparation. June 3, 2019 to October 30, 2020.

Task 3. Project Implementation. June 17, 2019 to October 30, 2020.

Task 4. Riparian Planting. December 2, 2019 to February 26, 2021.

Task 5. Post-Project Data and Photo Collection. December 2, 2019 to February 26, 2021.

Task 6. Reporting. July 1, 2019 to March 31, 2021.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross

contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fields Landing (4012462) OR Cannibal Island (4012463) OR Eureka (4012472) OR Arcata South (4012471) OR McWhinney Creek (4012461) OR Hydesville (4012451) OR Fortuna (4012452) OR Ferndale (4012453))

Possible Species within the Fields Landing quad and surrounding quads for 725641 Salmon Creek - Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR), Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Acipenser medirostris green sturgeon	AFCAA01030	Threatened	None	G3	S1S2	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Bryoria spiralifera twisted horsehair lichen	NLTEST5460	None	None	G3	S1S2	1B.1
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Circus cyaneus northern harrier	ABNKC11010	None	None	G5	S3	SSC
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Collinsia corymbosa round-headed Chinese-houses	PDSCR0H060	None	None	G1	S1	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus japonicus seaside pea	PDFAB250C0	None	None	G5	S2	2B.1
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Monotropa uniflora ghost-pipe	PDMON03030	None	None	G5	S2	2B.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Puccinellia pumila dwarf alkali grass	PMPOA531L0	None	None	G4?	SH	2B.2
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05016	Endangered	Endangered	G5T1	S1	FP
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sitka Spruce Forest Sitka Spruce Forest	CTT82110CA	None	None	G1	S1.1	
Spergularia canadensis var. occidentalis western sand-spurrey	PDCAR0W032	None	None	G5T4	S1	2B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 89

Project Location Topographic Map
Salmon Creek - Salmonid Habitat Enhancement with Accelerated Recruitment
Fields Landing Quad, Humboldt County

Salmon Creek Project Reach

Eel River Watershed Improvement Group
March 2018

0 0.25 0.5 1 Miles

N

Introduction:

The Humboldt County Resource Conservation District, (Grantee) will implement the project, Restoring Fish Passage from Salt River to Williams Creek. The purpose of the project is to excavate and restore 3,000 feet of the aggraded and disconnected Salt River channel in order to provide access to Williams Creek, a second order stream with approximately 6.9 miles of blue line stream, for all life stages of Coho Salmon (*Oncorhynchus kisutch*). The project is necessary because deforestation of the Salt River watershed, channelization of the tributaries, reclamation of 3,000 acres of tidal marsh, loss of tidal prism, timber extraction, and highly erosive geologic formations of the surrounding area, the Salt River channel has filled with sediment and vegetation and is often impassable for salmonids.

The proposed project is part of a larger watershed-scale restoration effort known as the Salt River Ecosystem Restoration Project (SRERP). The over-arching goal of the SRERP is to re-establish a functioning upslope, riverine, riparian, wetland and estuarine ecosystem. The SRERP will re-connect the Eel River estuary via the historic Salt River channel to a series of five streams draining the Wildcat Mountains. Williams Creek is the remaining tributary that needs to be reconnected to the system. Williams Creek has 6.9 miles of upper watershed fish habitat that is currently unavailable to fish, including salmonids, due to the complete alluvial sedimentation of the upper reaches of the Salt River channel. The channel excavation portion of this project is identified in California Department of Fish and Wildlife (formerly Fish and Game)'s Salt River Watershed Assessment (2005) and in the Basis of Design Report - Salt River Ecosystem Restoration Project (2011).

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual*, Volume I and Volume II, Parts VII, XI, IX, XI and XII (Flosi et al 1998 and 2002).

Objective(s):

The project will excavate and restore 3,000 feet of the aggraded and disconnected Salt River channel to re-connect Williams Creek, a second order stream with approximately 6.9 miles of fish habitat in the upper Salt River Watershed.

Project Description:

Location:

The project is located on the Salt River, tributary to Eel River, in Humboldt County, California. The project starts approximately 6.5 miles upstream of the confluence with Eel River and continues upstream 3,000 feet to confluence with Williams Creek. The

project boundaries are 40.5953º north latitude, -124.2419º west longitude at the downstream end and 40.5889º north latitude, -123.2385º west longitude at the upstream end; Township 03 North, Range 02 West, and Section 36, and Township 02 North, Range 02 West, and Section 1 of the Fortuna 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

Project Set Up:

Grantee staff will provide all project oversight and administration. Subcontractor, Construction Contractor will construct the project, install and maintain clear water diversion and temporary fish barriers during construction.

Materials:

Materials for implementation include crushed rock for up to 3 construction entrances along the project reach to allow access for equipment and protect the County road from damage, fiber rolls (6,000 linear feet) for placement at break in slopes on both sides of the 3,000 foot channel excavation to limit storm water runoff into the site. Materials used for water control will be outlined in the water control diversion plan and may include fish screens, sheet piles, sand bags, or other materials as determined by the contractor.

Tasks:

Task 1. Temporary Access Routes: Three temporary construction entrances will be sited and developed using appropriate sized rock delivered by dump trucks and placed by and excavator.

Task 2. Stream Dewatering and Fish Exclusion: Fish exclusion fencing will be installed upstream and downstream of the project reach. All aquatic species will be relocated outside of the project reach. Once all aquatic species have been relocated, the project reach will be dewatered following the clear water diversion plan. All methods will follow according to the *California Salmonid Stream Habitat Restoration Manual*, Parts IV, IX and XII.

Task 3. Stream Excavation: Multiple excavators will be staged and work at different locations along the river channel. Excavators will excavate sediments and load them into street legal or off-highway dump trucks. Dump trucks will deliver sediments to appropriate sediment reuse sites and to be spread by landowners.

Task 4. Erosion Control: Upon completion of excavation, erosion control measures will be implemented, such as spreading suitable erosion control seed mix, placing fiber rolls (straw waddles) at break in slopes, and erecting silt fences at appropriate locations.

Task 6. Temporary Road Crossing and Exclusion Fencing Removal: When the project is completed, the temporary access routes will be removed. All imported materials associated with the temporary road and crossing will be removed from the stream. Cofferdams, fish exclusion nets and clear water diversion equipment will be removed from the stream channel.

Deliverables:

Approximately 36,000 cubic yard of sediment will be excavated from approximately 3,000 feet of Salt River channel by the construction contractor following the final design plans.

Timelines:

June 15 through October 31 of the years 2019, 2020, and 2021, access routes, clear water stream diversion, fish removal and stream excavation will take place.

June 15 through November 30, of the years 2019, 2020, and 2021, erosion control materials will be installed including spreading suitable seed mix, installing coir fabric across newly constructed banks, placing straw waddles at break in slopes, and erecting silt fences at appropriate locations.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Project Manager on a form provided by CDFW.
- The Grantee will provide fish relocation data to CDFW on a form provided by CDFW.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this

agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Project Managers.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fortuna (4012452) OR Ferndale (4012453) OR Cannibal Island (4012463) OR Fields Landing (4012462) OR McWhinney Creek (4012461) OR Hydesville (4012451) OR Scotia (4012441) OR Taylor Peak (4012442) OR Capetown (4012443))

Possible Species within the Fortuna quad and surrounding quads for 725649 Restoring Fish Passage from Salt River to Williams Creek, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Acipenser medirostris green sturgeon	AFCAA01030	Threatened	None	G3	S1S2	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	

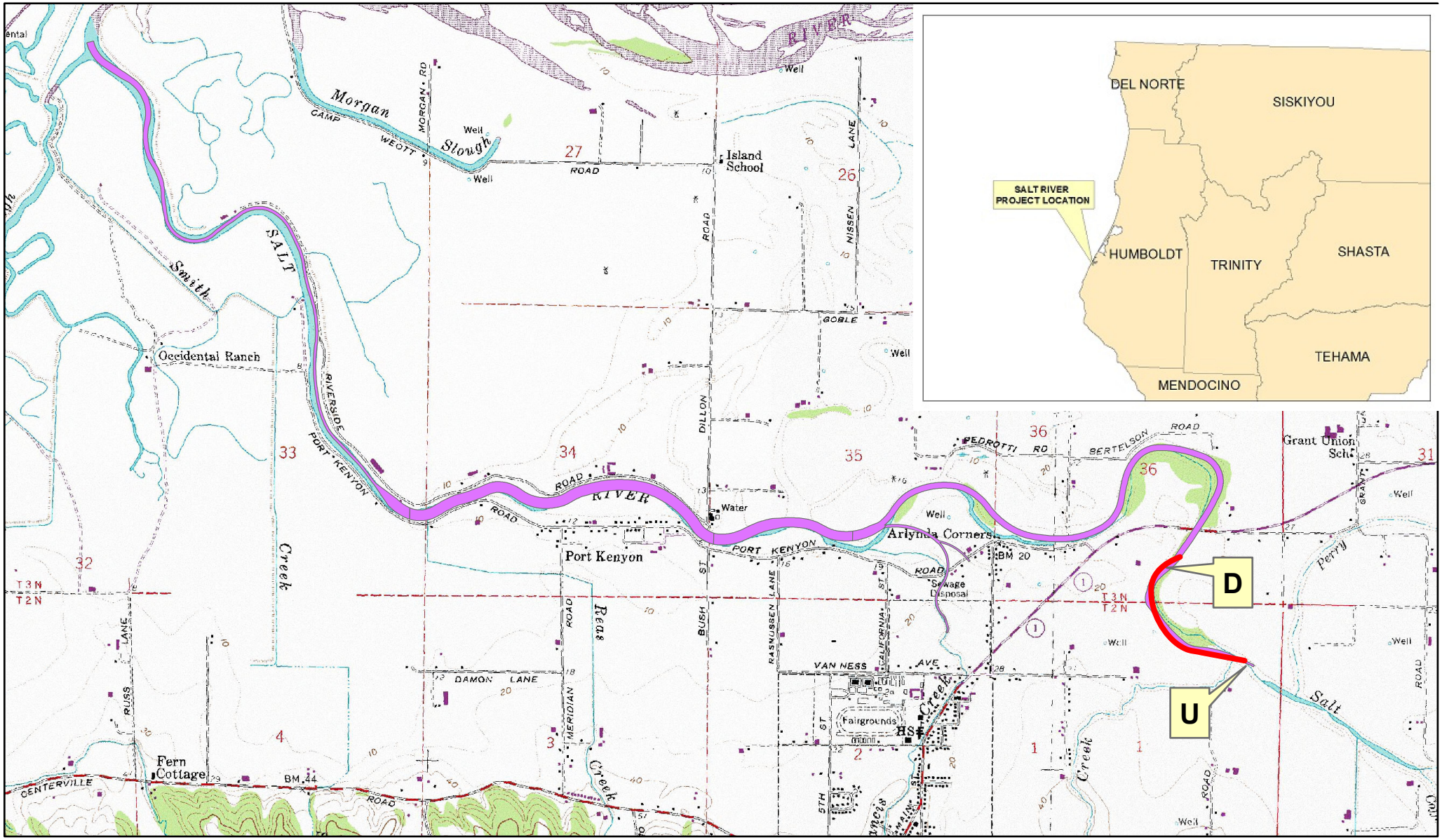
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Puccinellia pumila dwarf alkali grass	PMPOA531L0	None	None	G4?	SH	2B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Sisyrinchium hitchcockii Hitchcock's blue-eyed grass	PMIRI0D0S0	None	None	G2	S1	1B.1
Sitka Spruce Forest Sitka Spruce Forest	CTT82110CA	None	None	G1	S1.1	
Spergularia canadensis var. occidentalis western sand-spurrey	PDCAR0W032	None	None	G5T4	S1	2B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2

Record Count: 77

Restoring Fish Passage From Salt River to Williams Creek



Salt River Ecosystem Restoration Project

Fish Passage Improvement

Channel Excavation

1 0.5 0 1 Miles

N

PROJECT LOCATION: USGS FERNDALE QUADRANGEL

Introduction:

The Mattole Salmon Group (Grantee) will place at least 100 logs at 16 locations along 0.75 miles of McGinnis Creek. Structures will include up to 25 whole trees. This project is necessary as the lack of large wood in McGinnis Creek has resulted in a stream dominated by shallow runs and riffles. Most pools that exist are shallow and lack cover and complexity. During surveys conducted in the summer of 2014, only a single pool with a residual depth of >60 centimeters was found in over 2 kilometers surveyed.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, Part VII (CDFG 1998) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

The objectives of this project are to increase pool frequency, pool depth, cover, channel complexity, and floodplain connectivity through the placement of at least 100 logs in 0.75 miles of McGinnis Creek in order to enhance spawning and rearing habitat in a stream reach with potential for steelhead trout (*Oncorhynchus mykiss*), and Coho Salmon (*Oncorhynchus kisutch*) and Chinook Salmon (*Oncorhynchus clarkii clarkii*). This work will occur at 16 sites and will include placement of large woody material including up to 25 whole trees with rootwads.

Project Description:

Location:

The project is on McGinnis Creek approximately one quarter mile upstream from the confluence with the Mattole River, immediately upstream of the Hartman/3030 Ranch road crossing. The treatment reach is 0.75 miles long. Project coordinates are: 40.30094 latitude, -124.2132132 longitude at the upstream extent of sites.

Project Set Up:

As a Licensed C-27 Contractor, Sungnome Madrone, will be overseeing the final feature placement along with Cam Thompson and Conor Shea of the United States Fish and Wildlife Service. This work will have the benefit of input from the Lower River Technical Advisory Committee and the landowner and will be done as cost share. Cam Thompson will be responsible for heavy equipment operations for the project. The Equipment Operator will complete tree removal and placement, and structure construction. The Project Manager's responsibilities include management tasks such as subcontracts and budgets

and invoicing, personnel management, as well as implementation and overall project oversight and management. The Project Coordinator's responsibilities include day-to-day supervision of construction activities, including crew supervision, tracking daily costs, maintaining the safety program and protocols, and meeting all permit conditions. The Project Coordinator will be responsible for day-to-day management and maintenance of tools, equipment and overall upkeep of facilities utilized in the implementation of this project. The Laborer Specialists will assist with all labor activities related to removing, hauling, and placement of trees, anchoring, and site cleanup. Laborers will assist with all pre- and post-monitoring activities, as well as construction. The Bookkeeper will help create invoicing and track budgets, as well as meet payroll and pay accounts receivable. The Program Assistant will be responsible for assisting the Project Manager and Bookkeeper with day-to-day tasks of communication and paperwork processing.

The Humboldt Redwood Company (HRC) Forest Science Director will assist with wildlife surveys and approve tree selection. HRC's Registered Professional Forester/Area manager will assist with and approve tree selection. An HRC Aquatic Biologist/Hydrologist will provide input on structure final placement and design. The HRC lead and staff biologists will complete required wildlife surveys as needed.

Humboldt State University's, Sponsored Programs Foundation-Cultural Resources Facility will provide archeology, botany, and paleontology services for this project.

Conor Shea, Ph.D., P.E. (License: C71843) is a professional engineer and fluvial geomorphologist specializing in aquatic habitat restoration and is responsible for providing design comments.

Materials: Construction materials: One hundred Douglas Fir trees 60-100 feet tall and 14-36" diameter at breast height (dbh), rebar, cable, washers, nuts, clamps; Power tools: chainsaws, drills, compressors, generators; Safety items: dust masks, hard hats, safety vests, first aid supplies; and Miscellaneous small tools and supplies: grease, towels, notebooks, stakes, flagging, etc.

Tasks: The following list of tasks will be accomplished:

Task 1. Pre-project planning, design, and monitoring:

Final site locations will be recorded with Global Positioning System (GPS) and mapped. Specific access to site locations will also be determined during this phase. All stream crossings will be located on gravel riffles, and will be flagged. Fish exclusion and relocation will be implemented at equipment crossings where

necessary. Crossing use will be minimized. Any required listed species surveys (for northern spotted owls, etc.) will be conducted by HRC. Final permits such as the Notification of Lake and Streambed Alteration will be completed immediately upon Agreement execution. Tree thinning, removal and placement will be implemented following restrictions in permits. Pre-project monitoring of sites and feature locations will consist of measuring physical habitat characteristics, such as residual pool depth, habitat typing, and snorkel survey for fish presence.

Task 2. Implementation:

A minimum of 100 trees with limbs and some with rootballs will be used for this project. The large wood trees (14"-32" diameter at breast height) with attached crowns and some rootwads for this project will come from adjacent terraces and gentle slopes near the placement sites. Once the trees are felled they will be staged in preparation for placement. Staging areas for materials will be located on previously disturbed areas near each site. Tree placement will be assisted by an excavator and or skidded to maximize effectiveness. Trees will be placed in complex structures using the *California Salmonid Stream Habitat Restoration Manual* designs at 16 locations. Anchoring crews will secure anchored wood in existing bedrock and trees on site. Overlapping logs in the structures will be drilled, pinned, and anchored. Construction activities will take place in the channel bed and along the banks. Any disturbed areas will be cleaned up and mulched. All equipment will be stored away from the stream on high ground outside the immediate riparian corridor.

Task 3. Post-implementation monitoring and assessment:

Monitoring of implementation sites will include pre- and post-project photo documentation and site mapping, habitat typing, as well as surveys to document fish use. GPS locations will be taken.

Deliverables:

Task 1. Pre-project planning, design, and monitoring. Final site locations map with GPS locations. Copies of required listed species surveys (for northern spotted owls, etc.). Notification of Lake or Streambed Alteration. Pre-project monitoring data.

Task 2. Implementation. Placement of 100 trees in complex structures at 16 locations.

Task 3. Post-implementation monitoring and assessment.

- Completed final drawings and plans for all stream crossings, equipment staging areas, accelerated wood recruitment, and anchored structure placement, and tree donor sites;
- All trees to be removed will be flagged. Tree tipping and accelerated recruitment will be completed to include 100 trees;
- Complete installation of approximately 100 pieces of large wood;
- Grade and mulch all bare areas and remove crossings on the way out;
- Complete monthly invoices and progress reports as needed;
- Complete Final Report, including pre- and post-project photo-documentation, monitoring results, and other required reporting metrics. Results:
    - Increase in number of pools over 30" deep in treatment reach;
    - Increase in channel and habitat type complexity as shown by redoing baseline habitat typing each year after structure placement;
    - Increase in fish use as shown by repeating juvenile dive and adult spawner surveys;

Timelines:

Task 1. Pre-project planning, design, and monitoring. June 1, 2019 to June 1, 2022.

Task 2. Implementation. June 1, 2019 to June 1, 2022.

Task 3. Post-implementation monitoring and assessment. June 1, 2019 to June 1, 2022.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will

decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Buckeye Mtn. (4012432) OR Petrolia (4012433) OR Capetown (4012443) OR Taylor Peak (4012442) OR Scotia (4012441) OR Bull Creek (4012431) OR Honeydew (4012421) OR Shubrick Peak (4012422) OR Cooskie Creek (4012423))

Possible Species within the Buckeye Mountain quad and surrounding quads for 725653 McGinnis Creek Instream Habitat Enhancement Project, Humboldt County

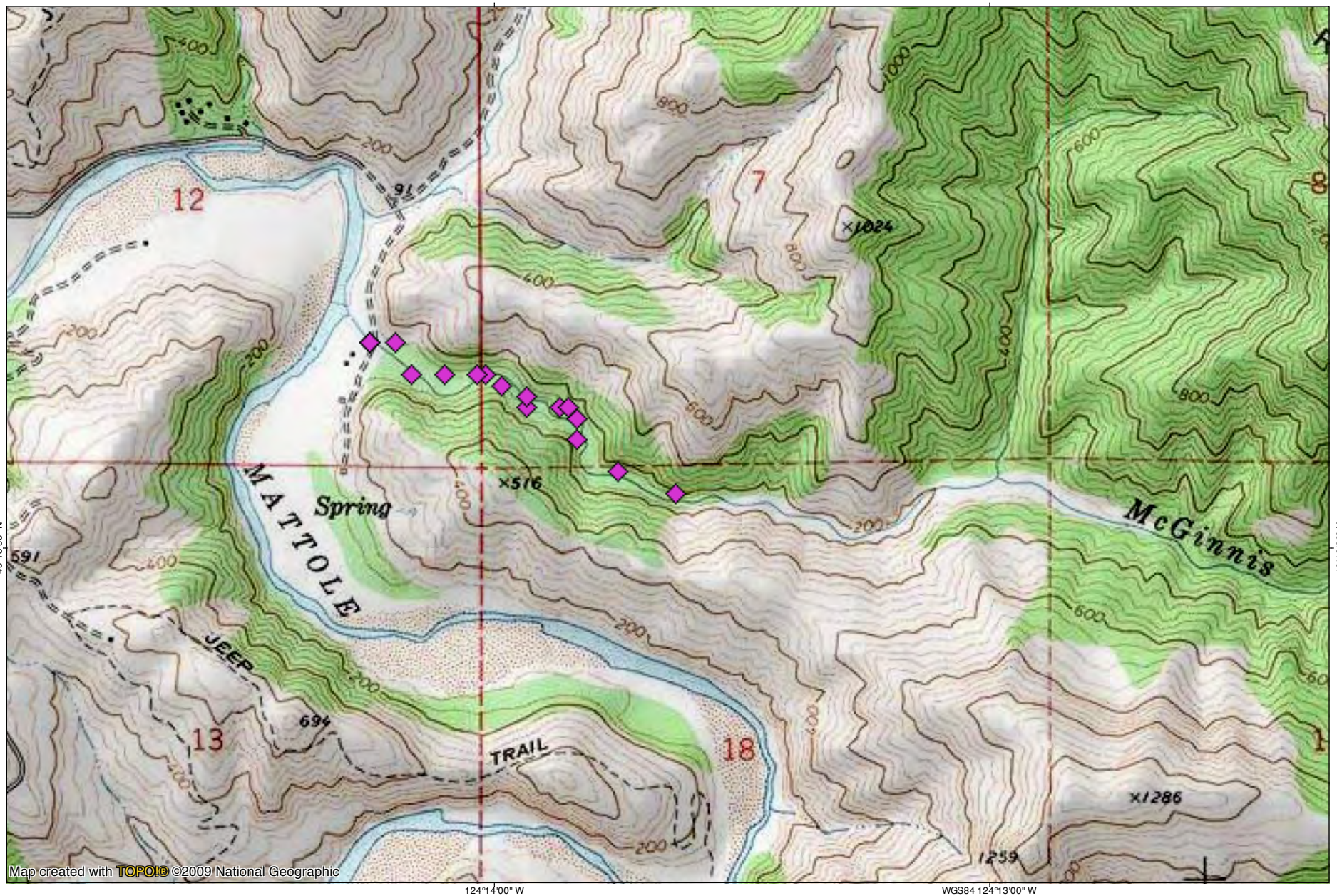
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Douglas Fir Western Hemlock Forest Coastal Douglas Fir Western Hemlock Forest	CTT82410CA	None	None	G4	S2.1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Helminthoglypta arrosa monticola mountain shoulderband	IMGASC2035	None	None	G2G3T1	S1	
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sisyrinchium hitchcockii Hitchcock's blue-eyed grass	PMIRI0D0S0	None	None	G2	S1	1B.1
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 53

TOPO! map printed on 03/25/18 from "McGinnis map .tpo"



NATIONAL GEOGRAPHIC

0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 miles
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 km

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03/25/18

Introduction:

The Pacific Coast Fish, Wildlife and Wetlands Restoration Association (Grantee) will implement the Panther Creek Barrier Removal Project. The purpose of the project is to restore access into 4.5 miles of habitat in Panther Creek for all life stages of Coho Salmon (*Oncorhynchus kisutch*), and to increase instream shelter values and pool habitat in Panther Creek. The project is necessary because remnants of an abandoned road crossing and gauging station create a barrier Coho Salmon, and the lack of large wood in the stream channel has affected the quality and quantity of salmonid habitat within Panther Creek by reducing the amount of large channel forming features and the loss of complex cover for salmonids.

Panther Creek provides year round cold water, which is especially important during the summer and fall months when temperatures in mainstem Redwood Creek can become too warm for rearing juvenile Coho Salmon. A California Department of Fish and Wildlife (CDFW; formerly CDFG) stream habitat inventory survey was conducted on Panther Creek in 2001 and limiting factors to salmonids were identified. The stream habitat inventory report shows that the pools of Panther Creek have a low mean shelter rating of 52. A pool shelter rating of approximately 100 is desirable. Salmonid recovery plans recommend removal of physical fish passage barriers, and increasing stream habitat complexity by installing large woody material.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement will follow techniques in the *California Salmonid Stream Habitat Restoration Manual,* Volume I and Volume II, Parts VII, XI, IX, XI and XII (Flosi et al 1998 and 2002).

Objectives:

The specific objectives of this project are to remove the remains of an abandoned road crossing and gauging station, including four channel-spanning sill logs, log abutments, and approximately 1,500 cubic yards of unstable fill that is perched above the barrier site, and to improve instream habitat conditions by installing four fish habitat structures consisting of 12 pieces of large wood. The project will implement California Department of Fish and Wildlife (CDFW) approved engineering design plans for the removal of the barrier and the stabilization of the stream bed and excavated banks. The barrier was previously evaluated by CDFW and Redwood National Park and was recommended for removal. Successful removal of this barrier will allow year-round access for all life stages of coho salmon and other salmonids to approximately 4.5 miles of instream habitat.

Project Description:

Location:

Work will take place at a specific location on Panther Creek, tributary to Redwood Creek in the county of Humboldt, State of California. The project starts at the confluence with Redwood Creek, approximately 24 miles upstream of the Pacific Ocean, and continues upstream for 200 feet. The project boundaries are 41.089º north latitude, -123.908º west longitude at the downstream end and 41.088º north latitude, -123.908º west longitude at the upstream end; Township 08 North, Range 02 East, and Section 14 of the Panther Creek 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

Project Set Up:

Grantee staff will provide all project oversight and administration. Subcontractor, Heavy Equipment Operator and Labor Contractor, will construct the project and maintain temporary fish barriers and flow diversion during construction. Subcontractor, Senior Geologist (Paleontologist) will conduct pre-construction paleontological survey. Subcontractor, Humboldt State University Cultural Resources Facility staff will conduct sensitive plant and cultural resource surveys prior to construction. Subcontractor, Biological Compliance Monitor will monitor for foothill yellow-legged frog and conduct avoidance measures. Subcontractor, Biologist will be selected to perform spotted owl, willow flycatcher, and any other sensitive bird surveys necessary prior to construction. Subcontractor, Principal Investigator and Field Staff will assist construction contractors with fisheries and amphibian relocation services prior to dewatering stream segments.

Materials:

Materials for implementation include 12 pieces of large wood, threaded rebar, washers and nuts, 350 tons of rock, and erosion control materials including seeds, straw wattles, culvert and couplings. A total of 150 native conifer trees will be planted in disturbed areas.

Tasks:

Task 1. Construction Stakeout: Project stakeout will include establishment of elevation control and placement of stakes to denote the location and stationing of the proposed centerline of the stream channel and left/right streambank configuration. Layout of temporary road and crossing alignment, stockpile locations and disturbance limits will be defined for the contractor using flagging and paint.

Task 2. Stream Dewatering and Fish Exclusion: Fish exclusion fencing will be installed upstream and downstream of the project reach. All aquatic species will be relocated outside of the project reach. Once all aquatic species have been relocated, the project reach will be dewatered following the clear water diversion plan. All methods will follow according to the *California Salmonid Stream Habitat Restoration Manual*, Parts IV, IX and XII.

Task 3. Temporary Access Route: Following CDFW approved design plans, Heavy Equipment Operator will construct a temporary access route and stream crossing in order to access the left bank and instream project locations.

Task 4. Barrier Removal: Following CDFW approved design plans, Heavy Equipment Operator will remove stacked log abutments, channel spanning sill logs, and approximately 1,500 cubic yards of fill perched above the abutments on the right and left banks. Stream banks will be laid back to an appropriate approved stable angle. All excavated fill will be placed in a stable upland location.

Task 5. Install Instream Habitat Features: Heavy Equipment Operator will install large wood habitat features in Redwood Creek and Panther Creek. The large wood habitat structure designs for the project involve one ballasted root-wad assemblage on Redwood Creek immediately downstream of the confluence with Panther Creek. This feature will be an assemblage of root wads, logs, cable, and a sufficient mass of ballast rock to resist downstream transport of the unit. This structure will not be anchored to the bed or banks. In Panther Creek, five multi-log instream habitat features will be constructed within a 200 foot reach where the passage barrier was removed. Work will consist of the following:

- Heavy Equipment Operator will construct instream log structures according to the site specific plans to be provided, using locally available logs or logs from other locations.
- Nuts, washers, plates, cable, glue and rebar will be ordered as applicable.
- Location of all project large wood will be documented.
- Various anchoring techniques, which will be approved by the CDFW prior to the initiation of work, may be used to hold multiple logs together to form complex structures. Anchoring techniques will include wedging logs into existing rocks and logs along the riparian banks; anchoring to live mature trees growing on riparian banks; or anchoring to existing boulders. Anchoring materials will consist of 1” threaded rebar, cable, nuts and washers, and waterproof epoxy.
- Available slash and woody debris will be installed into structures after site completion to provide immediate cover for salmonids present at time of construction.

Task 6. Temporary Road Crossing and Exclusion Fencing Removal: The temporary access road stream crossing will be removed with water bars installed where water directly leads to Panther or Redwood Creek. All imported materials associated with the temporary road and crossing will be removed from the stream. Cofferdams, fish exclusion nets and clear water diversion equipment will be removed from the stream channel.

Task 7. Erosion Control: Mulching using weed-free straw and native mulch will take place as sites are completed on all exposed soils which may deliver sediment to a stream in order to avoid unforeseen erosion.

Task 8. Riparian Planting: Approximately 150 native Coast Redwood (*Sequoia sempervirens)* tree seedlings will be planted in the disturbed areas of the project.

Deliverables:

Remediation of the Panther Creek fish barrier including the removal of abutment logs, sill logs and approximately 1,500 cubic yards of stored sediment. A total of 12 pieces of large wood will be installed in multiple instream habitat features. One large wood feature will be constructed in Redwood Creek and five large wood features will be constructed in Panther Creek. A total of 150 redwood tree seedlings will be planted along the disturbed areas of the project.

Timelines:

June 15 through October 31 of the years 2020 and 2021, construction stakeout, stream dewatering, species relocation, and barrier removal and instream habitat feature construction will take place. Erosion control will be installed as project features are completed.

December 1 through February 28 of 2020 and 2021, tree planting crews will plant redwood tree seedlings.

Additional Requirements:

Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the CDFW Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Project Manager on a form provided by CDFW.
- The Grantee will provide fish relocation data to CDFW on a form provided by CDFW.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Project Managers.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Tish Tang Point (4112315) OR Hoopa (4112316) OR Weitchpec (4112326) OR Hopkins Butte (4112325) OR Salmon Mtn. (4112324) OR Trinity Mtn. (4112314) OR Denny (4012384) OR Salyer (4012385) OR Willow Creek (4012386))

Possible species within the Tish Tang Point quad and surrounding quads for 725665 Panther Creek Barrier Removal Project. Humboldt County

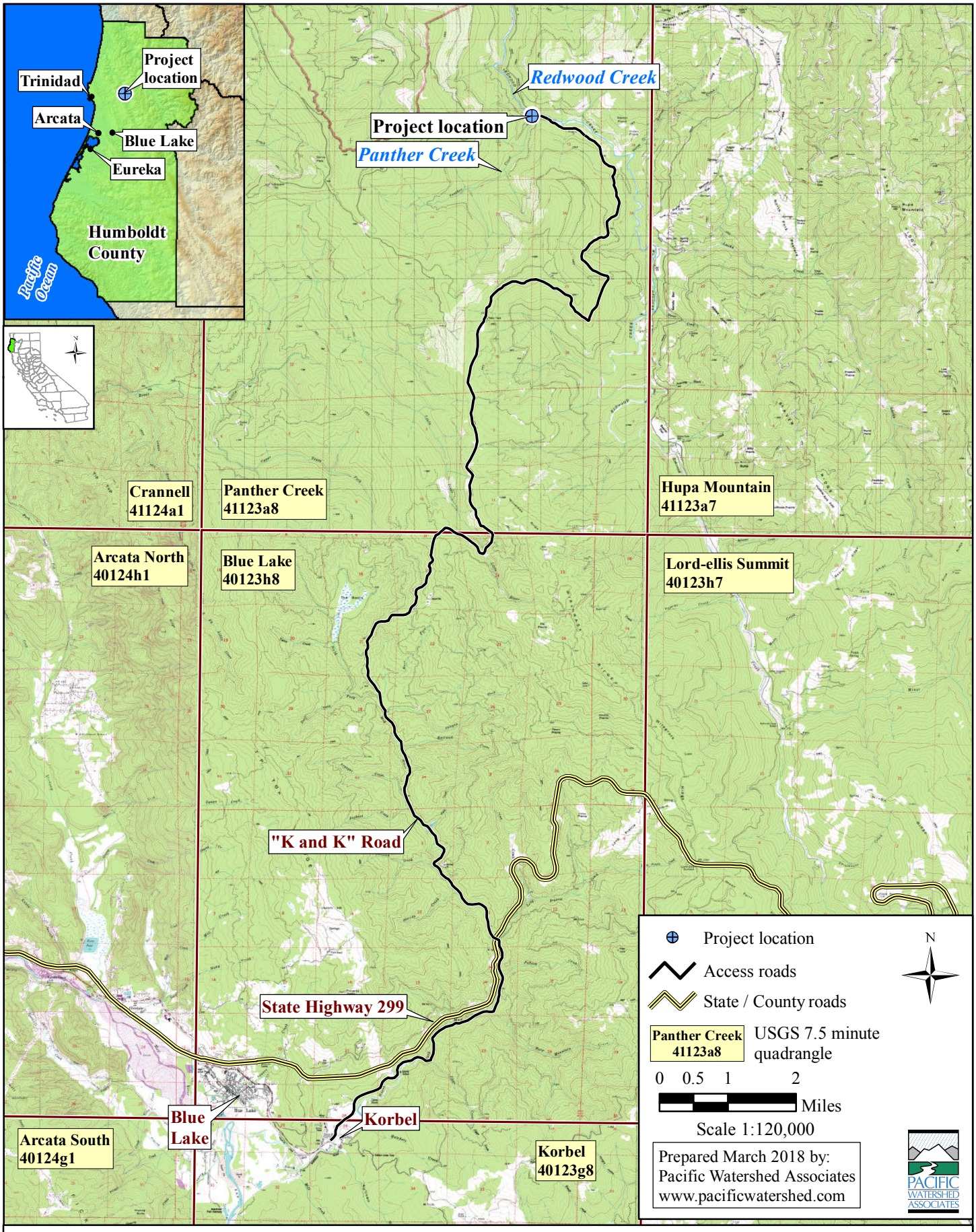
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Ancotrema voyanum hooded lancetooth	IMGAS36130	None	None	G1G2	S1S2	
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus umbraticus Bald Mountain milk-vetch	PDFAB0F990	None	None	G4	S2	2B.3
Bensoniella oregona bensoniella	PDSAX02010	None	Rare	G3	S2	1B.1
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Bonasa umbellus ruffed grouse	ABNLC11010	None	None	G5	S3S4	WL
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Cornus canadensis bunchberry	PDCOR01040	None	None	G5	S2	2B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Epilobium oreganum Oregon fireweed	PDONA060P0	None	None	G2	S2	1B.2
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythranthe trinitiensis pink-margined monkeyflower	PDPHR01070	None	None	G3	S3	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucephalus vialis wayside aster	PDASTEC0A0	None	None	G3	S1	1B.2
Gentiana plurisetosa Klamath gentian	PDGEN060V0	None	None	G2G3	S2	1B.3
Gulo gulo California wolverine	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
Helminthoglypta talmadgei Trinity shoulderband	IMGASC2630	None	None	G2	S2	
Hemieva ranunculifolia buttercup-leaf suksdorfia	PDSAX0W010	None	None	G5	S2	2B.2
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Klamath/North Coast Fall/Winter Run Chinook Salmon River Klamath/North Coast Fall/Winter Run Chinook Salmon River	CARB2332CA	None	None	GNR	SNR	
Klamath/North Coast Interior Headwater Fishless Stream Klamath/North Coast Interior Headwater Fishless Stream	CARB2220CA	None	None	GNR	SNR	
Klamath/North Coast Rainbow Trout Stream Klamath/North Coast Rainbow Trout Stream	CARB2312CA	None	None	GNR	SNR	
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lewisia cotyledon var. heckneri Heckner's lewisia	PDPOR04052	None	None	G4T3	S3	1B.2
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Mielichhoferia elongata elongate copper moss	NBMUS4Q022	None	None	G5	S4	4.3
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Myotis volans long-legged myotis	AMACC01110	None	None	G5	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC
Oncorhynchus tshawytscha pop. 30 chinook salmon - upper Klamath and Trinity Rivers ESU.	AFCHA02056	None	None	G5	S1S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Plethodon elongatus Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
Ptilidium californicum Pacific fuzzwort	NBHEP2U010	None	None	G4G5	S3S4	4.3
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Rosa gymnocarpa var. serpentina Gasquet rose	PDROS1J1V1	None	None	G5T3T4	S2	1B.3
Schoenoplectus subterminalis water bulrush	PMCYP0Q1G0	None	None	G4G5	S3	2B.3
Sedum divergens Cascade stonecrop	PDCRA0A0B0	None	None	G5?	S2	2B.3
Sedum laxum ssp. flavidum pale yellow stonecrop	PDCRA0A0L2	None	None	G5T4Q	S4	4.3
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Stellaria obtusa obtuse starwort	PDCAR0X0U0	None	None	G5	S4	4.3
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Upland Douglas Fir Forest						
Vaccinium scoparium	PDERI180Y0	None	None	G5	S3	2B.2
little-leaved huckleberry						
Strix occidentalis caurina	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC
northern spotted owl						

Record Count: 62



Map 1. Project location topographic map for the Panther Creek Fish Barrier Removal Project, Humboldt County, California. Grantee: Pacific Coast Fish, Wildlife and Wetlands Restoration Association

Introduction:

Redwood National Park will implement the Redwood Creek Habitat Protection Project. The purpose of this project is to prevent erosion and minimize future sedimentation to Larry Damm Creek, which provides critical spawning habitat for Coho Salmon (*Oncorhynchus kisutch*). The project is necessary because salmonid habitat conditions in Larry Damm Creek are degraded due to extensive (80 percent of watershed) logging and road building from 1963 through 1968. By decommissioning the subject road, work undertaken downstream in the Prairie Creek watershed will be protected from catastrophic failure of the road thereby avoiding delivery of sediment into downstream Coho Salmon habitat being actively restored.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Volume II, Part X).

Objective(s):

The specific objectives of this Project are to:

1. Remove 0.8 mile of legacy logging road from riparian forest adjacent to Larry Damm Creek.
2. Excavate and stabilize an estimated 15,000 cubic yards of fill material from stream crossings and unstable slopes.
3. Place large wood in subject channel to improve coho habitat, or place in main stem of Prairie Creek.

These activities will prevent erosion and minimize future sedimentation of the subject stream channel, which provides critical spawning habitat for Coho Salmon.

Project Description:

Location:

The project area, adjacent to Larry Damm Creek, is located approximately 46 miles north of Eureka, CA; 3.5 miles north of Orick, CA; 0.9 miles east of Highway 101; and 0.2 miles north of Geneva Road and the Lost Man Creek Picnic Area. The project area begins at the failing log stringer bridge, except for an export outslope road segment that is 1,000 ft from the picnic area parking lot. The failing log stringer bridge is 0.1 miles upstream from the confluence of Larry Damm and Lost Man Creeks; 1.3 miles from confluence of Lost Man and Prairie Creeks; and 4 miles from confluence of Prairie and Redwood Creeks. The project area is 8.2 acres. Project coordinates are: 41.19477 North and 124.0477 West.

Project Set Up:

All project design work, contract documents, fish exclusion and channel habitat typing will be completed by Redwood National Park (RNP) staff geologists and fisheries biologists who have individually implemented similar projects for more than 19 years. RNP geologists will function as Contracting Officer's Representatives (COR) and will be on site during all equipment operations and all equipment operations will be closely monitored. The COR will look for natural elements and adjust excavations to insure that the objectives of the restoration work are met. The overall project will be managed by National Park Service staff in the Resource Management and Science Division at Redwood National and State Parks. Heavy equipment operations will be performed under an annual funding agreement (AFA) with the Yurok Tribe using the authorities contained in Title IV of the Indian Self-Determination Act Amendments of 1994.

Materials:

No materials will be purchased with the grant. Woody debris generated as part of the project will be placed on the ground adjacent to streams to provide ground cover, reduce surface erosion and provide habitat for seedlings, fungi, microorganisms, invertebrates, birds, amphibians, and small mammals. Removed vegetation would be stockpiled for surface erosion control in areas adjacent to streams after final shaping of excavation and fill areas.

Tasks: The Grantee will complete the following tasks:

Task 1. Grant Oversight: Grant oversight will be conducted by Grantee. All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following items to the Grantor Project Manager:
• Final Landowner Access Agreement as per the requirements of the 2018 Proposal Solicitation Notice, Appendix E, Funding Approval Submissions. Written permission must be obtained from landowner for access to perform grant work.
• Subcontractor Agreements. If a subcontractor is to be used, then a written copy of the sub agreement(s) shall be submitted to the Grantor Project Manager. The subcontract shall include specific language which establishes the rights of the auditors of the State to examine the records of the subcontractor relative to the services and materials provided under the grant.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement and subcontracts are delivered to Grantor Project Manager,

and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Project Implementation:

Task 2.01. Fish Relocation

Exclusion fencing shall be installed on the upstream and downstream edges of the work area, far enough from the construction area so as not to be disturbed by the construction activities. Care will be taken to ensure the bottom of all exclusion fencing is securely attached to the stream bottom with no gaps that can allow fish to enter the exclusion area. A first attempt to capture fish stranded within exclusion zone construction area shall be made using seine nets and dip nets, where possible, and, if necessary, electrofishing. Another attempt shall be made to capture any remaining fish the following morning. The following procedures will be used for fish capture and relocation: Prior to capturing fish, the most appropriate release location will be determined. Suitable areas shall be identified based on quality of habitat, risk of predation, 10/08/2019 10/09/2019 Exclude and relocate fish prior to bridges being removed stranding, and water quality using the following order of preference: “a” in Larry Damm Creek upstream of the work area, “b” in Larry Damm Creek downstream of the work area, “c” on the mainstem of Lost Man Creek, approximately 500 feet downstream of the work area. Initial fish relocation efforts will be performed every 3- 5 days prior to the start of construction. This provides the qualified fishery biologist an opportunity to return to the work area and perform additional electrofishing passes prior to construction. A second attempt, the morning following the initial endeavor, shall be made to capture any remaining fish. Exclude fish from re-entering work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh size should be no greater than 1/8". To prevent fish from re-entering the work area it is vital to completely secure bottom edge of the net or screen to the channel bed. Exclusion fencing will be placed in areas of low water velocity to minimize impingement of fish. Screens will be checked periodically and cleaned of debris to permit free flow of water. Air and stream temperatures will also be periodically measured. Activities will be ceased when water temperatures exceed 68°Fahrenheit (20°C). When handling of salmonids is necessary, hands and nets will be wet prior to touching fish. Captured fish will be placed in cool, shaded, aerated, and dark colored containers filled with cool, clear water. Aeration will be provided with a battery powered external bubbler. Fish will be protected from jostling and noise and fish will not be removed from the container until time of release. Fish will be released when the

container reaches capacity or within one and a half hours after capture. The water in the holding container will periodically be checked to insure that the temperature does not get to warm or if there is more than an hour of delay between when the holding container is brought to maximum capacity and the time of release. Overcrowding in containers will be avoided by having at least two separate containers and segregating young of the year from larger age classes to avoid predation.

Densities shall not exceed 5 fish per gallon of water in each container. If found, large amphibians, such as Pacific Giant salamanders, will be placed in the container with the larger fish. Capture will be ceased and listed salmonids will be released when containers are filled to capacity. At the time of release individuals will be visually identified and year classes of listed salmonids will be estimated at time of release. Listed salmonids will not be anesthetized or measured. If mortality during relocation exceeds 5% of fish captured, efforts will be stopped and NOAA Fisheries will be contacted immediately.

Task 2.02. Mobilization of contractor and equipment

Task 2.03. Road removal and sediment stabilization

There are four stream crossings (including log-stringer bridge) identified for treatment. Estimated fill to be excavated ranges from 1,200 cubic yards (CY) to 3,000 CY of fill. The fourth stream crossing (SX# 11) is a failed log stringer bridge and contains approximately 1,200 CY of road fill. Total fill volume is estimated to be 7,300 CY. Excavating the fill from the stream crossings will prevent approximately 6,700 CY from being delivered to streams. Fill excavated from the stream crossing will be placed in outslope reaches. The area of disturbance from excavating all stream crossings is estimated at 1.1 acres (ac). Stream crossing excavations will entail removal and disposal of road fill, the culvert, if there is one, and woody debris from a stream channel. Fill removed from the crossing will be moved to a stable location by pushing it with a dozer or hauling it a stable location. Step 1. Remove existing vegetation growing in the crossing fill. Trees will be placed in channel. Step 2. Bulldozer will remove as much road fill as possible, and fill is moved to a stable location. Care will be taken stream channel is not disturbed when water is present. Step 3. An excavator will remove the remaining fill in road prism and channel, and begin excavating the remaining fill from the channel. Bare soils adjacent to live channels will be treated for surface erosion as prescribed in the Watershed Restoration Erosion Control and Monitoring Plan (Klein and Spreiter 2002). Streams with significant surface flow capable of sediment transport will be diverted around excavation areas. Streams with subsurface seepage through the buried streambed gravels will not be diverted because the flow is not disturbed during excavation. Most of the

time when a culvert is present water will be kept flowing through the culvert as long as possible. When a culvert is near the center of the crossing, it will be removed section by section, as the excavator works its way up the channel; thus water is only allowed to flow on the finished stream channel excavation, and not on partially excavated areas. Woody debris will be placed on the ground adjacent to streams to provide ground cover, reduce surface erosion and provide habitat for seedlings, fungi, microorganisms, invertebrates, birds, amphibians, and small mammals. Removed vegetation will be stockpiled for surface erosion control in areas adjacent to streams after final shaping of excavation and fill areas. Vegetation is primarily coast redwood (*Sequoia sempervirens*), Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*) and tanoak (*Notholithocarpus densiflorus*).

Two road segments within the project area are Export Outslope (EOS) treatment segments. Combined, the EOS reaches total 430 linear feet of road and entails excavation of approximately 1,500 CY of road fill. Excavating the fill from the EOS road reaches will prevent approximately 1,500 CY from eroding and transporting downslope causing damage to terrestrial and aquatic habitat. Fill excavated from the EOS reaches will be placed in outslope reaches. The estimated area of disturbance from export outslope treatments is 0.8 acres.

Four road segments within the project area are outslope (OS) treatment segments. Combined, the OS reaches total 2,115 linear feet of road and entails excavation of approximately 6,200 CY of road fill. Excavating the fill from the OS road reaches will prevent approximately 420 CY from eroding and transporting downslope causing damage to terrestrial and aquatic habitat. Fill excavated from the adjacent stream crossings and OS reaches will be incorporated into the fill site areas of the outslope reaches (the upslope side of outslope treatment area). Outslope treatments, including all fill areas within the outslope reach that will also include fill from stream crossing excavations and OS treatments will disturb an estimated 4.9 ac.

Task 2.04. Removal of bridges and stockpiling of large wood

The road crosses Larry Dam Creek at a bridged crossing. The crossing is composed of a failing log stringer bridge that has a temporary "Bailey Type" bridge placed over it. The grantee will remove both bridges. The temporary bridge will be dismantled and hauled off site. The log stringer bridge removal entails excavation of fill packed behind the abutments and removal of the abutments and log stringers. Some road fill remains on the log stringers although the bulk of it has eroded off the logs. The volume of fill remaining is estimated at between 5 and 20 cubic yards. Grantee will

retrieve 10 pieces of large wood (6 pieces at 60 feet long by 3 feet in diameter, and 4 pieces at 20 feet long by 4 to 6 feet in diameter). The abutments are composed of logs and milled wood. Some logs may be suitable for placement in the channel as habitat, where access to channel allows. Equipment will need to cross the stream during the removal of the bridge and abutments. Diversion of all fish around the work site will be accomplished by installing temporary fish exclusion fences which will direct all fish away from the active work site. Immediately upon completion of bridge removal, all structures associated with the temporary fish diversion will be completely removed from the channel. All fill and manmade materials associated with crossings (culverts, cables, etc.) will be completely exported from the channel and adjacent banks and placed in stable locations identified and delineated prior to initiation of equipment operations. Vegetation disturbed during excavation will be stockpiled and dispersed along the finished surfaces of both the fill sites and restored channel in order to prevent post excavation surface erosion and to provide habitat and simulate natural forest litter. Additional organic material will be imported to supplement ground cover and further protect exposed finished slopes from post-excavation surface erosion.

Task 2.05. Demobilization of contractor and equipment

Task 3. Post-Project Data and Photo Collection: Following implementation, post-project photos will be taken and metrics shall be collected which satisfy the Grant Agreement Annual Progress Report(s) and Final Report.

Task 4. Reporting: Write and deliver progress reports for invoicing, Annual Progress Report(s), and a Final Report to Grantor Project Manager.

Deliverables: The following items will be considered deliverables and shall be delivered during the life of this grant:

- Final Landowner Access Agreements
- Grantor Notification of Lake or Streambed Alteration Application with a check for the cost of the 1600 permit
- Removal of 0.8 mile of legacy logging road from riparian forest adjacent to Larry Damm Creek.
- Excavation and stabilization of estimated 15,000 cubic yards of fill material from stream crossings and unstable slopes.
- Removal of temporary "Bailey type" and log-stringer bridge.

- Retrieval of 10 pieces of large wood (6 pieces at 60 feet long by 3 feet in diameter, and 4 pieces at 20 feet long by 4 to 6 feet in diameter).
- Progress Report submitted with each invoice
- Annual Report, November 15
- Final Report

The project is expected to deliver the following quantitative results:

Miles of road treated (total)	0.8 miles
Acres of upslope area treated (total)	8.2 acres
Miles of road decommissioned/abandoned	0.8 miles
Type(s) of upland erosion and sediment control	Road decommissioning
Cubic yards of sediment prevented from entering the stream	8620 cubic yards
Number of stream crossings treated	3

Timelines:

Project will be completed according to the following timeline:

- Task 1: Administer and manage the project throughout the entirety of the agreement term June 2019 to December 31, 2020.
- Task 2: Project implementation from June 2019 to October 15, 2019.
- Task 3: Post-construction data collection. Post-treatment data collection, road logs and maps showing as built road conditions, and photographic monitoring will be completed to fulfill reporting requirements October to December 2020.
- Task 4: Reporting. Data analysis and report writing October 2019 to December 2020.
- Final Reporting: The implementation report will be completed and submitted no later than December 31, 2020.

If unable to complete the approved project within the time frame, an amendment for a time extension may be requested following Section 5.10 – Amendments, and if funding source(s) are available for the requested time extension.

November 15 of each year of implementation, post-project description, photos and quantitative metrics shall be delivered to the Grantor Project Manager in an Annual Report, following the guidelines presented in Section 7.01 - Progress Reports.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the Grantor.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and oversee the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible.

- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- The Grantee will provide fish relocation data to the Grantor Project Manager on a form provided by the Grantor.

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Rodgers Peak (4112421) OR Orick (4112431) OR Holter Ridge (4112338) OR Bald Hills (4112328) OR Panther Creek (4112318) OR Crannell (4112411) OR Trinidad (4112412))

Possible Species within the Rodgers Peak quad and surrounding quads for 725677 Redwood Creek Habitat Protection Project, Humboldt County

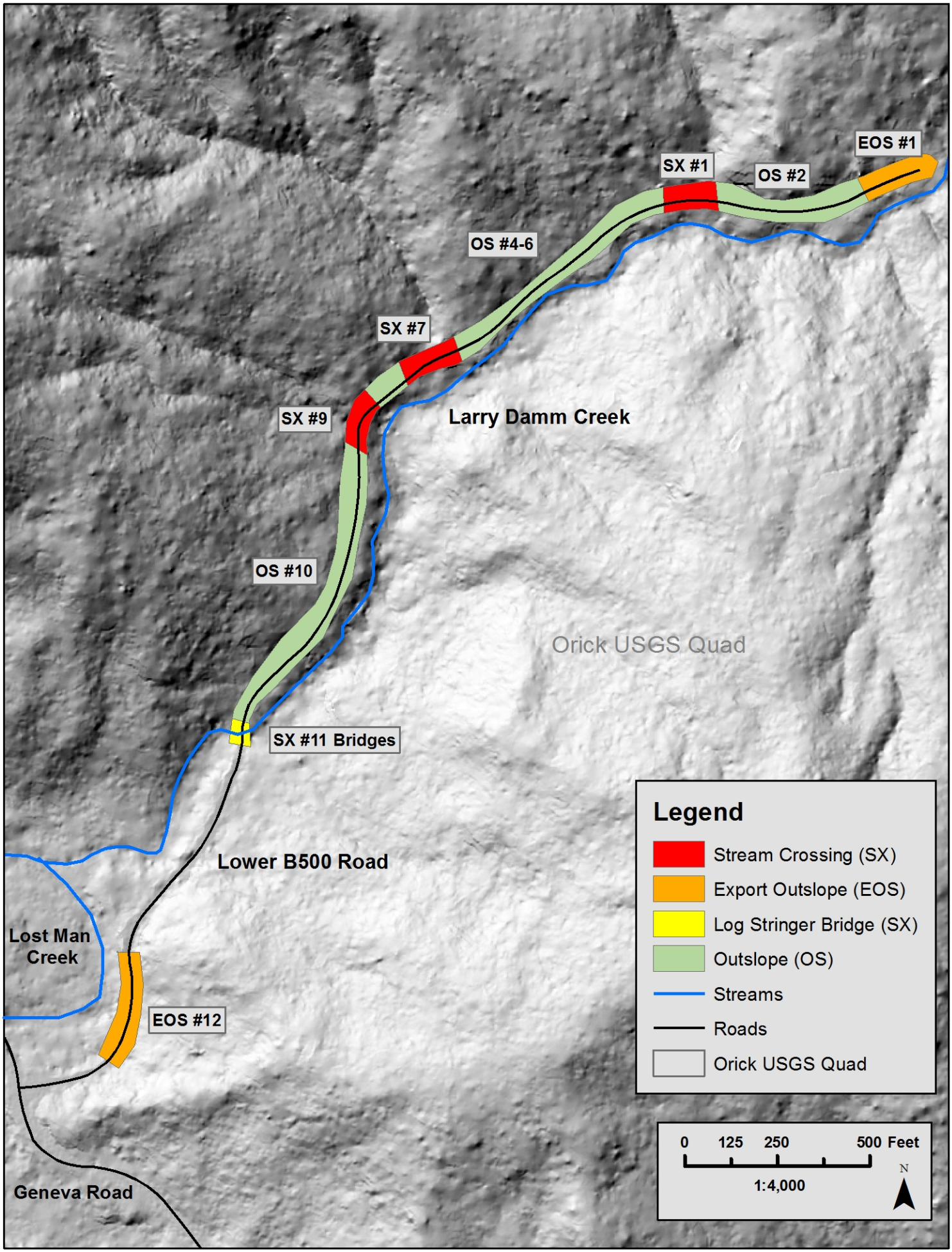
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Arborimus albipes white-footed vole	AMAFF23010	None	None	G3G4	S2	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus umbraticus Bald Mountain milk-vetch	PDFAB0F990	None	None	G4	S2	2B.3
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex lenticularis var. limnophila lagoon sedge	PMCYP037A7	None	None	G5T5	S1	2B.2
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Carex saliniformis deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
Carex viridula ssp. viridula green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Cerorhinca monocerata rhinoceros auklet	ABNNN11010	None	None	G5	S3	WL
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Discelium nudum naked flag moss	NBMUS2E010	None	None	G4G5	S1	2B.2
Empetrum nigrum black crowberry	PDEMP03020	None	None	G5	S1?	2B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron bloomeri var. nudatus Waldo daisy	PDAST3M0M2	None	None	G5T4	S3	2B.3
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fratercula cirrhata tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Juga orickensis redwood juga	IMGASK4190	None	None	G2	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Juncus nevadensis var. inventus Sierra rush	PMJUN011Z5	None	None	G5T3T4	S1	2B.2
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lathyrus japonicus seaside pea	PDFAB250C0	None	None	G5	S2	2B.1
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lycopodiella inundata inundated bog-clubmoss	PPLYC03060	None	None	G5	S1?	2B.2
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Moneses uniflora woodnymph	PDPYR02010	None	None	G5	S2	2B.2
Monotropa uniflora ghost-pipe	PDMON03030	None	None	G5	S2	2B.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oceanodroma furcata fork-tailed storm-petrel	ABNDC04010	None	None	G5	S1	SSC
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Plethodon elongatus Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Romanzoffia tracyi Tracy's romanzoffia	PDHYD0E030	None	None	G4	S2	2B.3
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sitka Spruce Forest Sitka Spruce Forest	CTT82110CA	None	None	G1	S1.1	
Speyeria zerene behrensii Behren's silverspot butterfly	IILEPJ6088	Endangered	None	G5T1	S1	
Sphagnum Bog Sphagnum Bog	CTT51110CA	None	None	G3	S1.2	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4	S2	2B.2
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 81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Lost Man Creek
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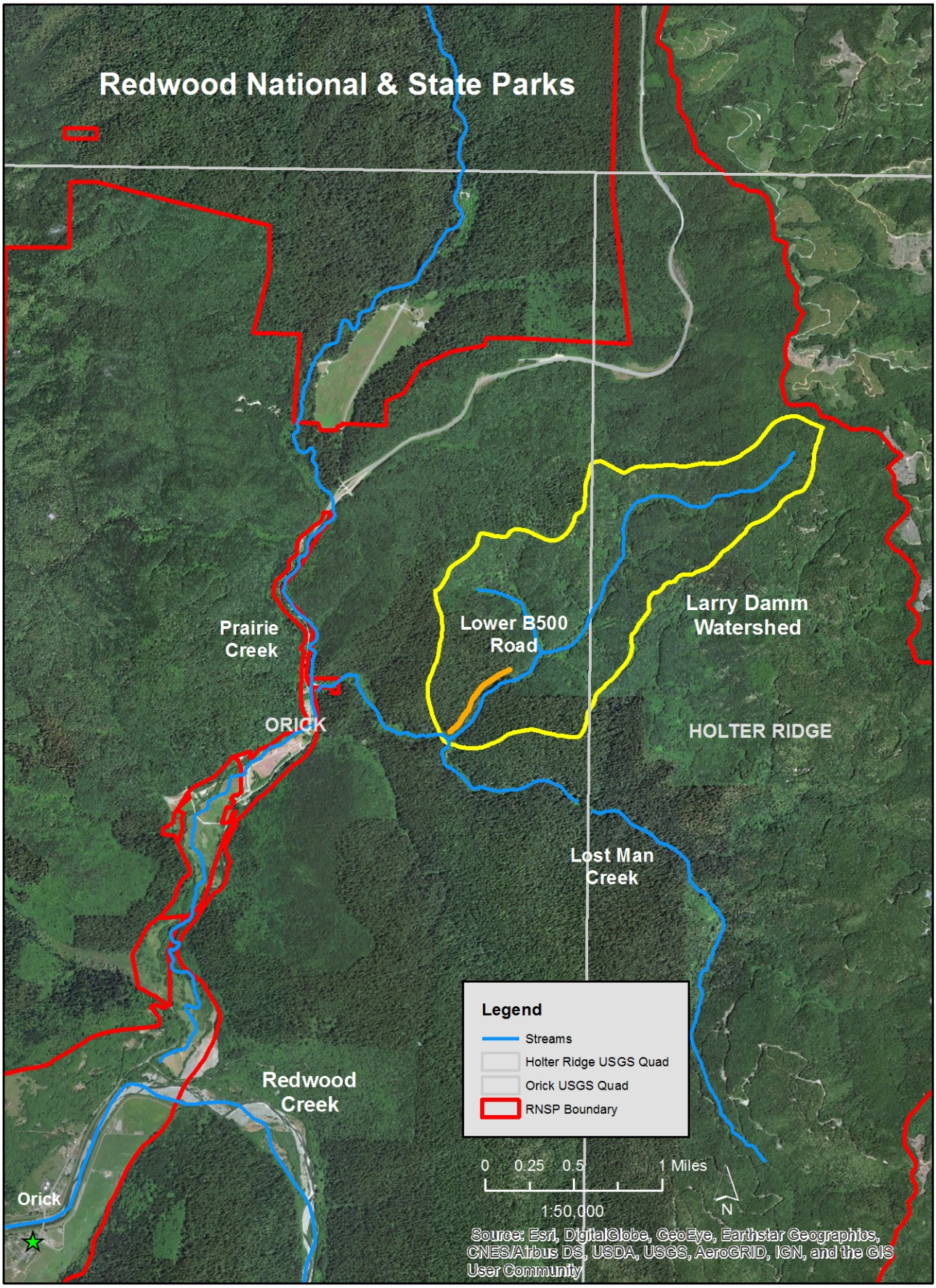
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Prairie Creek
Lower B500 Road
Larry Damm Watershed
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HOLTER RIDGE
Lost Man Creek
Redwood Creek
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Streams
Holter Ridge USGS Quad
Orick USGS Quad
RNSP Boundary
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Introduction:

The Salmon River Restoration Council will improve juvenile and adult salmonid fish passage to over 70 tributaries in the Middle Klamath, Salmon, and Lower Scott River Subbasins through manual modification of seasonal barriers. Maintaining fish passage at cold water tributaries will allow connectivity to refugia habitat during low flow, high water temperatures during summer and fall months. The project tasks have been identified in The Mid Klamath Subbasin Fisheries Resource Recovery Plan as critical for Coho Salmon (*Oncorhynchus kisutch*) survival. The project also includes refugia habitat assessment and salmonid utilization assessment.

The Grantee will not proceed with on the ground implementation until all necessary permits, consultations, and Notice to Proceed are secured. Work in flowing streams is restricted to June 15 through October 31. All habitat restoration improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual.* Actual project start and end dates, within this timeframe, are at the discretion of the Grantor.

Objective(s):

The specific objective of this project is to restore and maintain juvenile and adult salmonid fish passage to over 70 tributaries in the Middle Klamath, Salmon and Lower Scott River systems. Re-connecting tributary access from main-stem river corridors provides salmonids in the Klamath River Basin with access to increased habitat quantity and improved habitat. Cold-water tributaries provide critical habitat during the juvenile and adult life stages of salmonids, especially during high water temperature, low flow periods.

Project Description:

Location:

The project sites are located in Humboldt and Siskiyou Counties, Orleans, CA to Iron Gate Dam, Hornbrook CA.

The Grantee will conduct work on the following tributaries:

- Aikens Creek - Township 10N, Range 5E, Section 30 of the Weitchpec 7.5 Minute U.S.G.S. Quadrangle, 41.2287^0 N latitude and -123.6522^0 W longitude, Humboldt County
- Beaver Creek - Township 46N, Range 8W, section 6 of the McKinley Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.8691^0 N latitude and -122.8169^0 W longitude, Siskiyou CountyBluff Creek - Township 10N, Range 5E, section 19 of the Weitchpec 7.5 Minute U.S.G.S. Quadrangle, 41.2403^0 N latitude and -123.6526^0 W longitude, Humboldt County

- Boise Creek –Township 10N, Range 5E, section 11 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.2827^0 N latitude and -123.5757^0 W longitude, Humboldt County
- Cade Creek – Township 16N , Range 7E , section 1 of the Slater Butte 7.5 Minute U.S.G.S. Quadrangle, 41.8073^0 N latitude and -123.3491^0 W longitude Siskiyou County
- Camp Creek - Township 10N, Range 5E, section 1 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.2928^0 N latitude and -123.562450198356^0 W longitude Humboldt County
- China Creek - Township 16N, Range 8E, section 5 of the Slater Butte 7.5 Minute U.S.G.S. Quadrangle, 41.8000^0 N latitude and -123.3141^0 W longitude Siskiyou County
- Clear Creek – Township 15N , Range 7E , section 7 of the Clear Creek 7.5 Minute U.S.G.S. Quadrangle, 41.7097^0 N latitude and -123.4480^0 W longitude, Siskiyou County
- Coon Creek - Township 14N, Range 6E, section 16 of the Ukonom Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.6126^0 N latitude and -123.4966^0 W longitude, Siskiyou County
- Cottonwood Creek - Township 47N, Range 6W, section 28 of the Hornbrook 7.5 Minute U.S.G.S. Quadrangle, 41.8888^0 N latitude and -122.5435^0 W longitude, Siskiyou County
- Bogus Creek – Township 47N , Range 5W, section 17 of the Iron Gate Reservoir 7.5 Minute U.S.G.S. Quadrangle, 41.9292^0 N latitude and -122.4432^0 W longitude, Siskiyou County
- Crawford (Orleans RD) Creek - Township 10N, Range 5E, section 2 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.2954^0 N latitude and -123.5654^0 W longitude, Humboldt County
- Crawford (Happy Camp RD) Creek - Township 15N, Range 7E, section 31 of the Clear Creek 7.5 Minute U.S.G.S. Quadrangle, 41.648^0 N latitude and -123.4640^0 W longitude, Siskiyou County
- Dillon Creek – Township 14N, Range 6E, section 30 of the Dillon Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.5760^0 N latitude and -123.5388^0 W longitude, Siskiyou County
- Elk Creek - Township 16N, Range 7E, section 15 of the Happy Camp 7.5 Minute U.S.G.S. Quadrangle, 41.7808^0 N latitude and -123.3942^0 W longitude, Siskiyou County

- Fort Goff Creek - Township 47N, Range 12W, section 32 of the Slater Butte 7.5 Minute U.S.G.S. Quadrangle, 41.8637^0 N latitude and -123.2575^0 W longitude, Siskiyou County
- Grider Creek - Township 46N, Range 12W, section 11 of the Seiad Valley 7.5 Minute U.S.G.S. Quadrangle, 41.8413^0 N latitude and -123.2072^0 W longitude, Siskiyou County
- Hopkins Creek - Township 9N, Range 4E, section 1 of the Weitchpec 7.5 Minute U.S.G.S. Quadrangle, 41.2033^0 N latitude and -123.6616^0 W longitude, Humboldt County
- Horse Creek - Township 46N, Range 10W, section 16 of the Horse Creek 7.5 Minute U.S.G.S. Quadrangle, 41.8237^0 N latitude and -123.0049^0 W longitude, Siskiyou County
- Ikes Creek - Township 11N, Range 6E, section 9 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.3627^0 N latitude and -123.4933^0 W longitude, Humboldt County
- Independence Creek - Township 15N, Range 7E, section 31 of the Clear Creek 7.5 Minute U.S.G.S. Quadrangle, 41.6583^0 N latitude and -123.4511^0 W longitude, Siskiyou County
- Indian Creek - Township 16N, Range 7E, section 11 of the Happy Camp 7.5 Minute U.S.G.S. Quadrangle, 41.7901^0 N latitude and -123.3786^0 W longitude, Siskiyou County
- Irving Creek - Township 12N, Range 6E, section 4 of the Somes Bar 7.5 Minute U.S.G.S. Quadrangle, 41.4679^0 N latitude and -123.5003^0 W longitude, Siskiyou County
- King Creek – Township 14N , Range 6E, section 10 of the Ukonom Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.6181^0 N latitude and -123.4725^0 W longitude
- Little Grider Creek - Township 16N, Range 7E, section 15 of the Happy Camp 7.5 Minute U.S.G.S. Quadrangle, 41.7839^0 N latitude and -123.3947^0 W longitude, Siskiyou County
- Little Horse Creek - Township 16N, Range 8E, section 17 of the Slater Butte7.5 Minute U.S.G.S. Quadrangle, 41.7848^0 N latitude and -123.31850^0 W longitude, Siskiyou County
- Little Humbug Creek - Township 46N, Range 9W, section 13 of the McKinley Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.8356^0 N latitude and -122.8425^0 W longitude, Siskiyou County

- Oak Flat Creek - Township 15N, Range 7E, section 5 of the Clear Creek 7.5 Minute U.S.G.S. Quadrangle, 41.7291^0 N latitude and -123.4357^0 W longitude, Siskiyou County
- O'Neil Creek - Township 46N, Range 11W, section 22 of the Hamburg 7.5 Minute U.S.G.S. Quadrangle, 41.8103^0 N latitude and -123.1153^0 W longitude, Siskiyou County
- Pearch Creek - Township 11N, Range 6E, section 29 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.3122^0 N latitude and -123.5251^0 W longitude, Humboldt County
- Portuguese (Happy Camp RD) Creek - Township 46N, Range 12W, section 4 of the Seiad Valley 7.5 Minute U.S.G.S. Quadrangle, 41.8583^0 N latitude and -123.2473^0 W longitude, Siskiyou County
- Red Cap Creek –Township 10N, Range 5E, section 15 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.2586^0 N latitude and -123.6047^0 W longitude, Humboldt County
- Rock Creek - Township 13N, Range 6E, section 19 of the Dillon Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.5120^0 N latitude and -123.5304^0 W longitude, Siskiyou County
- Rodgers Creek - Township 12N, Range 6E, section 10 of the Somes Bar 7.5 Minute U.S.G.S. Quadrangle, 41.4450^0 N latitude and -123.4906^0 W longitude, Siskiyou County
- Sandy Bar Creek - Township 13N, Range 12E, section 29 of the Bark Shanty Gulch 7.5 Minute U.S.G.S. Quadrangle, 41.4858^0 N latitude and -123.5185^0 W longitude, Siskiyou County
- Seiad Creek - Township 46N, Range 12W, section 11 of the Seiad Valley 7.5 Minute U.S.G.S. Quadrangle, 41.8429^0 N latitude and -123.2117^0 W longitude, Siskiyou County
- Slate Creek - Township 10N, Range 5E, section 19 of the Fish Lake 7.5 Minute U.S.G.S. Quadrangle, 41.2500^0 N latitude and -123.6436^0 W longitude, Humboldt County
- Stanshaw Creek - Township 13N, Range 6E, section 32 of the Bark Shanty Gulch 7.5 Minute U.S.G.S. Quadrangle, 41.4764^0 N latitude and -123.5122^0 W longitude, Siskiyou County
- Swillup Creek - Township 14N, Range 6E, section 16 of the Dillon Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.6083^0 N latitude and -123.5011^0 W longitude, Siskiyou County

- Thompson Creek - Township 17N, Range 8E, section 17 of the Slater Butte 7.5 Minute U.S.G.S. Quadrangle, 41.8635^0 N latitude and -123.3085^0 W longitude, Siskiyou County
- Ti Creek - Township 13N, Range 6E, section 17 of the Dillon Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.52540^0 N latitude and -123.5290^0 W longitude, Siskiyou County
- Titus Creek - Township 15N, Range 7E, section 9 of the Clear Creek 7.5 Minute U.S.G.S. Quadrangle, 41.671302^0 N latitude and -123.4303^0 W longitude, Siskiyou County
- Tom Martin Creek - Township 46N, Range 10W, section 31 of the Hamburg 7.5 Minute U.S.G.S. Quadrangle, 41.7839^0 N latitude and -123.0422^0 W longitude, Siskiyou County
- Ukonom Creek – Township 14N , Range 6E, section 10 of the Ukonom Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.6165^0 N latitude and -123.4848^0 W longitude, Siskiyou County
- Ullathorne Creek - Township 10N, Range 5E, section 2 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.2911^0 N latitude and -123.5708^0 W longitude, Humboldt County
- Walker Creek - Township 46N, Range 11W, section 18 of the Hamburg 7.5 Minute U.S.G.S. Quadrangle, 41.8363^0 N latitude and -123.1716^0 W longitude, Siskiyou County
- Whitmore Creek - Township 11N, Range 6E, section 20 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.3352^0 N latitude and -123.5114^0 W longitude, Humboldt County
- Wilson Creek - Township 11N, Range 6E, section 20 of the Orleans 7.5 Minute U.S.G.S. Quadrangle, 41.3299^0 N latitude and -123.5213^0 W longitude, Humboldt County

Tributaries to the Salmon River:

- Merrill Creek - Township 11N, Range 6E, section 3 of the Somes Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3789^0 N latitude and -123.4729^0 W longitude, Siskiyou County
- Butler Creek - Township 10N, Range 7E, section 20 of the Orleans Mountain 7.5 Minute U.S.G.S. Quadrangle, 41.3366^0 N latitude and -123.4093^0 W longitude, Siskiyou County
- Wooley Creek - Township 11N, Range 7E, section 6 of the Somes Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3770^0 N latitude and -123.4225^0 W longitude, Siskiyou County

- Crapo Creek - Township 10N, Range 7E, section 3 of the Forks of Salmon 7.5 Minute U.S.G.S. Quadrangle, 41.2922^0 N latitude and -123.3628^0 W longitude, Siskiyou County
- Nordheimer Creek - Township 10N, Range 7E, section 3 of the Forks of Salmon 7.5 Minute U.S.G.S. Quadrangle, 41.2967^0 N latitude and -123.3597^0 W longitude, Siskiyou County
- Knownothing Creek - Township 10N, Range 8E, section 20 of the Youngs Peak 7.5 Minute U.S.G.S. Quadrangle, 41.2434^0 N latitude and -123.2917^0 W longitude, Siskiyou County
- Methodist Creek - Township 39N, Range 12W, section 30 of the Cecilville 7.5 Minute U.S.G.S. Quadrangle, 41.2217^0 N latitude and -123.2494^0 W longitude, Siskiyou County
- Indian Creek - Township 39N, Range 12W, section 32 of the Cecilville 7.5 Minute U.S.G.S. Quadrangle, 41.2112^0 N latitude and -123.2324^0 W longitude, Siskiyou County
- Black Bear Creek - Township 38N, Range 12W, section 4 of the Cecilville 7.5 Minute U.S.G.S. Quadrangle, 41.2041^0 N latitude and -123.2247^0 W longitude, Siskiyou County
- St. Claire Creek - Township 38N, Range 12W, section 25 of the Cecilville 7.5 Minute U.S.G.S. Quadrangle, 41.1409^0 N latitude and -123.1724^0 W longitude, Siskiyou County
- Cecil Creek - Township 38N, Range 11W, section 29 of the Cecilville 7.5 Minute U.S.G.S. Quadrangle, 41.1389^0 N latitude and -123.1282^0 W longitude, Siskiyou County
- East Fork of the Salmon River - Township 38N, Range 11W, section 21 of the Grasshopper Ridge 7.5 Minute U.S.G.S. Quadrangle, 41.1539^0 N latitude and -123.1087^0 W longitude, Siskiyou County
- Cronan Creek - Township 40N, Range 12W, section 23 of the Sawyers Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3132^0 N latitude and -123.1919^0 W longitude, Siskiyou County
- Jackass Gulch - Township 40N, Range 11W, section 30 of the Sawyers Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3024^0 N latitude and -123.1583^0 W longitude, Siskiyou County
- Glasgow Creek - Township 40N, Range 12W, section 25 of the Sawyers Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3065^0 N latitude and -123.1656^0 W longitude, Siskiyou County

- Kelly Gulch- Township 40N, Range 12W, section 24 of the Sawyers Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3156^0 N latitude and -123.1686^0 W longitude, Siskiyou County
- White's Gulch - Township 40N, Range 11W, section 26 of the Tanners Peak 7.5 Minute U.S.G.S. Quadrangle, 41.2983^0 N latitude and -123.0837^0 W longitude, Siskiyou County
- Little North Fork Salmon River - Township 40N, Range 12W, section 24 of the Sawyers Bar 7.5 Minute U.S.G.S. Quadrangle, 41.3208^0 N latitude and -123.1770^0 W longitude, Siskiyou County
- North Russian Creek - Township 40N, Range 10W, section 19 of the Tanners Peak 7.5 Minute U.S.G.S. Quadrangle, 41.3266^0 N latitude and -123.0568^0 W longitude, Siskiyou County
- South Russian Creek - Township 40N, Range 10W, section 19 of the Tanners Peak 7.5 Minute U.S.G.S. Quadrangle, 41.3266^0 N latitude and -123.0568^0 W longitude, Siskiyou County

Tributaries to the Lower Scott River:

- Boulder Creek - Township 44N, Range 11W, section 27 of the Scott Bar 7.5 Minute U.S.G.S. Quadrangle, 41.6341^0 N latitude and -123.0993^0 W longitude, Siskiyou County
- Middle Creek - Township 44N, Range 11W, section 16 of the Scott Bar 7.5 Minute U.S.G.S. Quadrangle, 41.6686^0 N latitude and -123.1089^0 W longitude, Siskiyou County
- Thompkins Creek - Township 44N, Range 11W, section 10 of the Scott Bar 7.5 Minute U.S.G.S. Quadrangle, 41.6811^0 N latitude and -123.0973^0 W longitude, Siskiyou County

Project Set Up:

SRRC will subcontract with MKWC to implement treatments on the Mid-Klamath tributaries in coordination with the SRRC Fisheries Program. MKWC will play a critical role in organizing volunteer workdays, providing outreach to landowners, and organizing a workforce to implement treatments.

Personnel: Restoration Director will participate in tasks 1, 4, 5 & 6. Project Coordinator will participate in tasks 1, 2, 3, 4, 5 & 6. Field Technician will participate in tasks 2, 3, 4, 5 & 6. Program Staff will participate in tasks 4, 5 & 6. Community Volunteers will participate in task 3. MKWC (subcontractor) will participate in tasks 1, 2, 3, 4, 5 & 6.

Materials:

The following materials will be purchased by the applicant: Waders - Waders will be used during habitat restoration. These are required for safety and prevention of hypothermia. Felt soled boots - Felt soled boots will be worn during snorkel surveys and habitat restoration. These are required for safety and to prevent slipping. Rock bars and gloves - Rock bars and gloves are required for safety and will be used to manually move rocks and debris to create temporary fishways. Field supplies, including field notebooks, clipboards, and small whiteboards - These materials will be used to record data during fish presence assessments and project implementation and monitoring. Measuring tape and a clinometer will also be purchased, and will be used for measurements of habitat conditions. Office supplies, including printer ink, printer toner, copy paper, pens, pencils, markers, weatherproof paper, tape, paperclips, fasteners, and folders - These materials will be used for various purposes associated with the project, including for the printing of project reports and datasheets.

The following materials are part of the applicant's in-kind contribution: Wetsuits and drysuits - Wetsuits and drysuits will be worn during snorkel surveys. These are required for safety and the prevention of hypothermia. Snorkels and masks - Snorkels and masks will be used during snorkel surveys to conduct fish presence assessments. These are required for safety and fish presence monitoring. Waterproof cameras - Cameras will be used during assessments to document pre- and post-implementation habitat conditions. These are required for implementation monitoring. Stadia rods - Stadia rods will be used during assessments to measure habitat conditions pre- and post-implementation. These are required for accurate measurements of habitat conditions. The following materials will be purchased by the subcontractor: Snorkels and masks - Snorkels and masks will be used during snorkel surveys to conduct fish presence assessments. These are required for safety and fish presence monitoring. Rock bars - Rock bars will be used to move rocks and debris to create temporary fishways. Clinometer - A clinometer will be used for measurements of habitat conditions.

Tasks:

Task 1. Coordinate with all collaborators to prioritize treatments, discuss techniques and standardize protocol. Train field technicians. Conduct pre-season coordination meetings (June 2019, March 2020).

Task 2. Conduct assessments of juvenile and adult fish passage on tributaries of the Mid Klamath, Salmon, and Lower Scott Rivers. Assessments will include identification of barriers and recording of qualitative features. Collect data at tributary mouths and other barriers, including channel width, depth, and gradient. Assessment data will be incorporated into an existing data set from previous

years' assessments, and will be used to develop a strategic plan for modification of fish barrier sites (May 2019, May 2020).

Task 3. Modify identified barriers to allow for juvenile and adult salmonid fish passage. Step-and-pool fishways are the primary model to be used for modification. In some cases, creek mouths with large, shallow alluvial fans will be channelized to improve fish passage and minimize solar heating (November 2019, November 2020). No heavy equipment will be used.

Task 4. Photo points will be taken before, during, and after the modifications to document methods used on each site and provide a reference for future years (ongoing). Video will also be taken at select sites.

Task 5. Data will be shared with all interested parties to increase understanding of fish passage issues at tributary mouths and develop appropriate scaled projects to address the issue (ongoing).

Task 6. Conduct outreach to private landowners at creek mouths, identified as having fish passage issues, to gain access for assessment and modification (ongoing). Signs will be posted at locations where swimmer's dams or push-up dams are chronically affecting fish passage in order to educate landowners and river users about the need for appropriate construction of these features.

Deliverables:

- Maps of project areas with identification and type of fish barriers.
- Before, during, and after photo points of project sites. Video of creek mouths, volunteer workdays, and fish barriers.
- Data on improvements to fish passage: fish usage, velocity, pool depths, barrier heights, channel gradient, cover and temperature measurements before and after treatment.
- Community participation in at least six volunteer workdays to manually modify barriers to allow for fish passage.
- Posting of educational signs about fish passage in swimmers dams at public swimming holes.
- Agreements with landowners to access potential fish barriers on private lands.
- Quarterly and annual progress reports, a draft final, and Final Report describing the project, and a summary of findings and results.

Timelines:

June 2019, June 2020: Convene a coordination meeting with the Mid Klamath Watershed Council, the Karuk Tribe Fisheries Program, Salmon River Restoration Council, and USFS Fisheries to standardize survey protocol, establish techniques and discuss priorities. (Task 1)

June-July 2019, June-July 2020: Develop assessment prioritization strategy. Begin assessment of tributaries for fish passage barriers and pre biological monitoring at sites marked for implementation. Begin outreach to private landowners. (Task 1, 2 & 6)

June-November 2019, June-November 2020: Implement treatments on prioritized sites for juvenile fish passage. Collect 12 photo-points and implement pre and post structural and biological monitoring. Coordinate two volunteer workdays and begin public outreach campaign. (Task 3, 4 & 6)

August-November 2019, August-November 2020: Implement treatments on prioritized sites for adult fish passage and monitor implementations. Coordinate one volunteer workday. (Task 3, 4 & 6)

November 2019, November 2020: Monitor adult fish passage sites. Develop/submit annual progress report and final report. (Task 3, 4 &5)

November-December 2020: Submit draft, final report. Publish and distribute collected data and findings.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own

bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.
- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible.
- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- The Grantee will provide fish relocation data to the Grantor Project Manager on a form provided by the Grantor.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

All habitat improvements will follow techniques described in the *California*

Salmonid Stream Habitat Restoration Manual Part III Habitat Inventory Methods, Part VI Project Planning and Organization, Part VII Project Implementation, Part VIII Project Evaluation and Monitoring

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Tanners Peak (4112331) OR Sawyers Bar (4112332) OR English Peak (4112342) OR Yellow Dog Peak (4112341) OR Etna (4112248) OR Eaton Peak (4112238) OR Deadman Peak (4112228) OR Grasshopper Ridge (4112321) OR Cecilville (4112322) OR Caribou Lake (4112218) OR Thompson Peak (4112311) OR Cecil Lake (4112312) OR Dees Peak (4112313) OR Youngs Peak (4112323) OR Forks of Salmon (4112333) OR Medicine Mtn. (4112343) OR Orleans Mtn. (4112334) OR Somes Bar (4112344) OR Salmon Mtn. (4112324) OR Trinity Mtn. (4112314) OR Hopkins Butte (4112325) OR Orleans (4112335) OR Bark Shanty Gulch (4112345) OR Weitchpec (4112326) OR Fish Lake (4112336) OR Lonesome Ridge (4112346) OR Hoopa (4112316) OR Hupa Mountain (4112317) OR French Camp Ridge (4112327) OR Johnsons (4112337) OR Chimney Rock (4112356) OR Dillon Mtn. (4112355) OR Prescott Mtn. (4112366) OR Bear Peak (4112365) OR Clear Creek (4112364) OR Ukonom Mtn. (4112354) OR Ukonom Lake (4112353) OR Huckleberry Mtn. (4112363) OR Preston Peak (4112375) OR Happy Camp (4112374) OR Slater Butte (4112373) OR Polar Bear Mtn. (4112385) OR Deadman Point (4112384) OR Figurehead Mtn. (4112383) OR Oregon Caves (4212314) OR Grayback Mountain (4212313) OR Carberry Creek (4212312) OR Kangaroo Mtn. (4112382) OR Seiad Valley (4112372) OR Grider Valley (4112362) OR Scott Bar (4112361) OR Marble Mountain (4112352) OR Boulder Peak (4112351) OR Greenview (4112258) OR Russell Peak (4112268) OR Horse Creek (4112278) OR Hamburg (4112371) OR Indian Creek Baldy (4112267) OR Fort Jones (4112257) OR McKinley Mtn. (4112277) OR Dutch Creek (4112381) OR Condrey Mtn. (4112288) OR Yreka (4112266) OR Badger Mtn. (4112276) OR Cottonwood Peak (4112286) OR Buckhorn Bally (4112287) OR Dutchman Peak (4212218) OR Siskiyou Peak (4212217) OR Mt. Ashland (4212216) OR Hornbrook (4112285) OR Siskiyou Pass (4212215) OR Hawkinsville (4112275) OR Bogus Mountain (4112274) OR Iron Gate Reservoir (4112284) OR Soda Mountain (4212214) OR Dewey Gulch (4112273) OR Copco (4112283) OR Parker Mtn. (4212213))

Possible species within the Tanner's Peak, Sawyer's Bar, Cecilville, Youngs Peak, Forks of Salmon, Orleans Mountains, Orleans, Weitchpec, Somes Bar, Dillon Mountain, Ukonom Mountain, Clear Creek, Happy Camp, Slater Butte, Boulder Peak, Grider Valley, Scott Bar, Figurehead Mountain, Seiad Valley, Hamburg, Russel Peak, Mckinley Mountain, Buckhorn Bally, Hornbrook, Iron Gate Reservoir and surrounding quads for 725681 Mid-Klamath Tributary Fish Passage Improvement Project, Humboldt & Siskiyou Counties.

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abies amabilis Pacific silver fir	PGPIN01010	None	None	G5	S2	2B.3
Abies lasiocarpa var. lasiocarpa subalpine fir	PGPIN01072	None	None	G5T5	S3	2B.3
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Ambystoma macrodactylum sigillatum southern long-toed salamander	AAAAA01085	None	None	G5T4	S3	SSC
Ancotrema voyanum hooded lancetooth	IMGAS36130	None	None	G1G2	S1S2	
Androsace filiformis slender-stemmed androsace	PDPRI02040	None	None	G3G4	S1	2B.3
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arabis aculeolata Waldo rockcress	PDBRA06010	None	None	G4	S2	2B.2
Arabis mcdonaldiana McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Arabis rigidissima var. rigidissima Trinity Mountains rockcress	PDBRA061R2	None	None	G3T3	S3	1B.3
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Asarum marmoratum marbled wild-ginger	PDARI02070	None	None	G4?	S2	2B.3
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus umbraticus Bald Mountain milk-vetch	PDFAB0F990	None	None	G4	S2	2B.3
Atractelmis wawona Wawona riffle beetle	IICOL58010	None	None	G1G3	S1S2	
Balsamorhiza lanata woolly balsamroot	PDAST11047	None	None	G3	S3	1B.2
Boechera koehleri Koehler's stipitate rockcress	PDBRA060Z0	None	None	G3	S2S3	1B.3
Boechera rollei Rolle's rockcress	PDBRA064H0	None	None	G1	S1	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus franklini Franklin's bumble bee	IIHYM24010	None	None	G1	S1	
Bombus morrisoni Morrison bumble bee	IIHYM24460	None	None	G4G5	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Bombus suckleyi Suckley's cuckoo bumble bee	IIHYM24350	None	None	GU	S1	
Bonasa umbellus ruffed grouse	ABNLC11010	None	None	G5	S3S4	WL
Botrychium pinnatum northwestern moonwort	PPOPH010V0	None	None	G4?	S2	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Botrypus virginianus rattlesnake fern	PPOPH010H0	None	None	G5	S2	2B.2
Buxbaumia viridis buxbaumia moss	NBMUS1B040	None	None	G4G5	S1	2B.2
Calochortus greenei Greene's mariposa-lily	PMLIL0D0H0	None	None	G3	S2S3	1B.2
Calochortus monanthus single-flowered mariposa-lily	PMLIL0D0W0	None	None	GH	SH	1A
Calochortus persistens Siskiyou mariposa-lily	PMLIL0D140	None	Rare	G1	S1	1B.2
Campanula wilkinsiana Wilkin's harebell	PDCAM020Z0	None	None	G2	S2	1B.2
Carex halliana Oregon sedge	PMCYP035M0	None	None	G4	S2	2B.3
Carex hystericina porcupine sedge	PMCYP036D0	None	None	G5	S2	2B.1
Carex nardina nard sedge	PMCYP03920	None	None	G4G5	S1	2B.2
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Carex serpenticola serpentine sedge	PMCYP03KM0	None	None	G4	S3	2B.3
Castilleja elata Siskiyou paintbrush	PDSCR0D213	None	None	G3	S2S3	2B.2
Catostomus snyderi Klamath largescale sucker	AFCJC02200	None	None	G3	S3	SSC
Chaenactis suffrutescens Shasta chaenactis	PDAST200H0	None	None	G3	S3	1B.3
Chasmistes brevirostris shortnose sucker	AFCJC03010	Endangered	Endangered	G1	S1	FP
Cirsium ciliolatum Ashland thistle	PDAST2E0P0	None	Endangered	G3	S1	2B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Cornus canadensis bunchberry	PDCOR01040	None	None	G5	S2	2B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Darlingtonia Seep Darlingtonia Seep	CTT51120CA	None	None	G4	S3.2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Deltistes luxatus Lost River sucker	AFCJC12010	Endangered	Endangered	G1	S1	FP
Draba carnosula Mt. Eddy draba	PDBRA112T0	None	None	G2	S2	1B.3
Drosera anglica English sundew	PDDRO02010	None	None	G5	S2	2B.3
Empidonax traillii willow flycatcher	ABPAE33040	None	Endangered	G5	S1S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Epilobium luteum yellow willowherb	PDONA060H0	None	None	G5	S1	2B.3
Epilobium oreganum Oregon fireweed	PDONA060P0	None	None	G2	S2	1B.2
Epilobium siskiyouense Siskiyou fireweed	PDONA06100	None	None	G3	S3	1B.3
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron bloomeri var. nudatus Waldo daisy	PDAST3M0M2	None	None	G5T4	S3	2B.3
Eriogonum diclinum Jaynes Canyon buckwheat	PDPGN081S0	None	None	G3	S3	2B.3
Eriogonum hirtellum Klamath Mountain buckwheat	PDPGN082T0	None	None	G2G3	S2S3	1B.3
Eriogonum umbellatum var. glaberrimum Warner Mountains buckwheat	PDPGN086U2	None	None	G5T2?	S2	1B.3
Eriogonum umbellatum var. lautum Scott Valley buckwheat	PDPGN086UX	None	None	G5T1	S1	1B.1
Eriogonum ursinum var. erubescens blushing wild buckwheat	PDPGN08632	None	None	G3G4T3	S3	1B.3
Erythronium hendersonii Henderson's fawn lily	PMLIL0U070	None	None	G4	S2	2B.3
Erythronium howellii Howell's fawn lily	PMLIL0U080	None	None	G3G4	S2	1B.3
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucephalus vialis wayside aster	PDASTEC0A0	None	None	G3	S1	1B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fissidens aphelotaxifolius brook pocket moss	NBMUS2W290	None	None	G3G4	S1	2B.2
Fritillaria gentneri Gentner's fritillary	PMLIL0V080	Endangered	None	G1	S1	1B.1
Galium serpenticum ssp. scotticum Scott Mountain bedstraw	PDRUB0N1Y6	None	None	G4G5T2	S2	1B.2
Gentiana plurisetosa Klamath gentian	PDGEN060V0	None	None	G2G3	S2	1B.3
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Grus canadensis tabida greater sandhill crane	ABNMK01014	None	Threatened	G5T4	S2	FP
Gulo gulo California wolverine	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helminthoglypta hertleini Oregon shoulderband	IMGASC2280	None	None	G1	S1S2	
Helminthoglypta talmadgei Trinity shoulderband	IMGASC2630	None	None	G2	S2	
Hemieva ranunculifolia buttercup-leaf suksdorfia	PDSAX0W010	None	None	G5	S2	2B.2
Horkelia hendersonii Henderson's horkelia	PDROS0W090	None	None	G1G2	S1	1B.1
Hydroporus leechi Leech's skyline diving beetle	IICOL55040	None	None	G1?	S1?	
Hymenoxys lemmonii alkali hymenoxys	PDAST530C0	None	None	G4?	S2S3	2B.2
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Juga acutifilosa topaz juga	IMGASK4010	None	None	G2	S2	
Juncus dudleyi Dudley's rush	PMJUN01390	None	None	G5	S1	2B.3
Juncus regelii Regel's rush	PMJUN012D0	None	None	G4	S1	2B.3
Klamath/No Coast Spring Run Chinook/Summer Steelhead Stream Klamath/No Coast Spring Run Chinook/Summer Steelhead Stream	CARB2333CA	None	None	GNR	SNR	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Klamath/North Coast Fall/Winter Run Chinook Salmon River	CARB2332CA	None	None	GNR	SNR	
Klamath/North Coast Fall/Winter Run Chinook Salmon River						
Klamath/North Coast Interior Headwater Fishless Stream	CARB2220CA	None	None	GNR	SNR	
Klamath/North Coast Interior Headwater Fishless Stream						
Klamath/North Coast Rainbow Trout Stream	CARB2312CA	None	None	GNR	SNR	
Klamath/North Coast Rainbow Trout Stream						
Kopsiopsis hookeri	PDORO01010	None	None	G4?	S1S2	2B.3
small groundcone						
Lasionycteris noctivagans	AMACC02010	None	None	G5	S3S4	
silver-haired bat						
Lasiurus cinereus	AMACC05030	None	None	G5	S4	
hoary bat						
Lewisia cotyledon var. heckneri	PDPOR04052	None	None	G4T3	S3	1B.2
Heckner's lewisia						
Limnanthes floccosa ssp. floccosa	PDLIM02043	None	None	G4T4	S3	4.2
woolly meadowfoam						
Lomatium martindalei	PDAPI1B140	None	None	G5	S2	2B.3
Coast Range lomatium						
Lomatium peckianum	PDAPI1B1G0	None	None	G4	S1	2B.2
Peck's lomatium						
Margaritifera falcata	IMBIV27020	None	None	G4G5	S1S2	
western pearlshell						
Martes caurina	AMAJF01030	None	None	G5	S3	
Pacific marten						
Martes caurina humboldtensis	AMAJF01012	None	Candidate Endangered	G5T1	S1	SSC
Humboldt marten						
Meesia longiseta	NBMUS4L010	None	None	G5	S2	2B.3
long seta hump moss						
Meesia uliginosa	NBMUS4L030	None	None	G5	S3	2B.2
broad-nerved hump moss						
Mertensia bella	PDBOR0N040	None	None	G4	S1	2B.2
Oregon lungwort						
Microseris laciniata ssp. detlingii	PDAST6E0A1	None	None	G4T3	S1	2B.2
Detling's silverpuffs						
Mielichhoferia elongata	NBMUS4Q022	None	None	G5	S4	4.3
elongate copper moss						
Mielichhoferia mielichhoferiana	NBMUS4Q020	None	None	G4	S1	2B.3
Mielichhofer's copper moss						
Mitellastra caulescens	PDSAX0N020	None	None	G5	S4	4.2
leafy-stemmed mitrewort						

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Monadenia callipeplus downy sideband	IMGASC7110	None	None	G1G2	S1S2	
Monadenia chaceana Siskiyou shoulderband	IMGASC7150	None	None	G2G3	S2	
Monadenia cristulata crested sideband	IMGASC7120	None	None	G1?	S1S2	
Monadenia fidelis leonina A terrestrial snail	IMGASC7037	None	None	G4G5T1T2	S1S2	
Monadenia infumata ochromphalus yellow-based sideband	IMGASC7051	None	None	G2T1	S1	
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Nebria gebleri siskiyouensis Siskiyou ground beetle	IICOL6L091	None	None	G4G5T4	S1S2	
Nebria sahlbergii triad Trinity Alps ground beetle	IICOL6L081	None	None	G1T1	S1	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC
Oncorhynchus tshawytscha pop. 30 chinook salmon - upper Klamath and Trinity Rivers ESU	AFCHA02056	None	None	G5	S1S2	SSC
Orthocarpus pachystachyus Shasta orthocarpus	PDSCR1H0L0	None	None	G1	S1	1B.1
Orthotrichum holzingeri Holzinger's orthotrichum moss	NBMUS560E0	None	None	G3	S2	1B.3
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Parnassia cirrata var. intermedia Cascade grass-of-Parnassus	PDSAX0P044	None	None	G5T4	S3	2B.2
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Penstemon filiformis thread-leaved beardtongue	PDSCR1L2A0	None	None	G3	S3	1B.3
Penstemon tracyi Tracy's beardtongue	PDSCR1L6A0	None	None	G2	S2	1B.3
Phacelia greenei Scott Valley phacelia	PDHYD0C1V0	None	None	G2	S2	1B.2

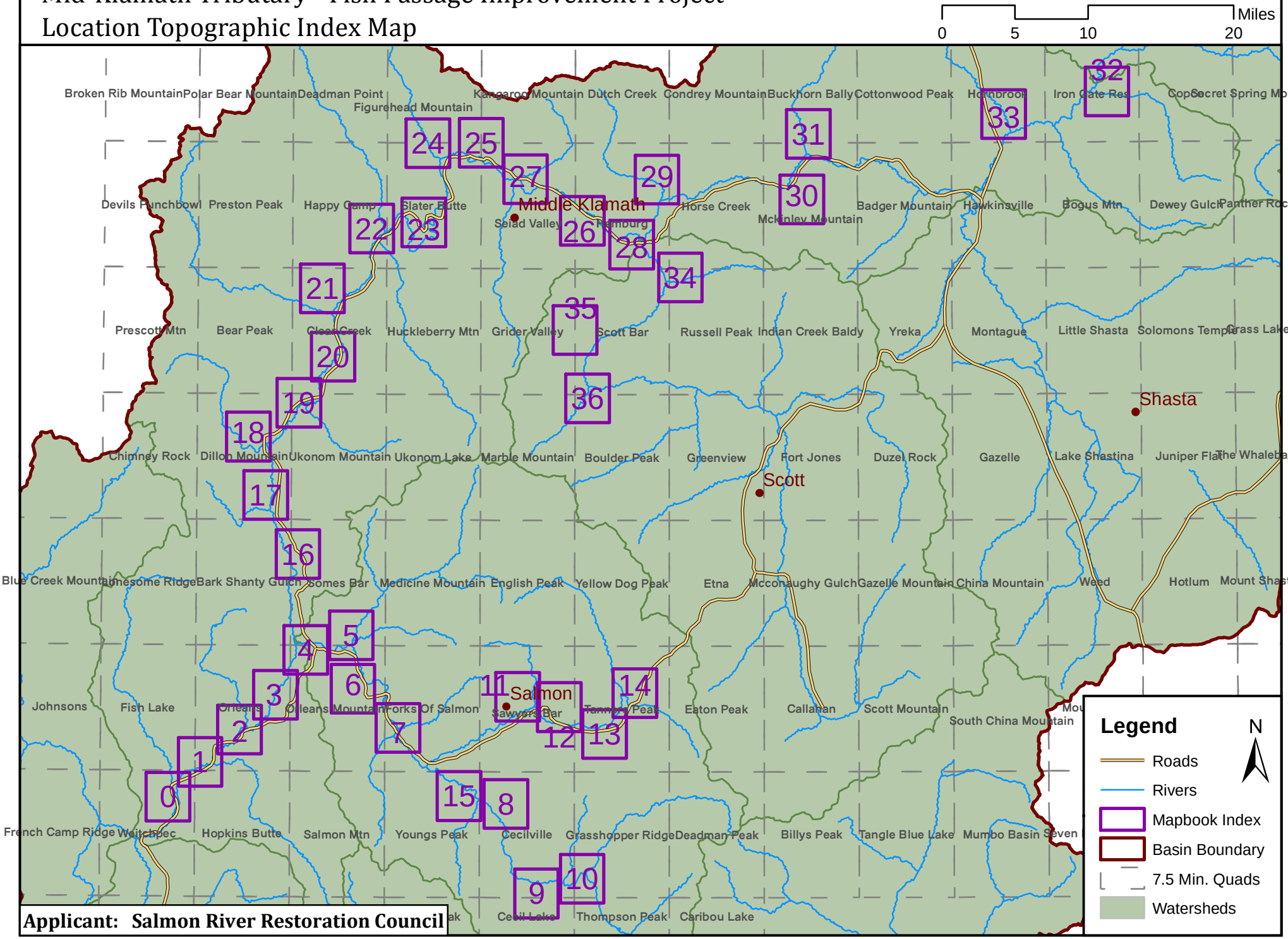
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Phacelia leonis Siskiyou phacelia	PDHYD0C2N0	None	None	G3	S2?	1B.3
Phlox hirsuta Yreka phlox	PDPLM0D100	Endangered	Endangered	G1	S1	1B.2
Picea engelmannii Engelmann spruce	PGPIN03030	None	None	G5	S2	2B.2
Pinguicula macroceras horned butterwort	PDLNT01040	None	None	G4	S2	2B.2
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Pisidium ultramontanum montane peaclam	IMBIV51220	None	None	G1	S1	
Plethodon asupak Scott Bar salamander	AAAAD12560	None	Threatened	G1G2	S1S2	
Plethodon elongatus Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
Plethodon stormi Siskiyou Mountains salamander	AAAAD12180	None	Threatened	G3?	S1S2	
Pohlia tundrae tundra thread moss	NBMUS5S1B0	None	None	G3	S3	2B.3
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Potamogeton robbinsii Robbins' pondweed	PMPOT030Z0	None	None	G5	S3	2B.3
Potentilla cristae crested potentilla	PDROS1B2F0	None	None	G2	S2	1B.3
Ptilidium californicum Pacific fuzzwort	NBHEP2U010	None	None	G4G5	S3S4	4.3
Raillardella pringlei showy raillardella	PDAST7X030	None	None	G2G3	S2S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana cascadae Cascades frog	AAABH01060	None	Candidate Endangered	G3G4	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Rorippa columbiae Columbia yellow cress	PDBRA27060	None	None	G3	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rosa gymnocarpa var. serpentina Gasquet rose	PDROS1J1V1	None	None	G5T3T4	S2	1B.3
Rubus nivalis snow dwarf bramble	PDROS1K4S0	None	None	G4?	S1	2B.3
Sabulina howellii Howell's sandwort	PDCAR0G0F0	None	None	G4	S3	1B.3
Sabulina stolonifera Scott Mountain sandwort	PDCAR0G110	None	None	G2	S2	1B.3
Sanicula tracyi Tracy's sanicle	PDAPI1Z0K0	None	None	G4	S4	4.2
Saussurea americana American saw-wort	PDAST8B020	None	None	G5	S1	2B.2
Saxifraga cespitosa tufted saxifrage	PDSAX0U0C0	None	None	G5	S1	2B.3
Schoenoplectus subterminalis water bulrush	PMCYP0Q1G0	None	None	G4G5	S3	2B.3
Scirpus pendulus pendulous bulrush	PMCYP0Q160	None	None	G5	S1	2B.2
Sedum divergens Cascade stonecrop	PDCRA0A0B0	None	None	G5?	S2	2B.3
Sedum laxum ssp. flavidum pale yellow stonecrop	PDCRA0A0L2	None	None	G5T4Q	S4	4.3
Sedum oblanceolatum Applegate stonecrop	PDCRA0A0T0	None	None	G3	S1	1B.1
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Silene marmorensis Marble Mountain campion	PDCAR0U0Z0	None	None	G2	S2	1B.2
Smilax jamesii English Peak greenbrier	PMSMI010D0	None	None	G3G4	S3S4	4.2
Stachys pilosa hairy marsh hedge-nettle	PDLAM1X1A0	None	None	G5	S3	2B.3
Stellaria obtusa obtuse starwort	PDCAR0X0U0	None	None	G5	S4	4.3
Strix nebulosa great gray owl	ABNSB12040	None	Endangered	G5	S1	
Tauschia howellii Howell's tauschia	PDAPI27050	None	None	G2G3	S2S3	1B.3
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Tonestus lyallii Lyall's tonestus	PDASTE0050	None	None	G5	S1	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Trifolium siskiyouense Siskiyou clover	PDFAB402S0	None	None	GH	SH	1B.1
Trilobopsis tehamana Tehama chaparral	IMGASA2040	None	None	G1	S1	
Triteleia grandiflora large-flowered triteleia	PMLIL21060	None	None	G4G5	S1	2B.1
Triteleia hendersonii Henderson's triteleia	PMLIL21070	None	None	G4	S1	2B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Vaccinium scoparium little-leaved huckleberry	PDERI180Y0	None	None	G5	S3	2B.2
Vespericola karokorum Karok hesperian	IMGASA4040	None	None	G2	S2	
Viola howellii Howell's violet	PDVIO040U0	None	None	G4	S1	2B.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

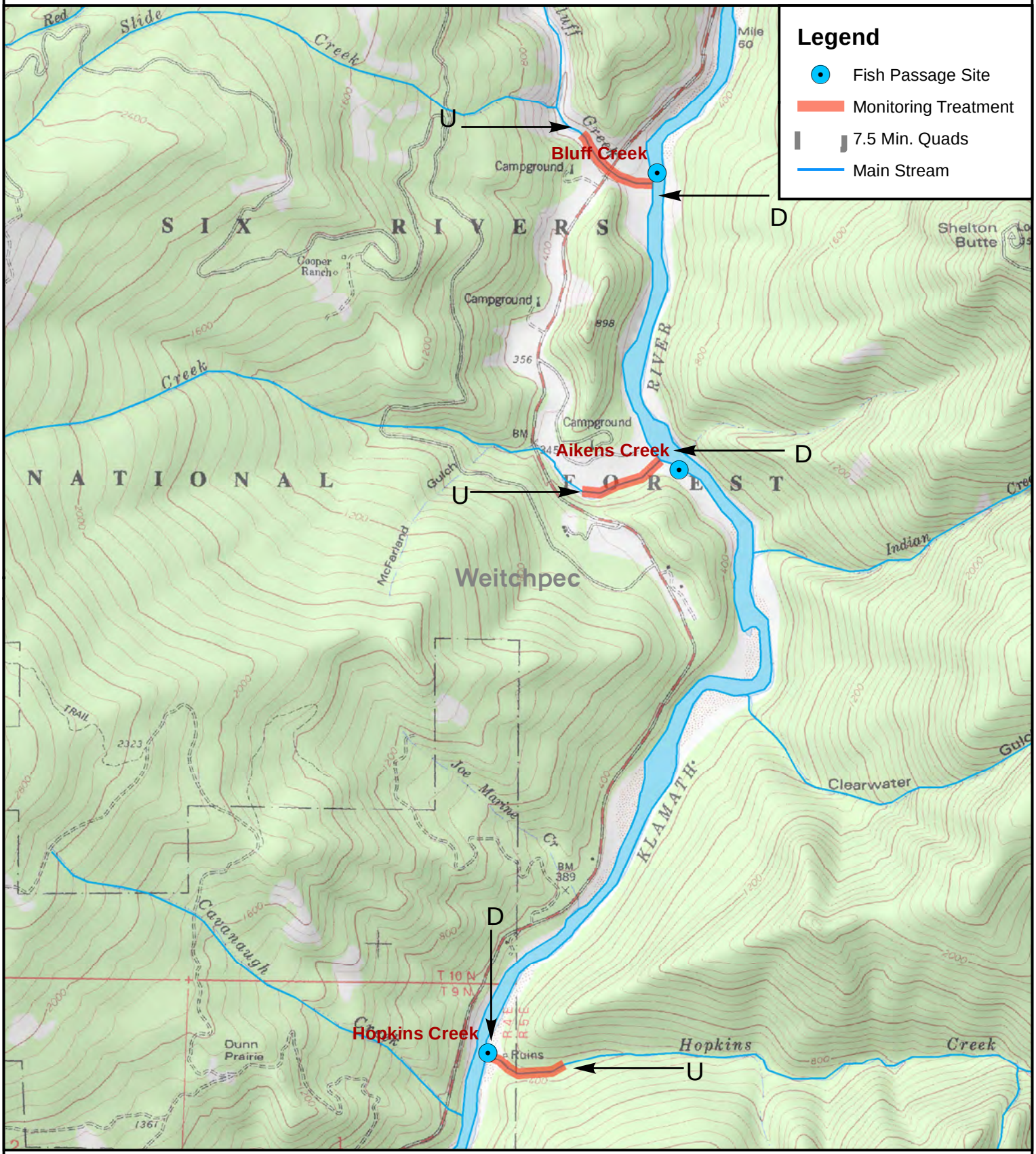
Record Count: 183

Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Index Map



Applicant: Salmon River Restoration Council

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 1 of 37



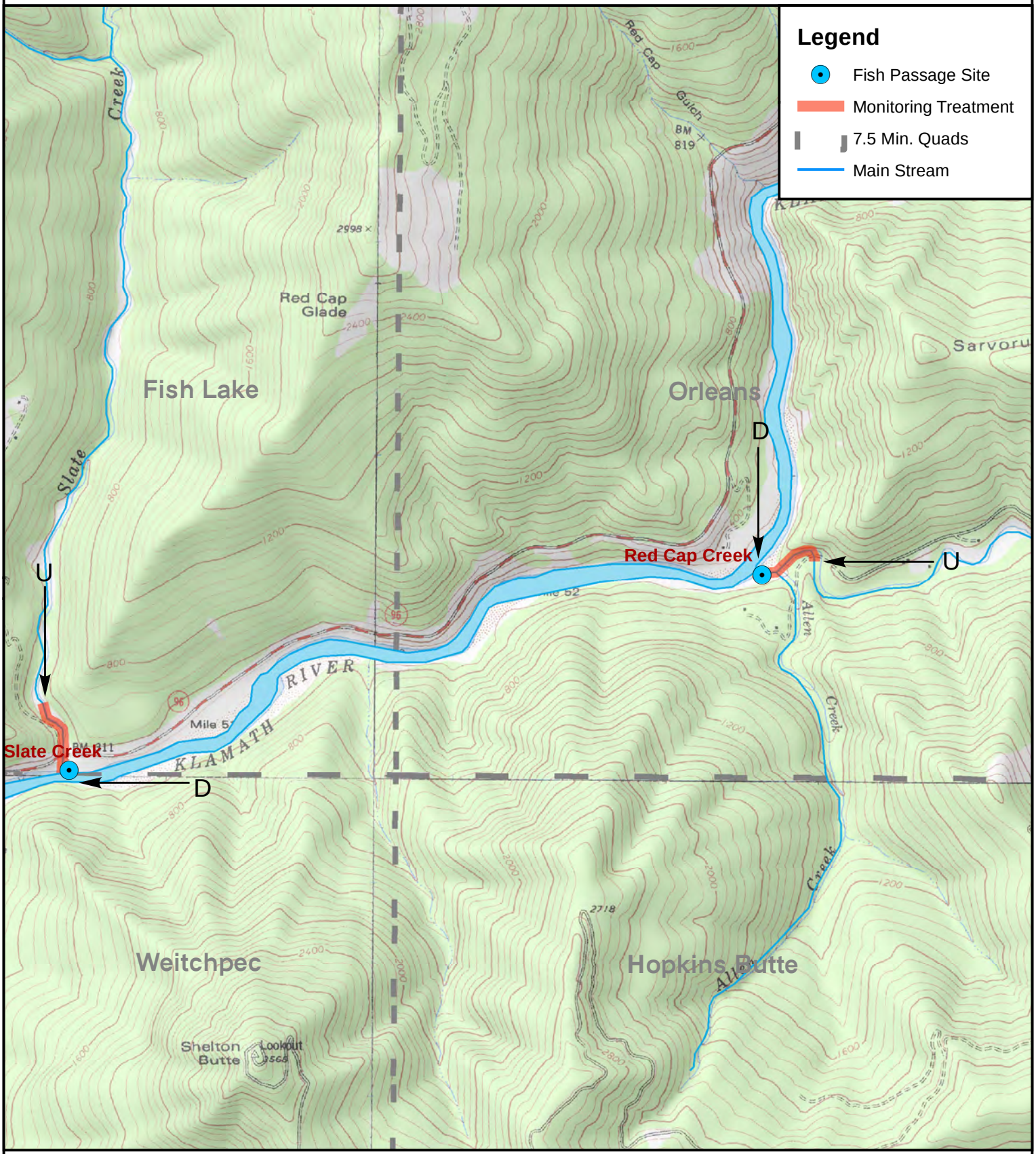
Applicant: Salmon River Restoration Council
Stream name: Bluff Creek, Aikens Creek, Hopkins Creek
Quad name: Weitchpec

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 2 of 37



Applicant: Salmon River Restoration Council

Stream name: Slate Creek, Red Cap Creek

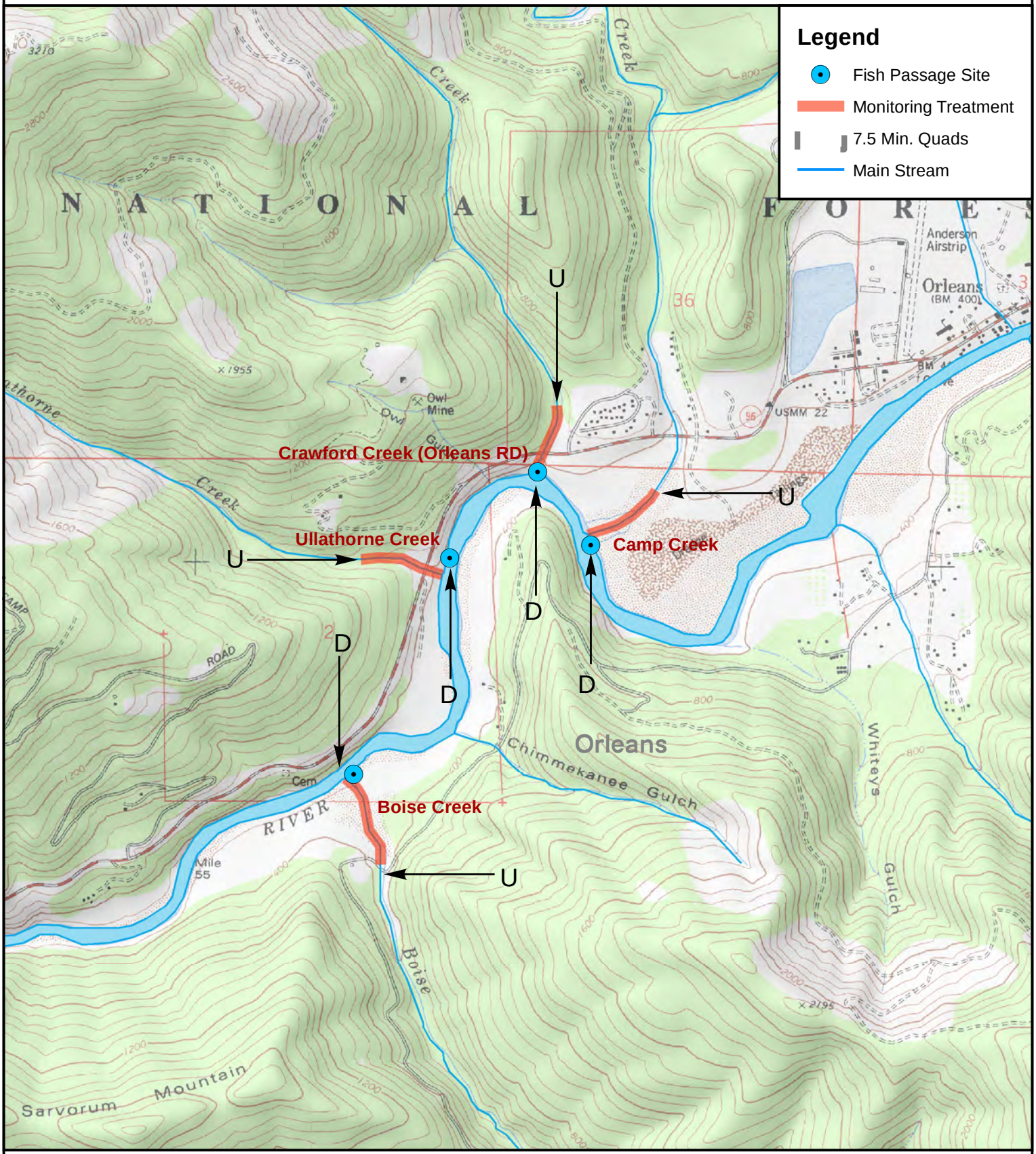
Quad name: Fish Lake, Orleans, Hopkins Butte, Weitchpec

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 3 of 37



Applicant: Salmon River Restoration Council

Stream name: Boise Cr., Ullathorne Cr., Crawford Cr., Camp Cr.

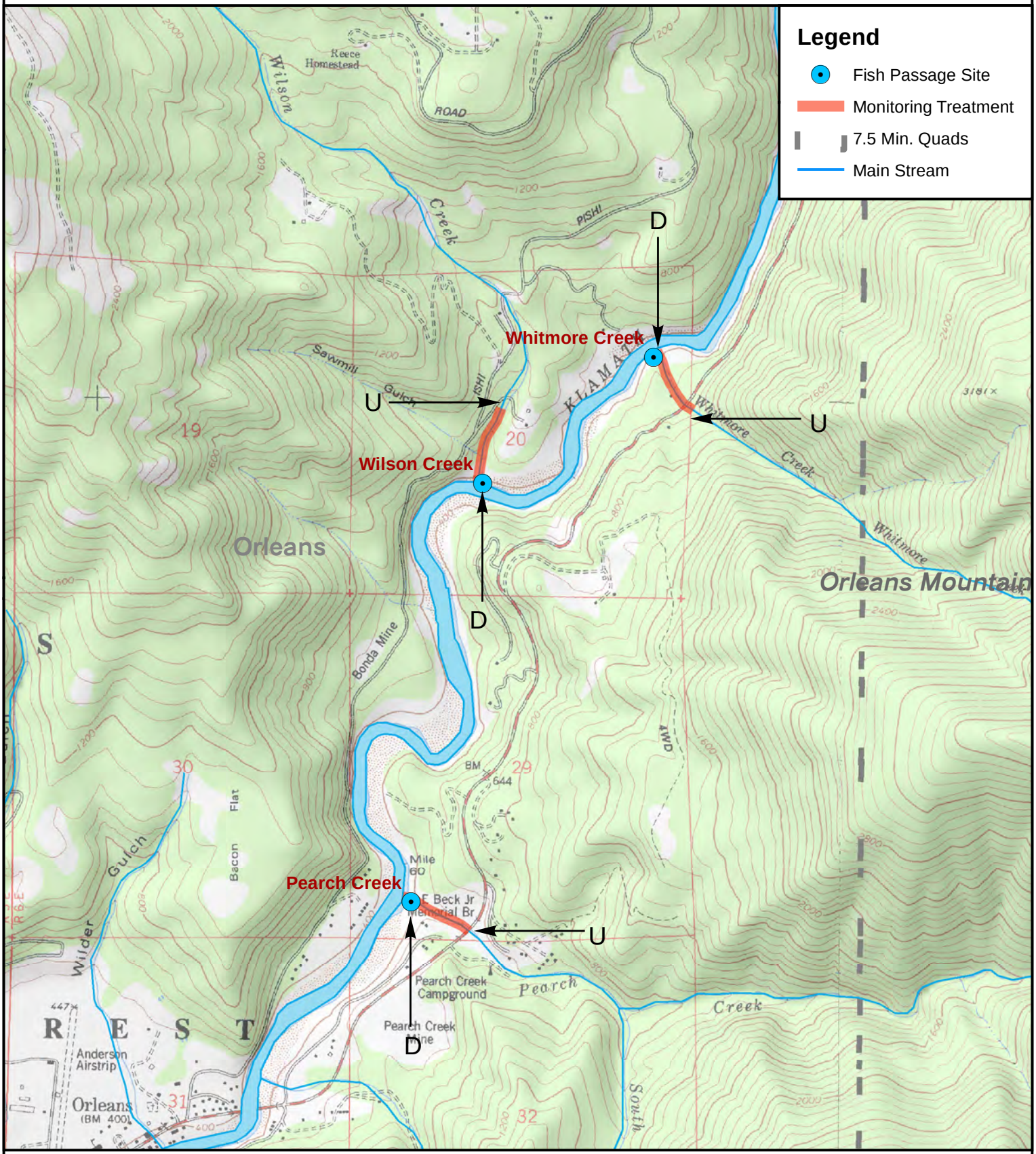
Quad name: Orleans

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 4 of 37



Applicant: Salmon River Restoration Council

Stream name: Pearch Cr., Wilson Cr., Whitmore Cr.

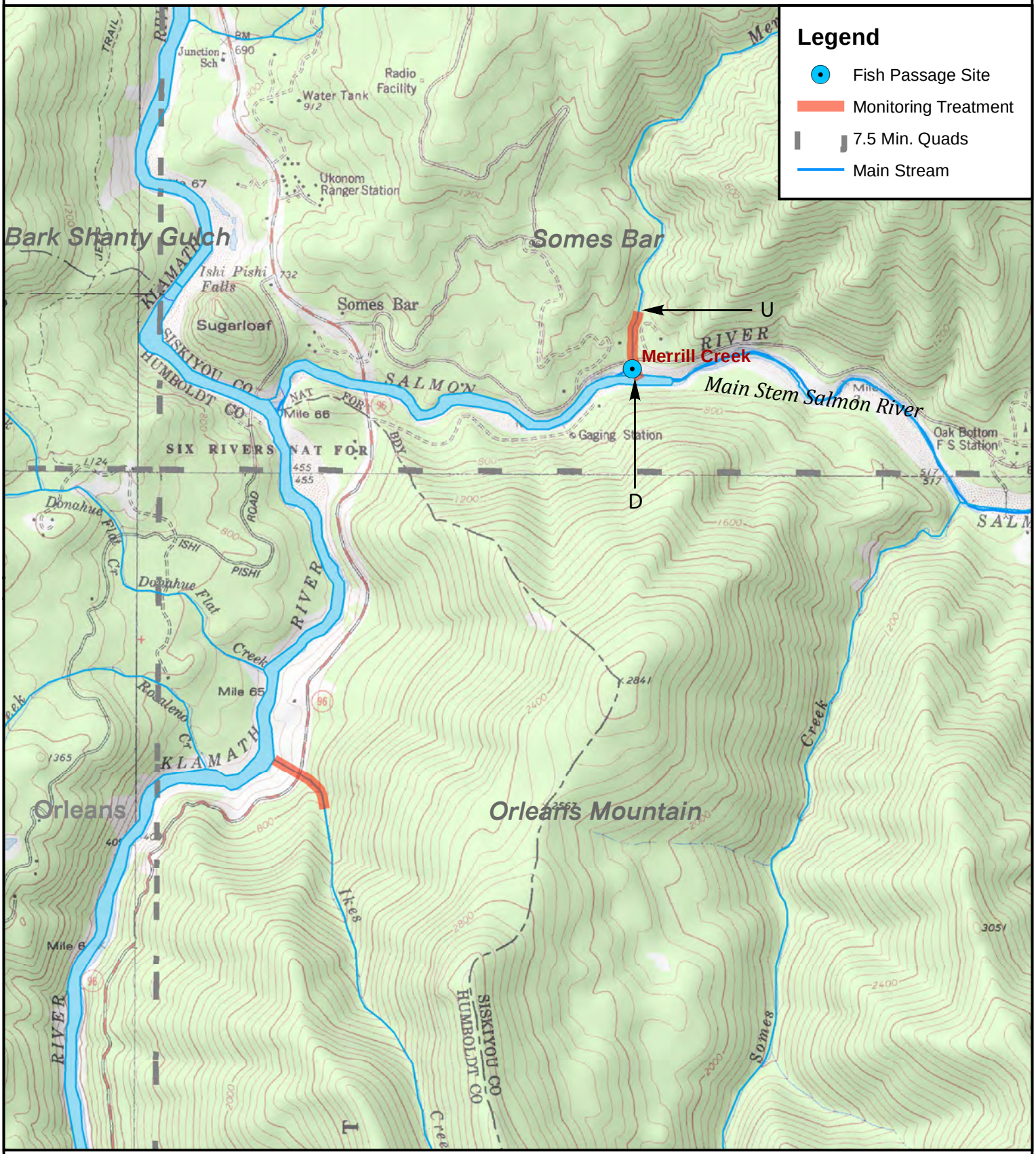
Quad name: Orleans, Orleans Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 5 of 37



Applicant: Salmon River Restoration Council
Stream name: Merrill Creek

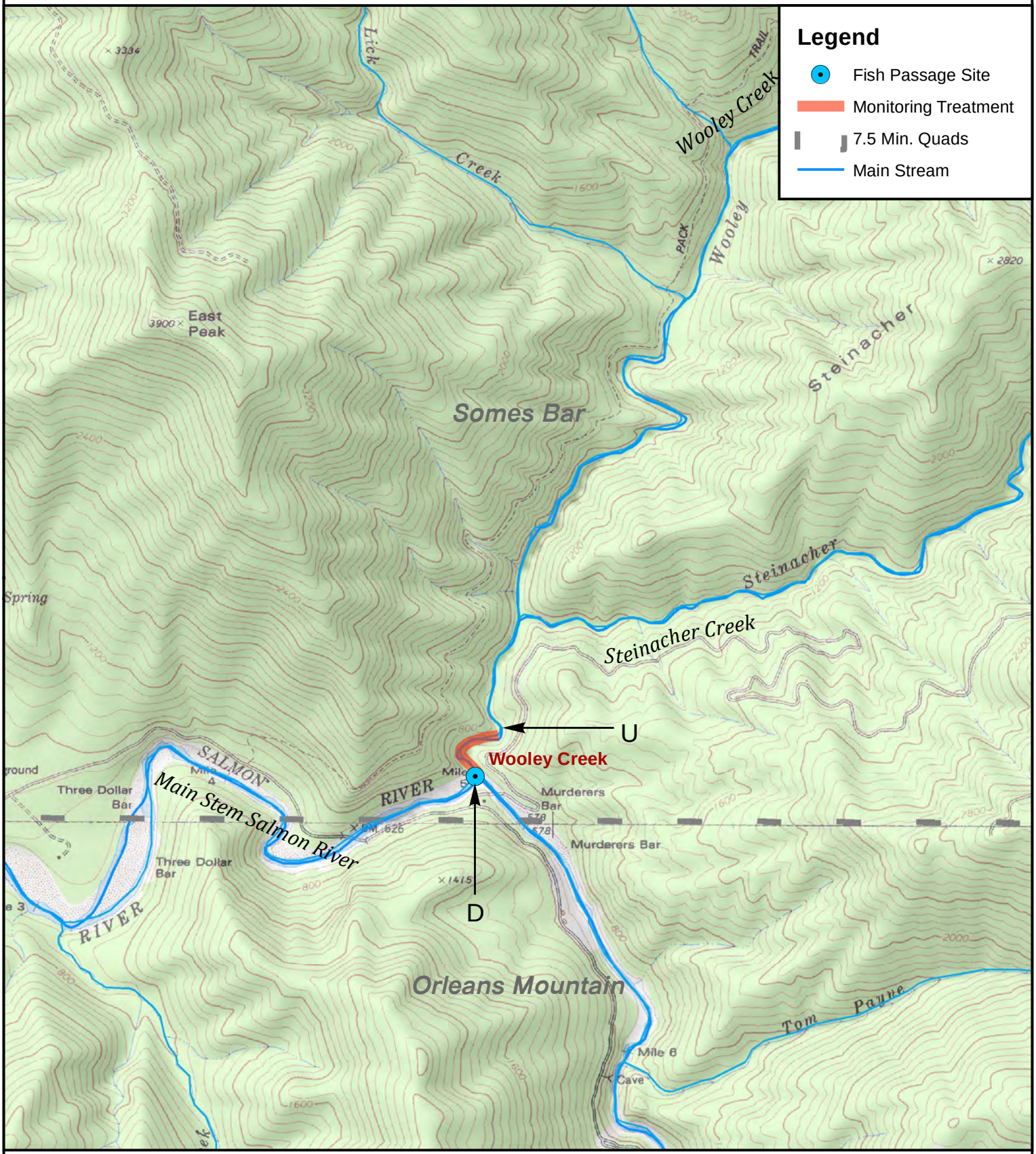
Quad name: Somes Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 6 of 37



Applicant: Salmon River Restoration Council
Stream name: Wooley Creek

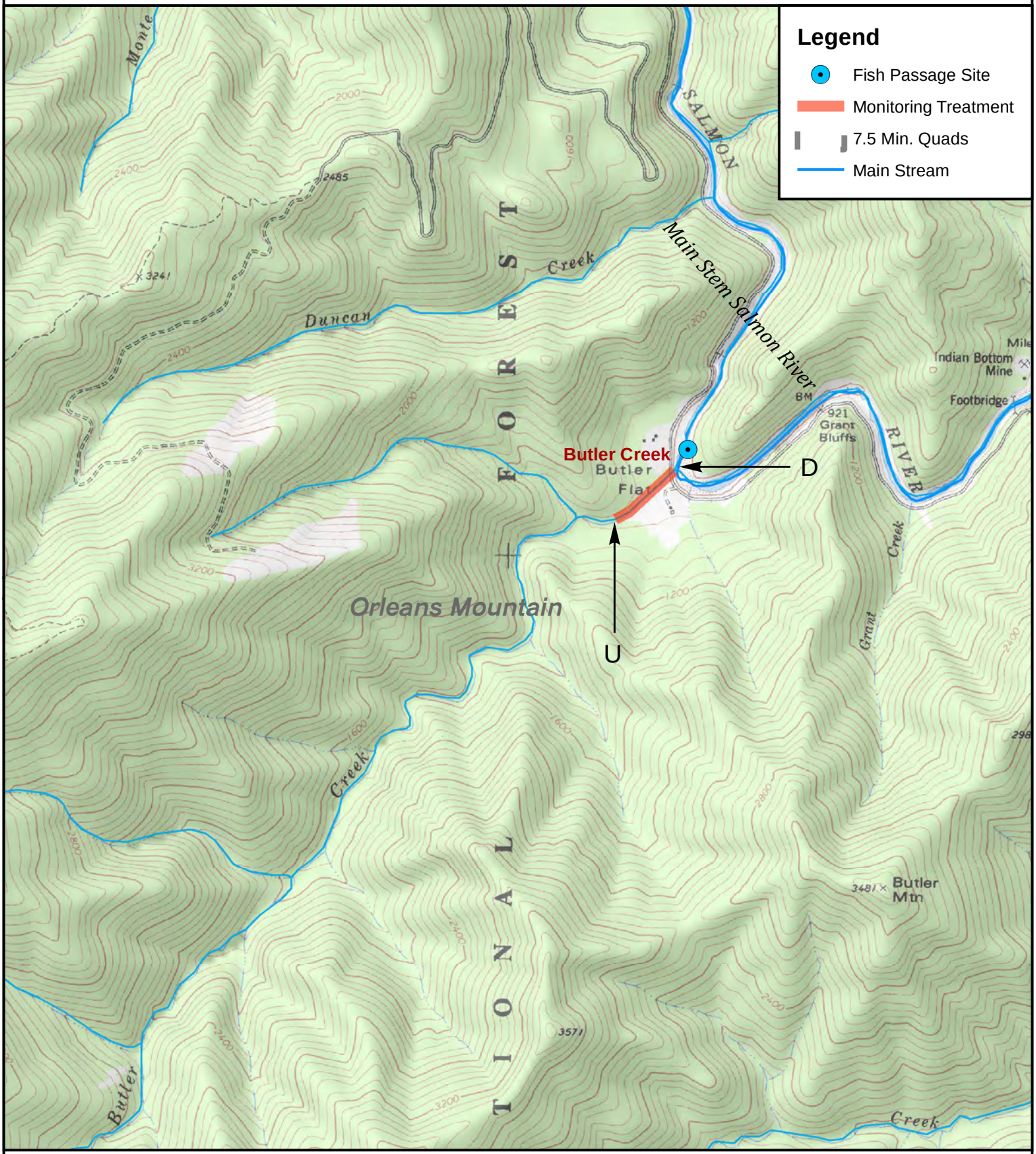
Quad name: Somes Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 7 of 37



Applicant: Salmon River Restoration Council

Stream name: Butler Creek

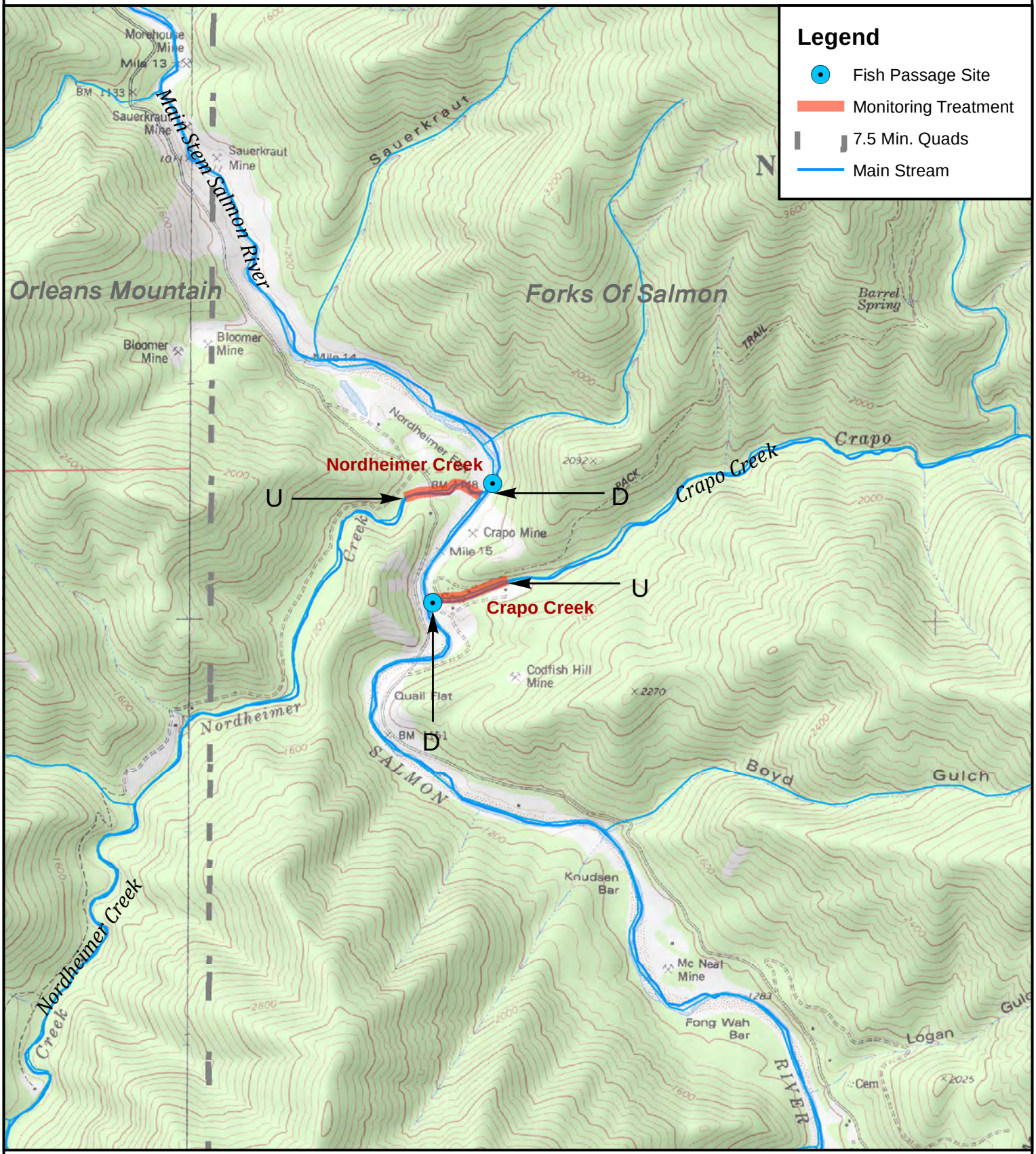
Quad name: Orleans Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 8 of 37



Applicant: Salmon River Restoration Council

Stream name: Nordheimer Creek, Crapo Creek

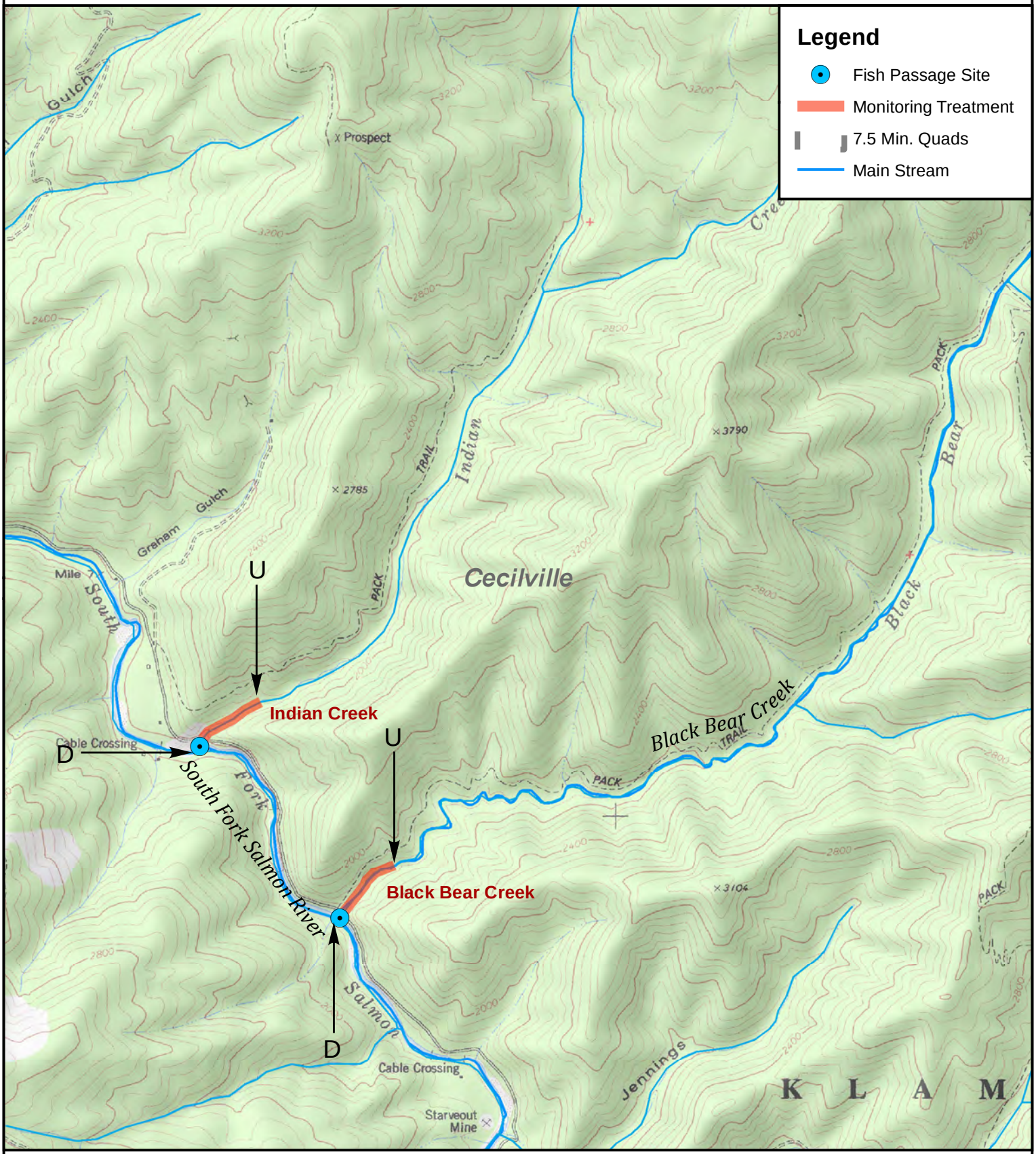
Quad name: Forks of Salmon

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 9 of 37



Applicant: Salmon River Restoration Council

Stream name: Indian Creek, Black Bear Creek

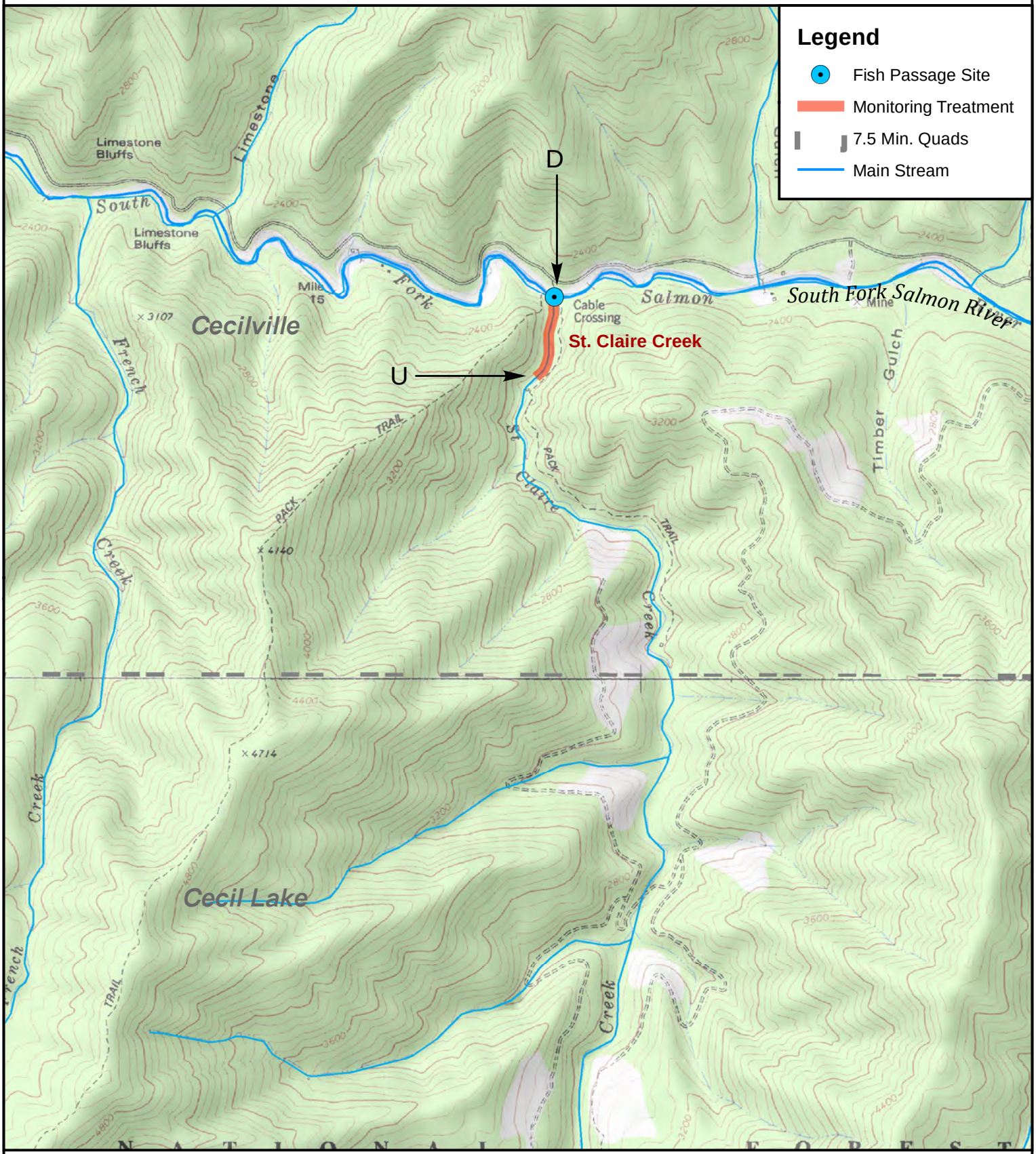
Quad name: Cecilville

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 10 of 37



Applicant: Salmon River Restoration Council

Stream name: St. Claire Creek

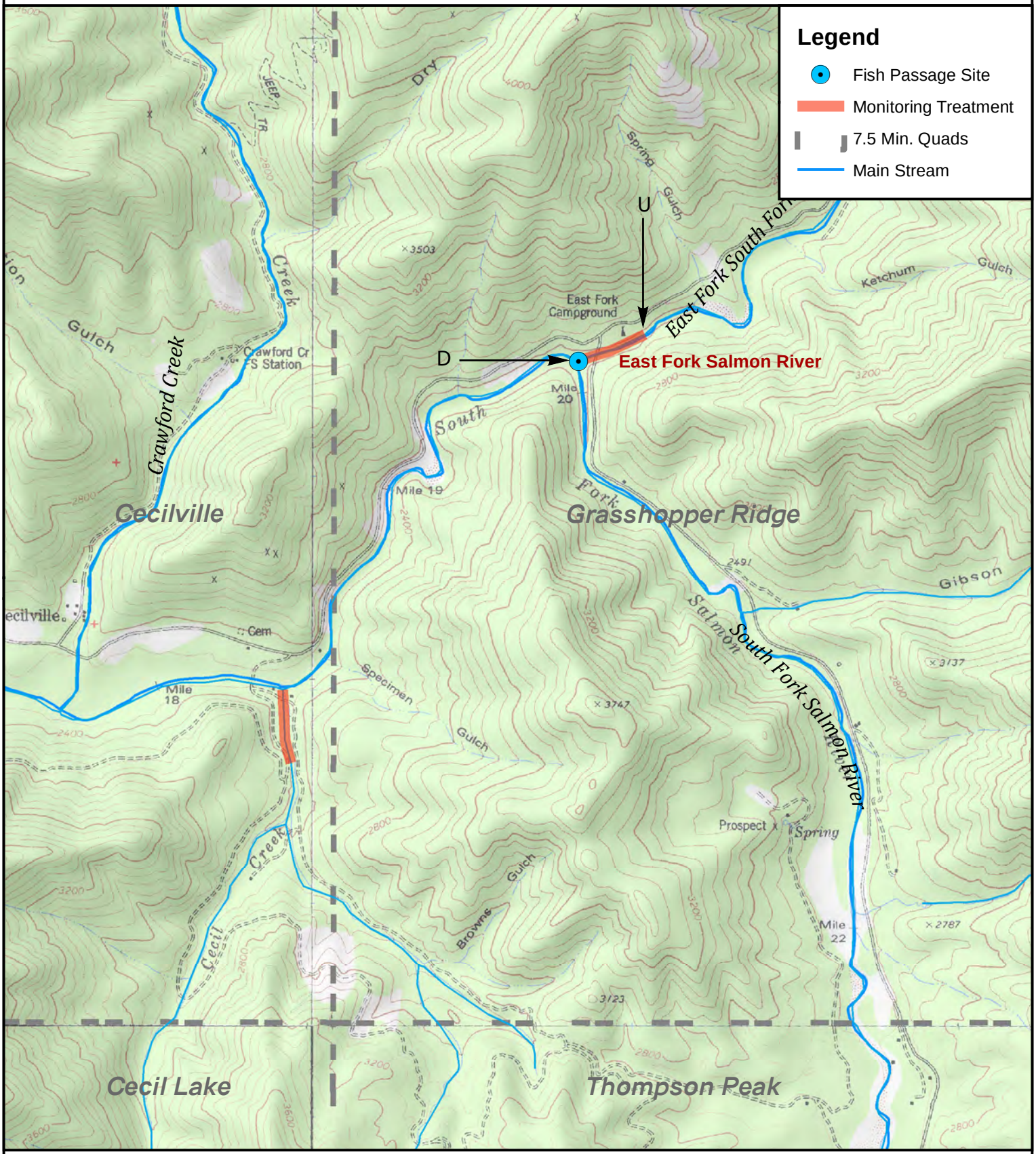
Quad name: Cecilville

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 11 of 37



Applicant: Salmon River Restoration Council
Stream name: East Fork Salmon River

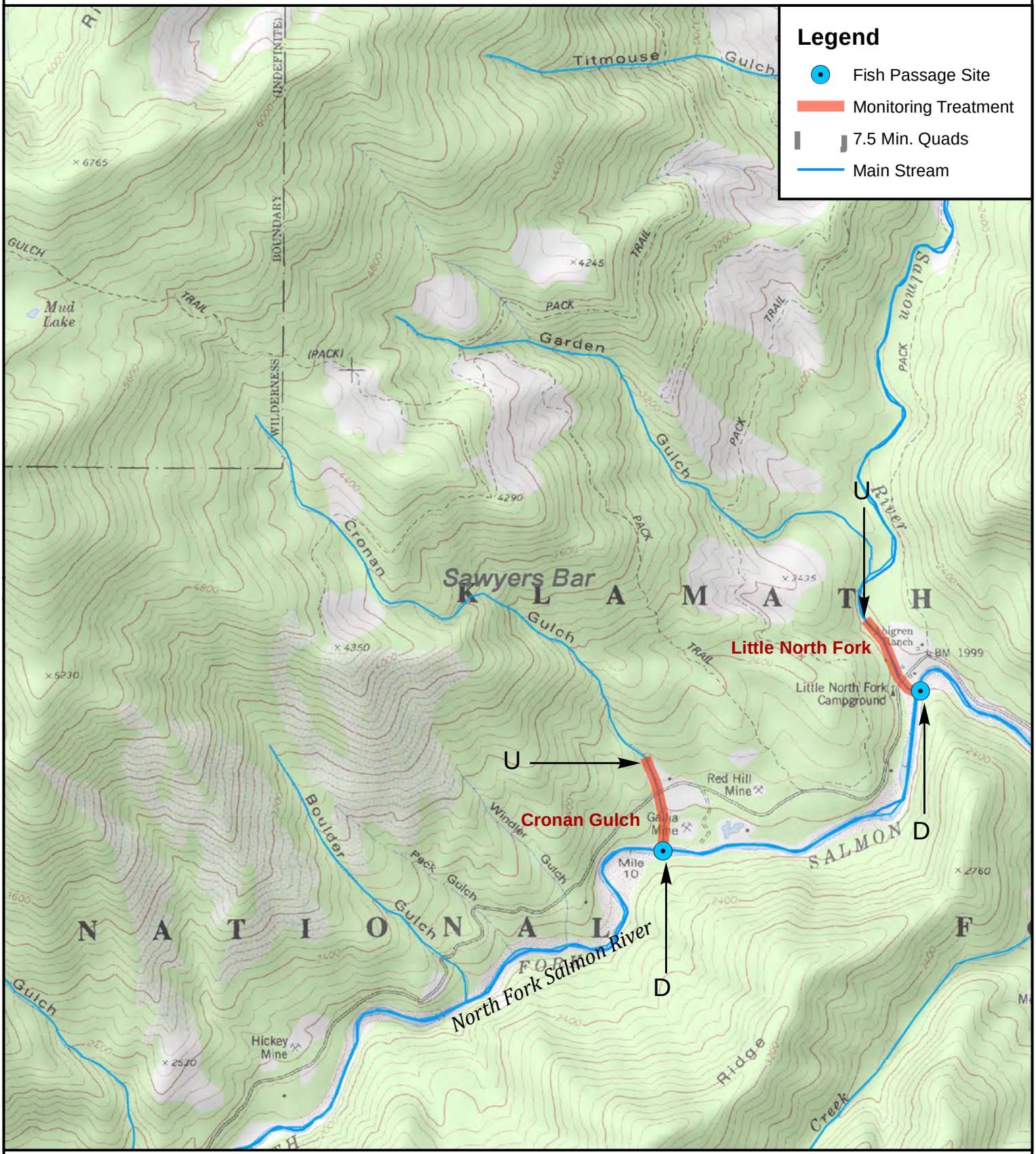
Quad name: Grasshopper Ridge

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 12 of 37



Applicant: Salmon River Restoration Council

Stream name: Cronan Gulch, Little North Fork

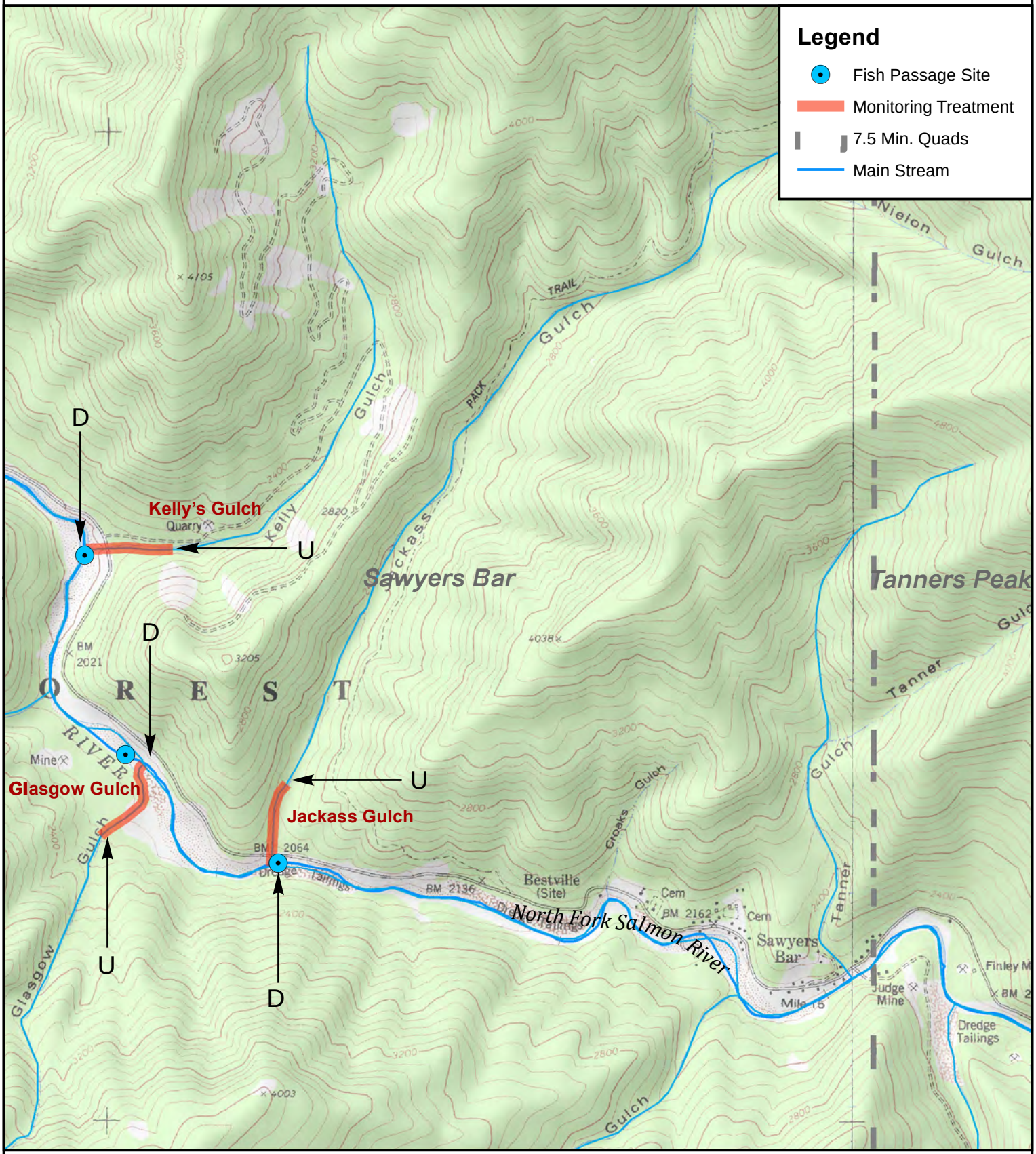
Quad name: Sawyers Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 13 of 37



Applicant: Salmon River Restoration Council

Stream name: Kelly's Gulch, Glasgow Gulch, Jackass Gulch

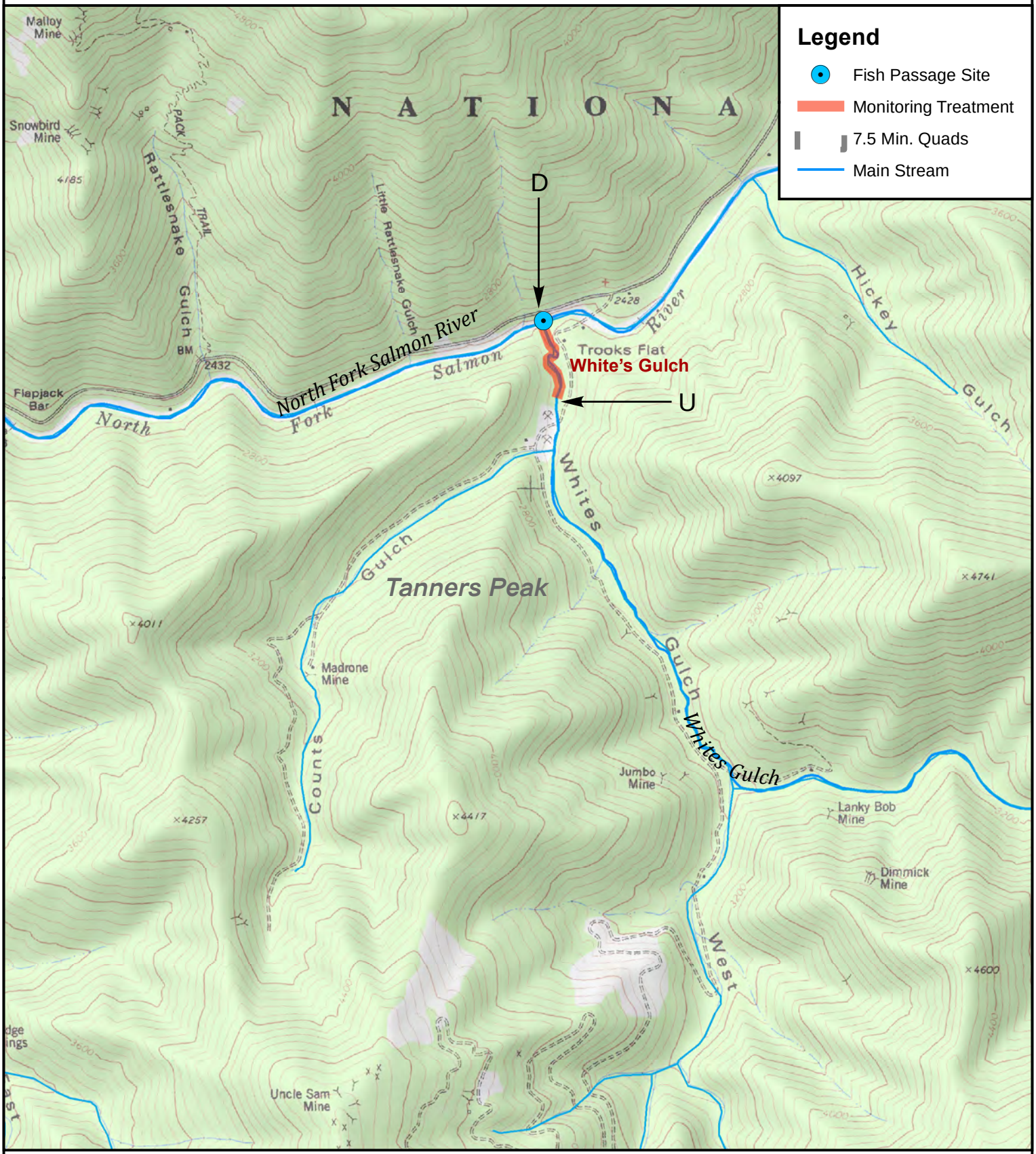
Quad name: Sawyers Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 14 of 37



Applicant: Salmon River Restoration Council
Stream name: White's Gulch

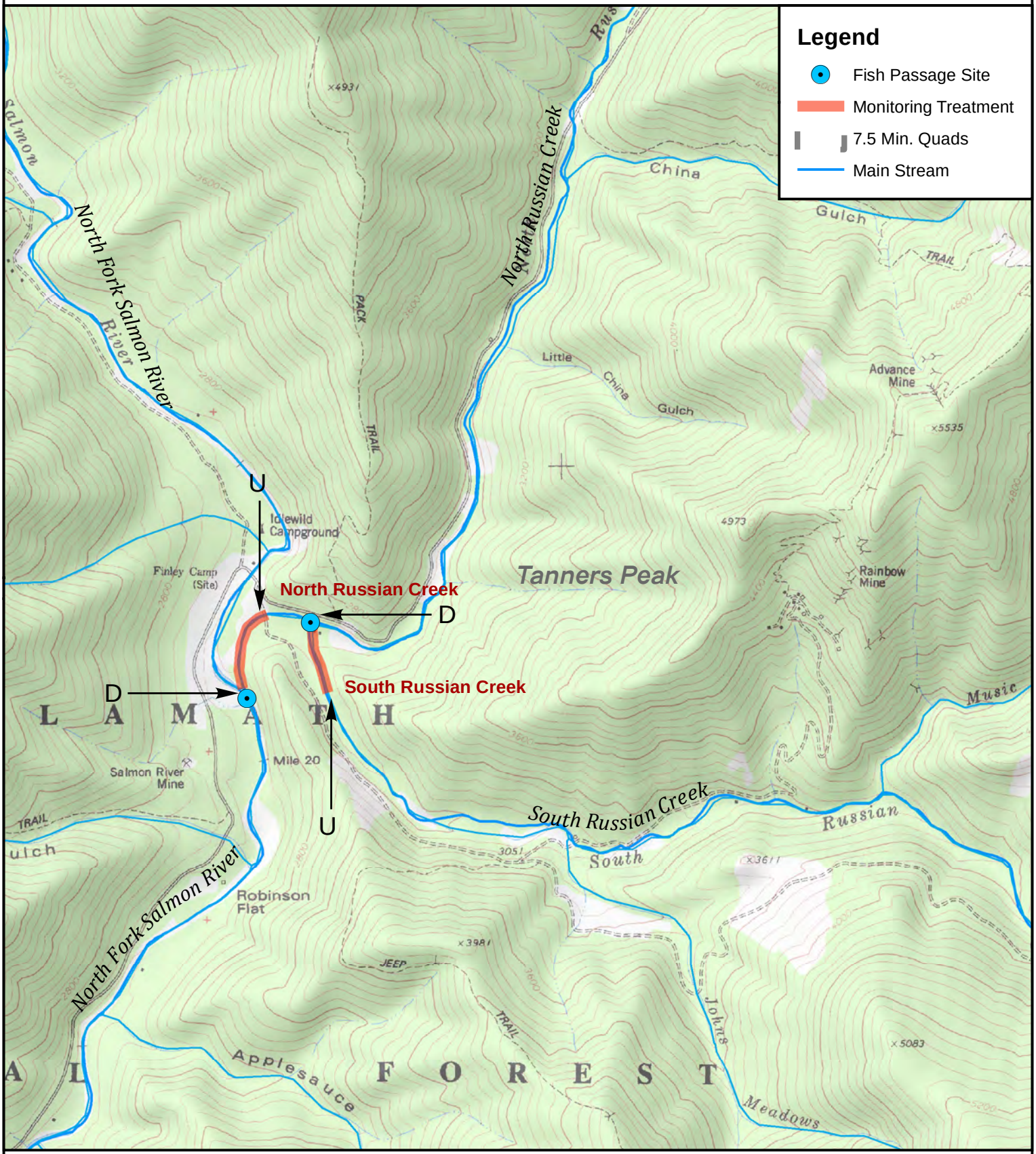
Quad name: Tanners Peak

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 15 of 37



Applicant: Salmon River Restoration Council
Stream name: South Russian Cr., North Russian Cr.

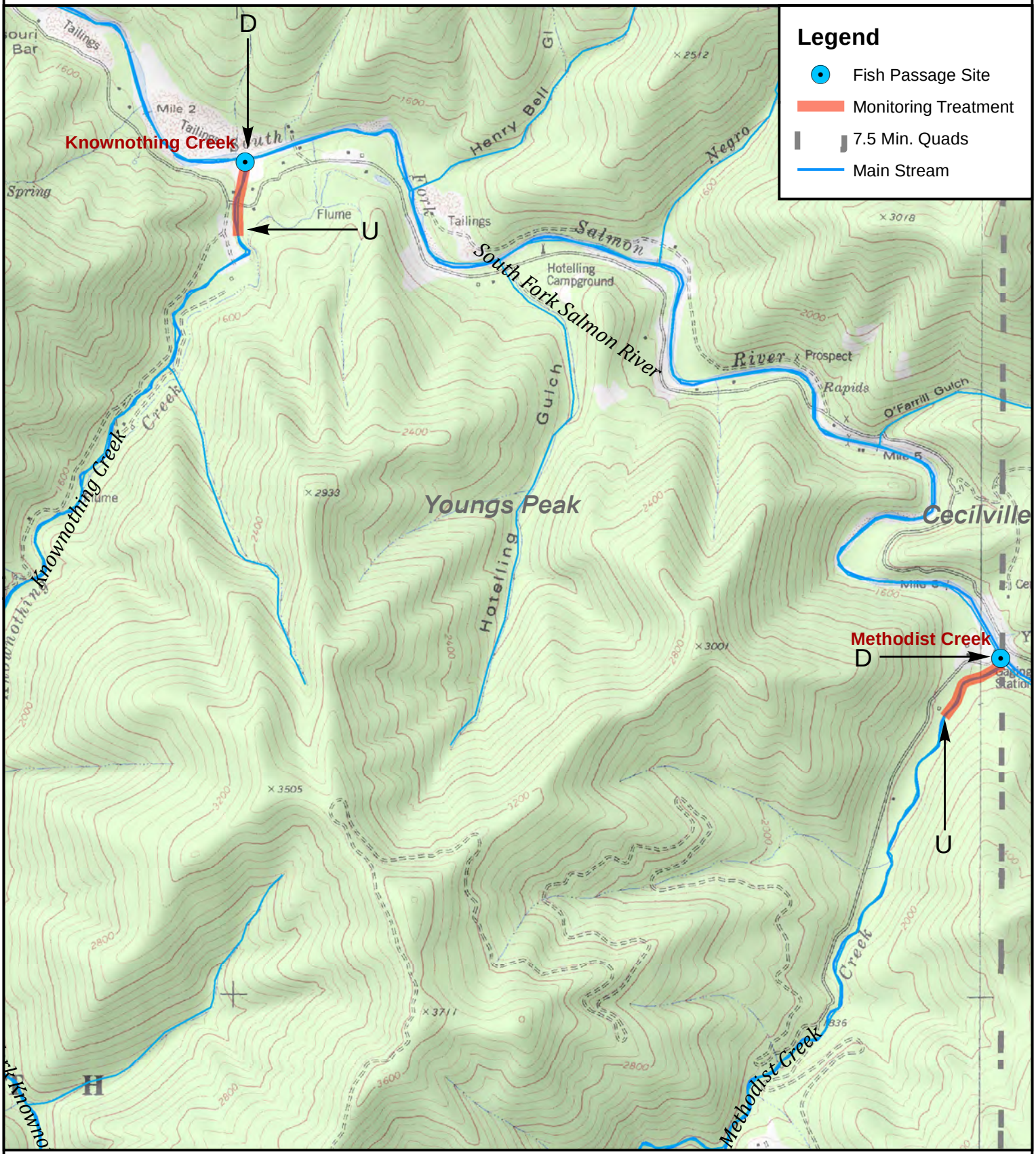
Quad name: Tanners Peak

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 16 of 37



Applicant: Salmon River Restoration Council

Stream name: Knownothing Creek, Methodist Creek

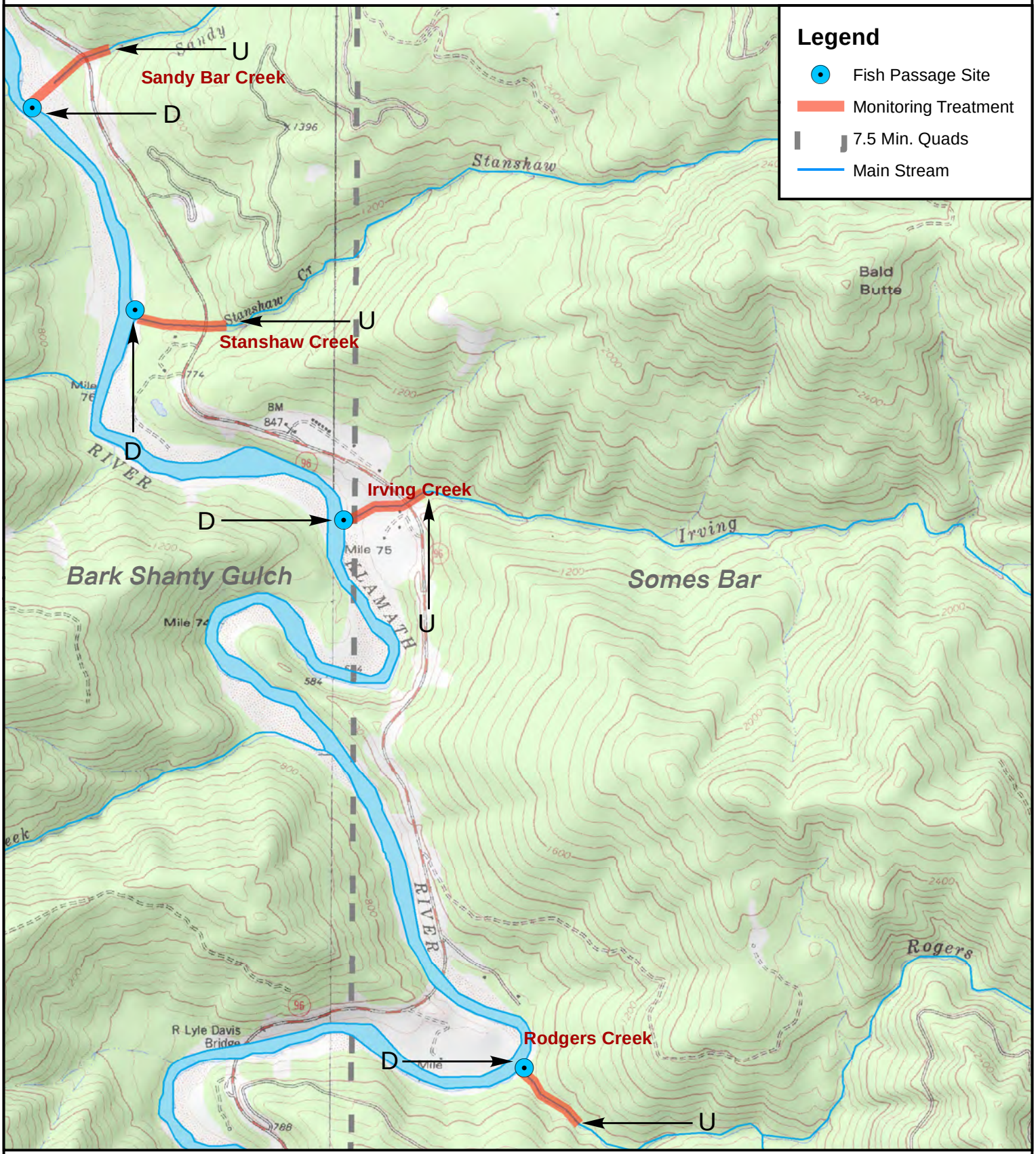
Quad name: Youngs Peak, Cecilville

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 17 of 37



Applicant: Salmon River Restoration Council

Stream name: Sandy Bar Cr., Stanshaw Cr., Irving Cr., Rogers Creek

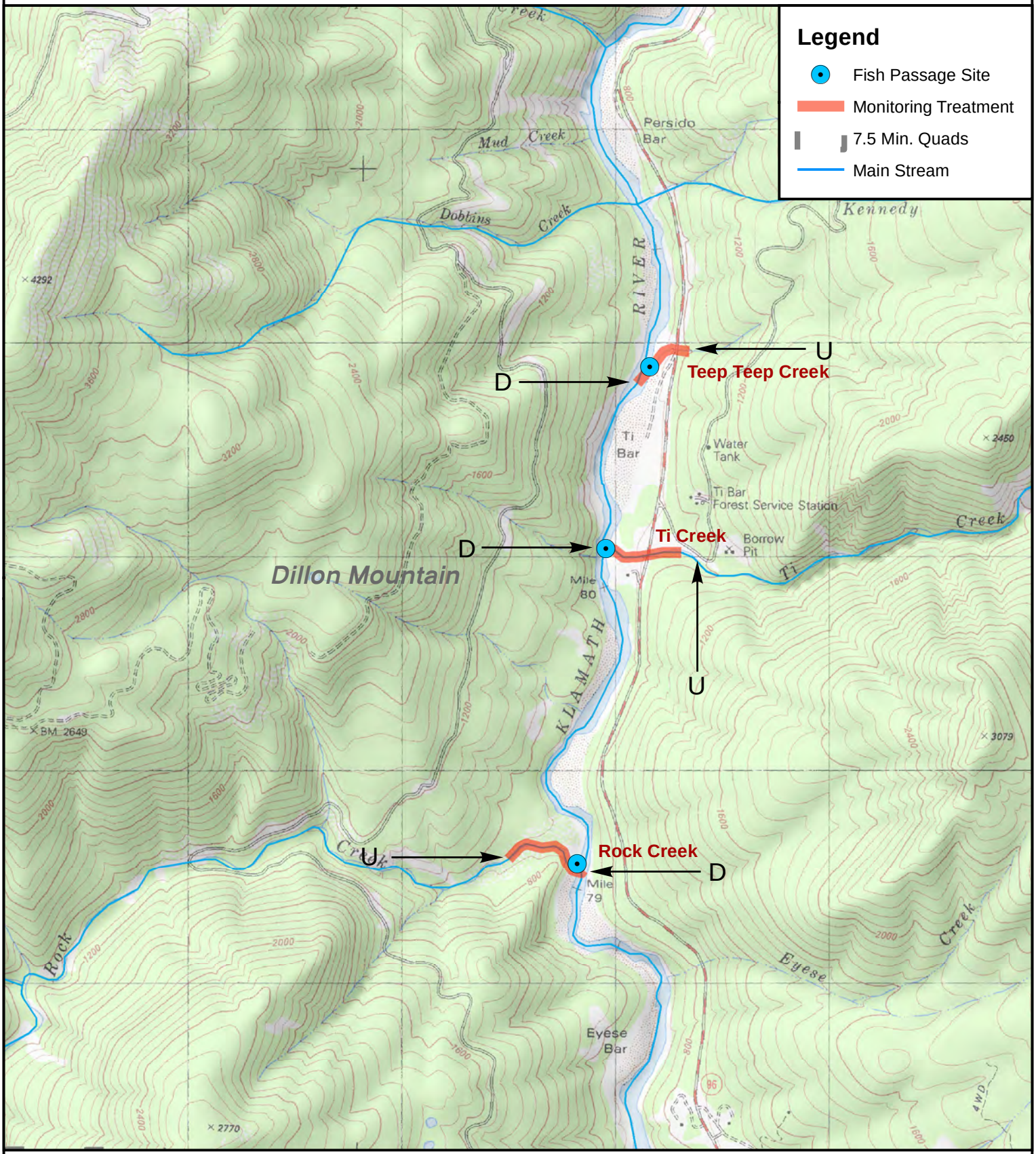
Quad name: Bark Shanty Gulch, Somes Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 18 of 37



Applicant: Salmon River Restoration Council

Stream name: Teep Teep Creek, Ti Creek, Rock Creek

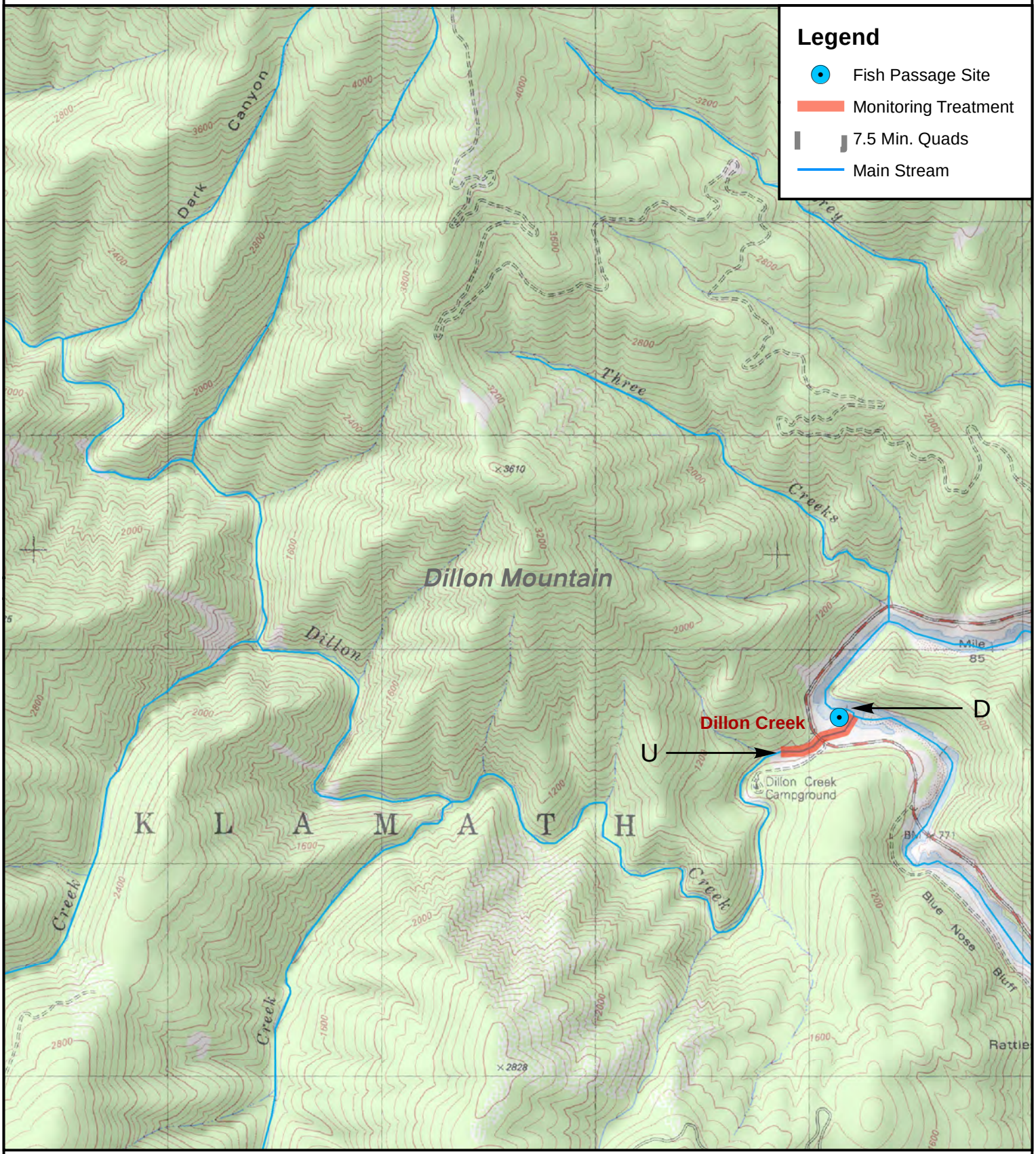
Quad name: Dillon Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 19 of 37



Applicant: Salmon River Restoration Council

Stream name: Dillon Creek

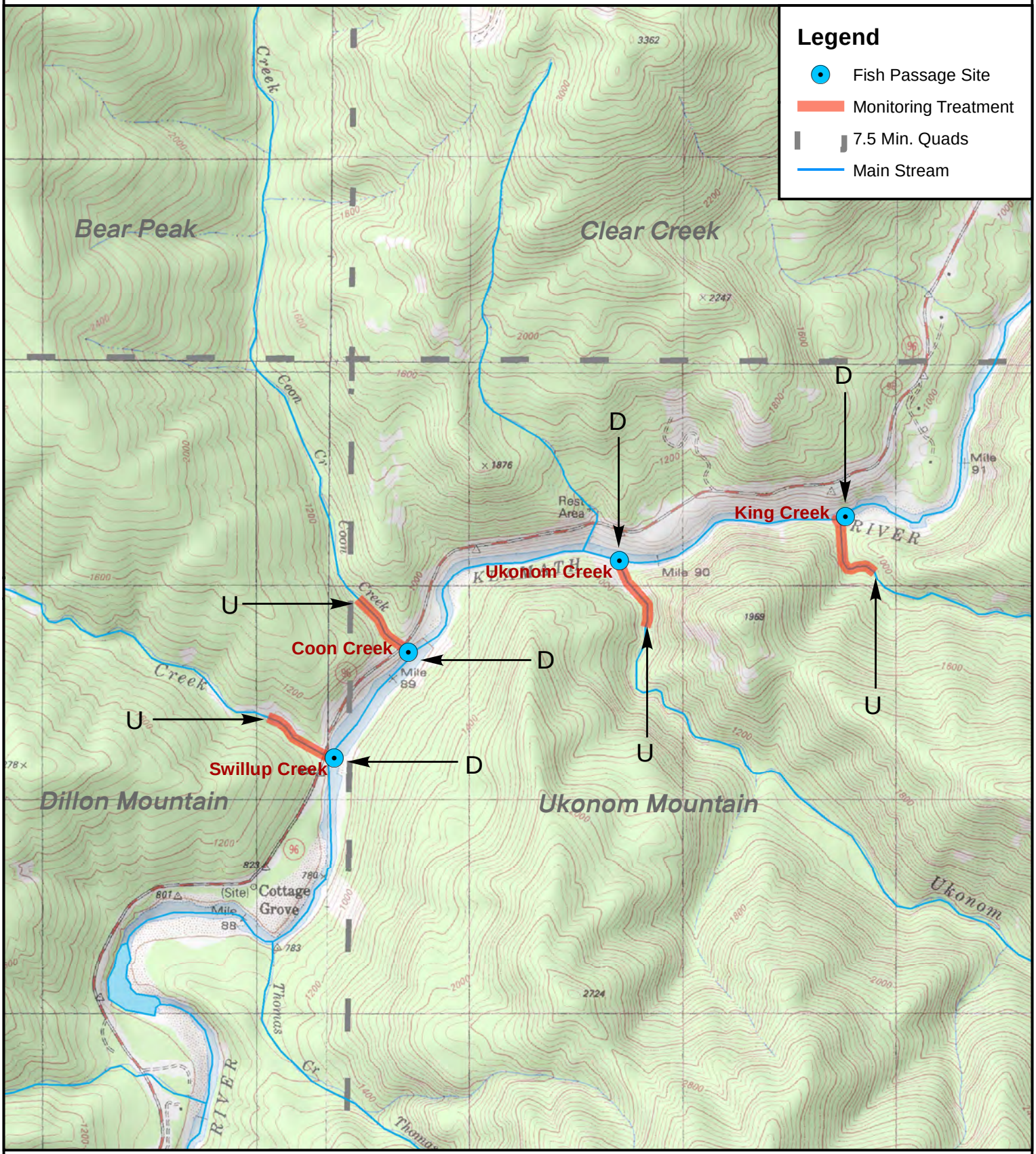
Quad name: Dillon Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 20 of 37



Applicant: Salmon River Restoration Council

Stream name: King Cr., Ukonom Cr., Coon Cr., Swillup Cr.

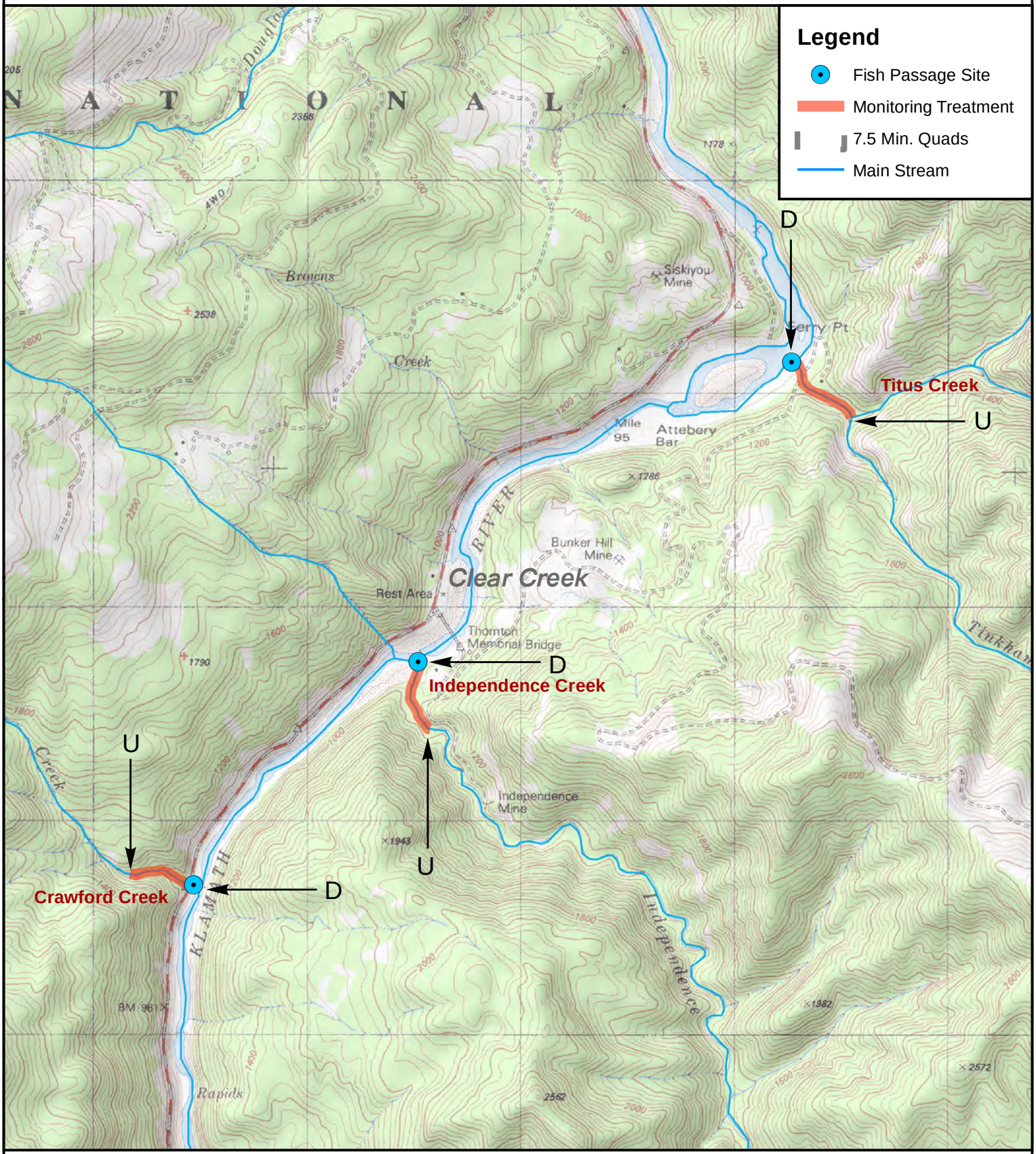
Quad name: Dillon Mountain, Ukonom Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 21 of 37



Applicant: Salmon River Restoration Council

Stream name: Titus Cr., Independence Cr., Crawford Cr.

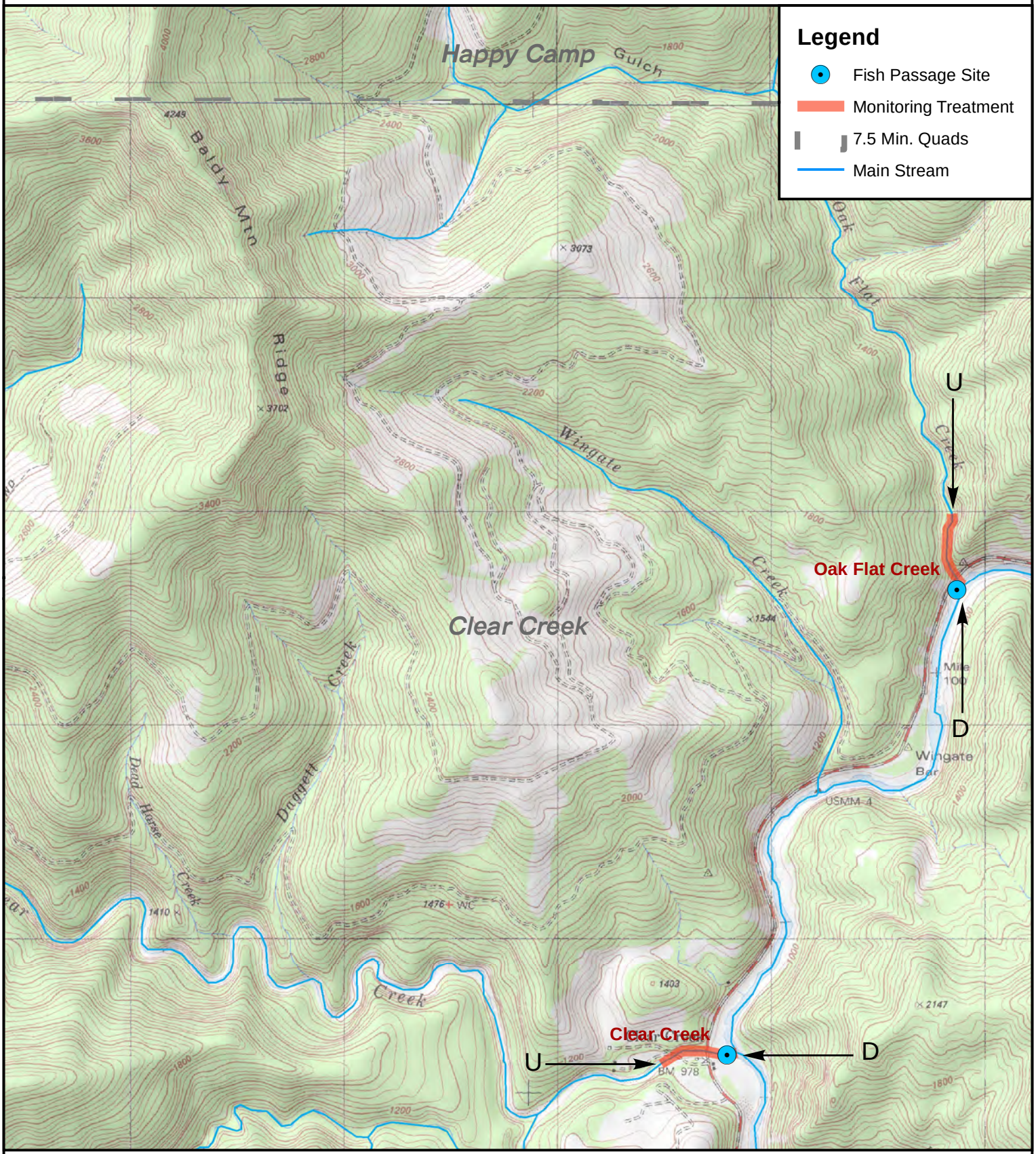
Quad name: Clear Creek

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 22 of 37



Applicant: Salmon River Restoration Council

Stream name: Oak Flat Creek, Clear Creek

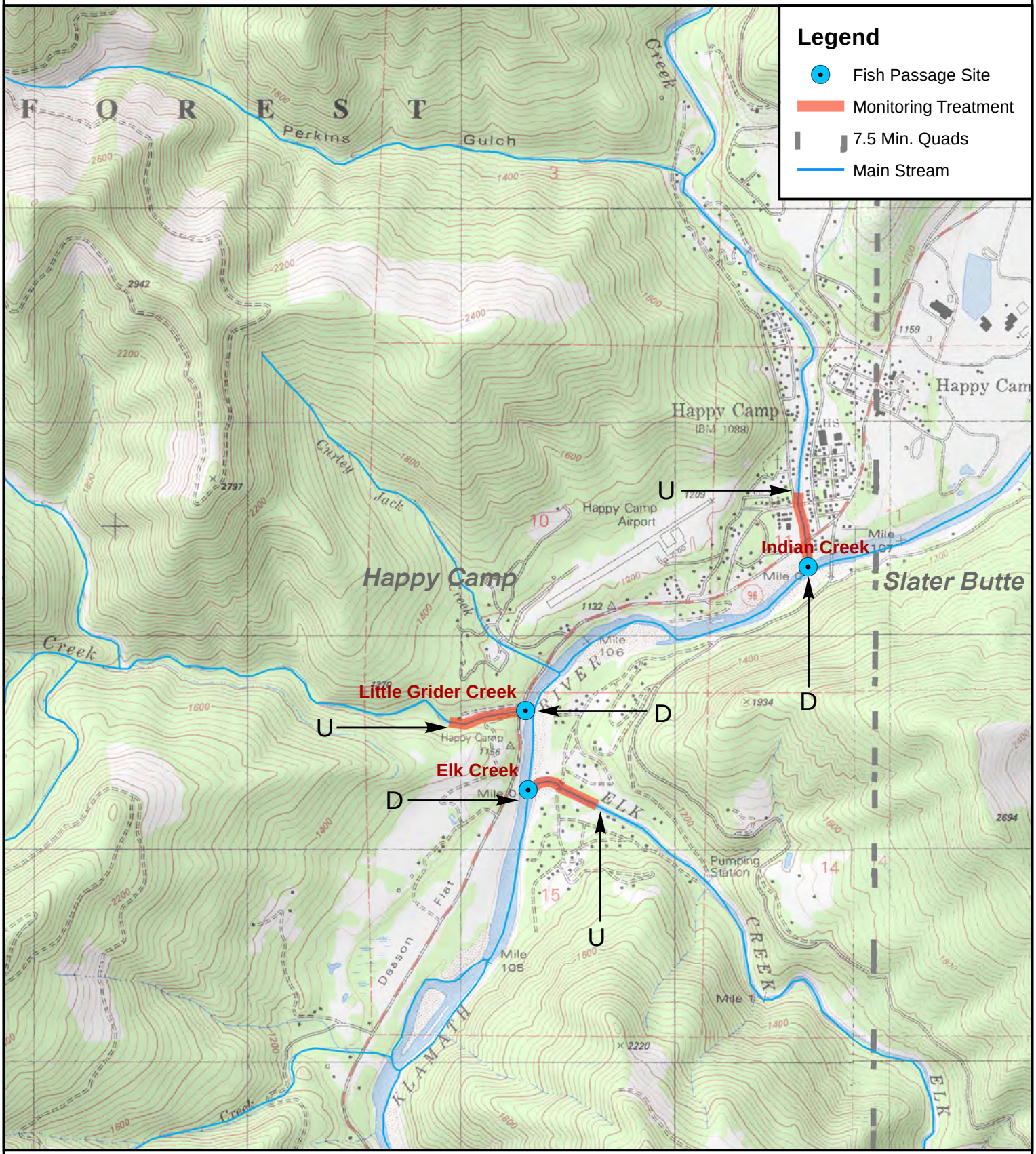
Quad name: Clear Creek

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 23 of 37

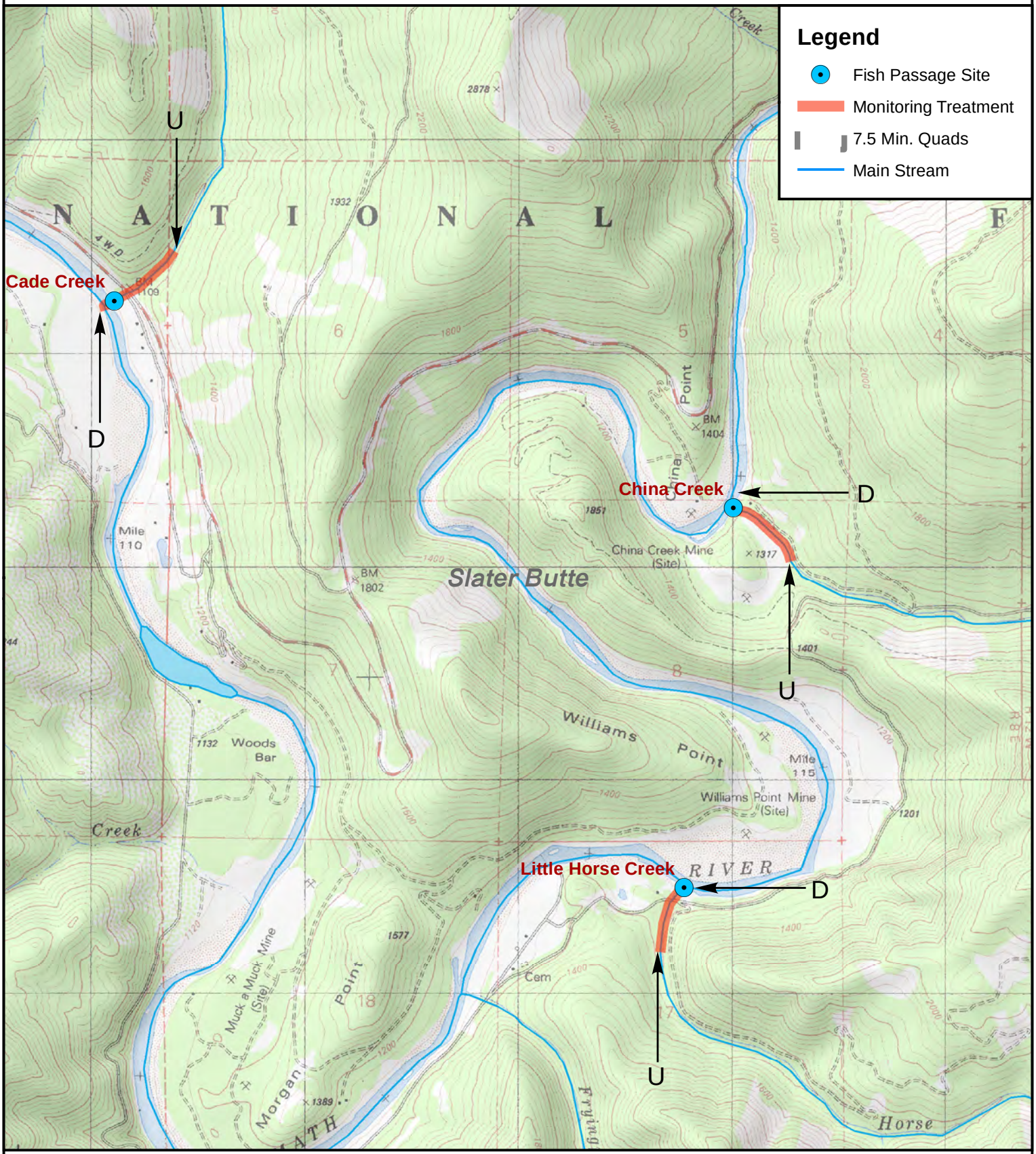


Applicant: Salmon River Restoration Council

Stream name: Indian Creek, Little Grider Cr., Elk Creek

Quad name: Happy Camp

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 24 of 37



Applicant: Salmon River Restoration Council

Stream name: Cade Creek, China Creek, Little Horse Creek

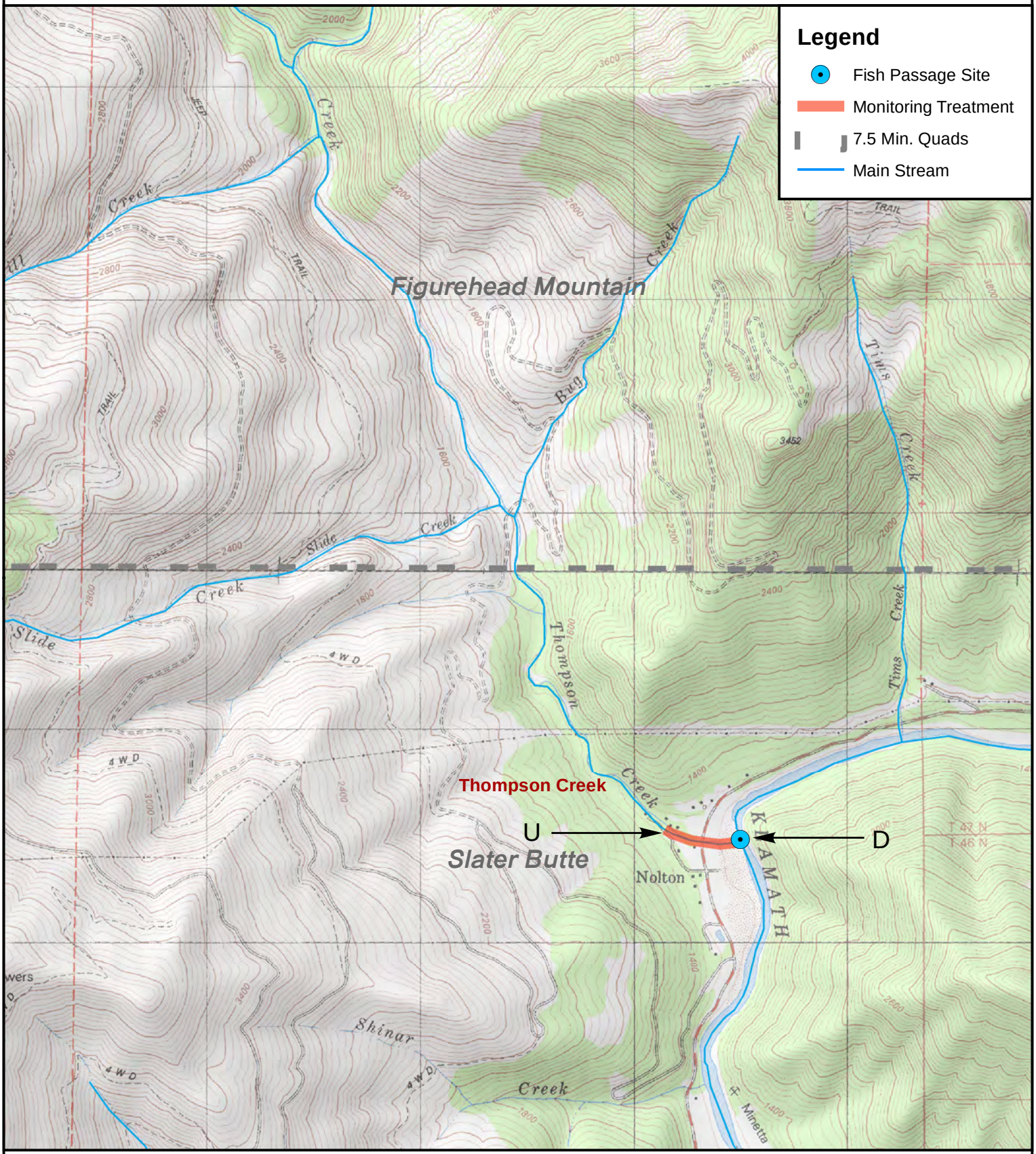
Quad name: Slater Butte

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 25 of 37



Applicant: Salmon River Restoration Council
Stream name: Thompson Creek

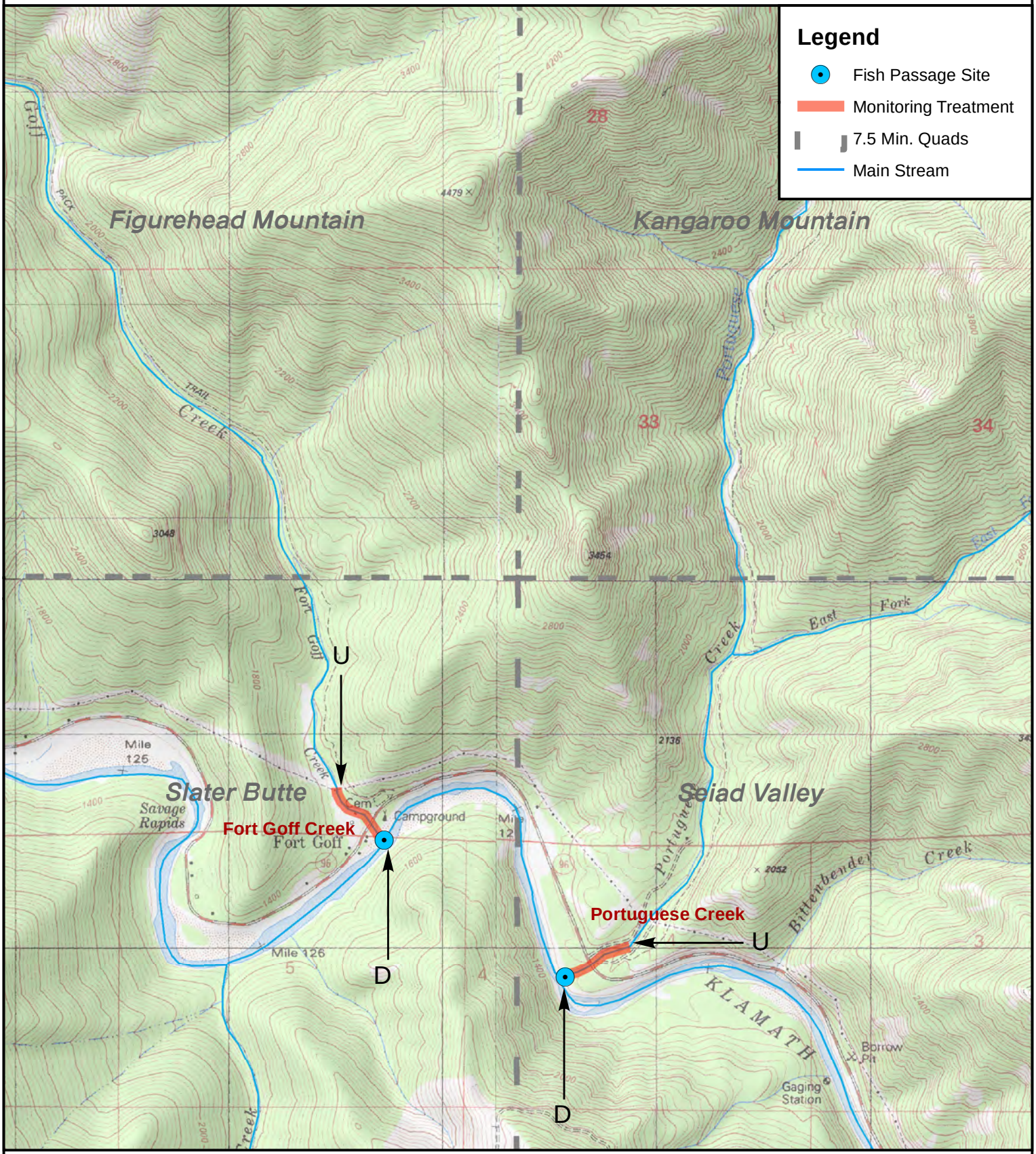
Quad name: Slater Butte

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 26 of 37



Applicant: Salmon River Restoration Council

Stream name: Fort Goff Creek, Portuguese Creek

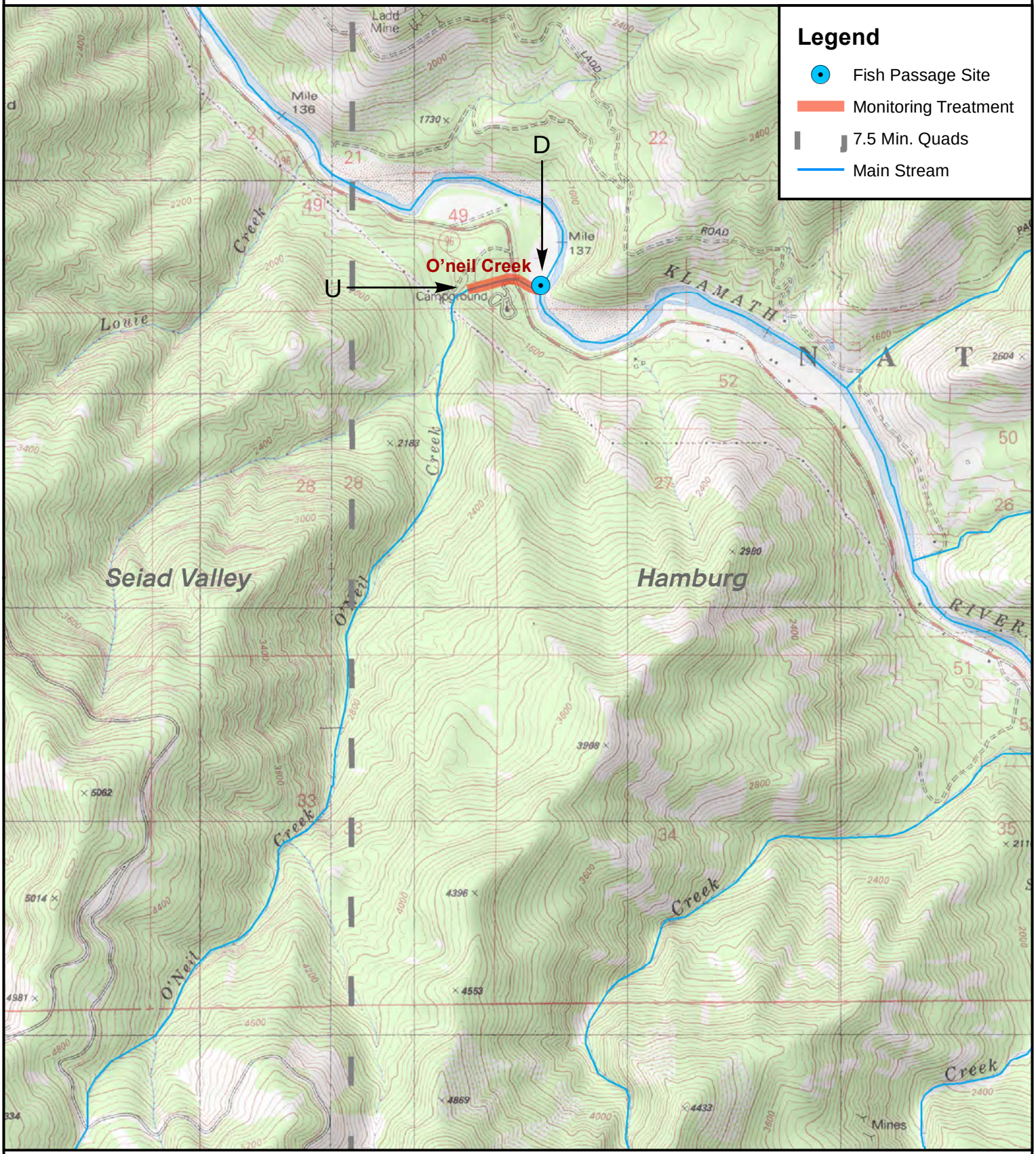
Quad name: Slater Butte, Seiad Valley

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 27 of 37



Applicant: Salmon River Restoration Council

Stream name: O'neil Creek

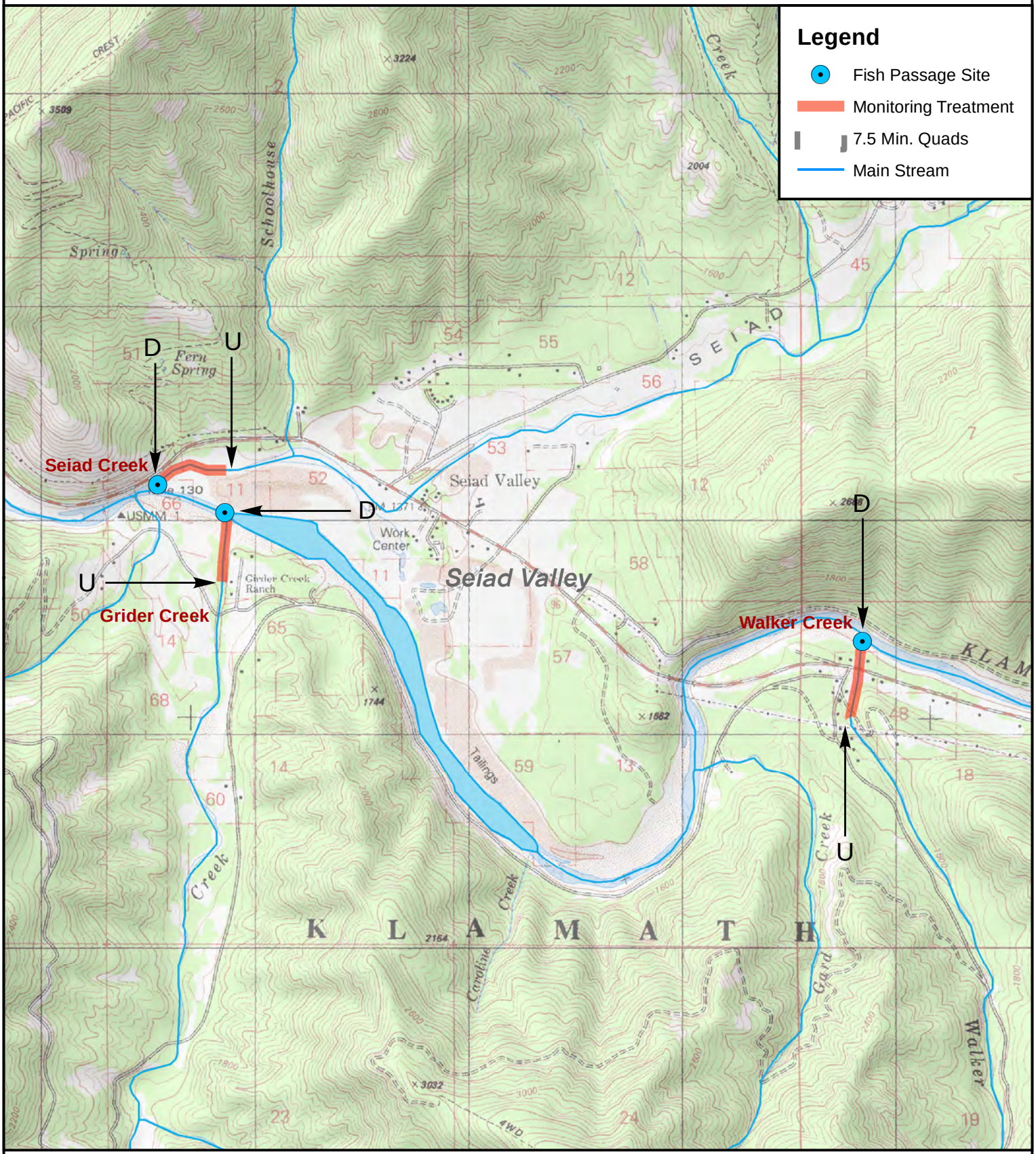
Quad name: Hamburg

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 28 of 37



Applicant: Salmon River Restoration Council

Stream name: Seiad Creek, Grider Creek, Walker Creek

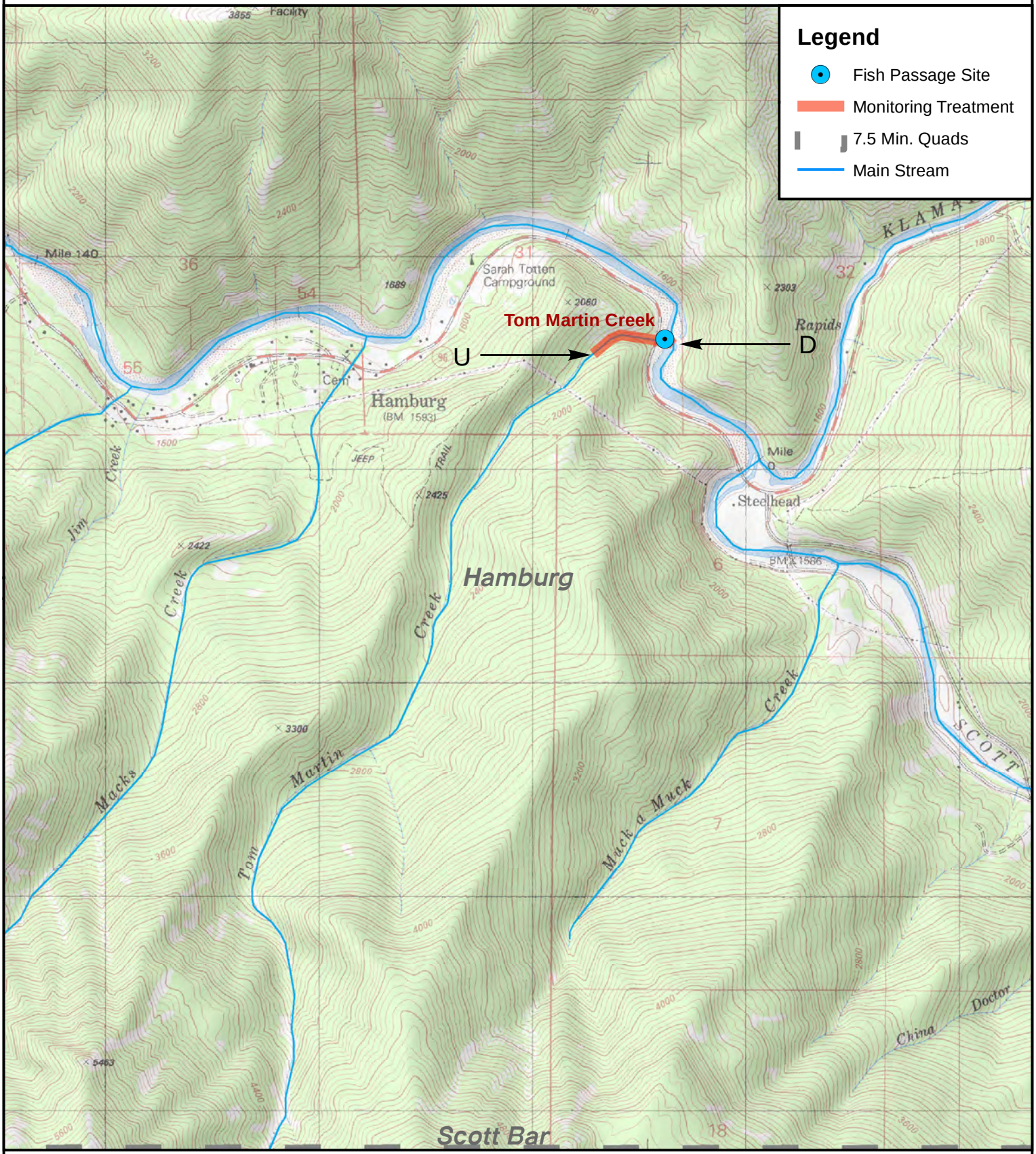
Quad name: Seiad Valley

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 29 of 37



Applicant: Salmon River Restoration Council

Stream name: Tom Martin Creek

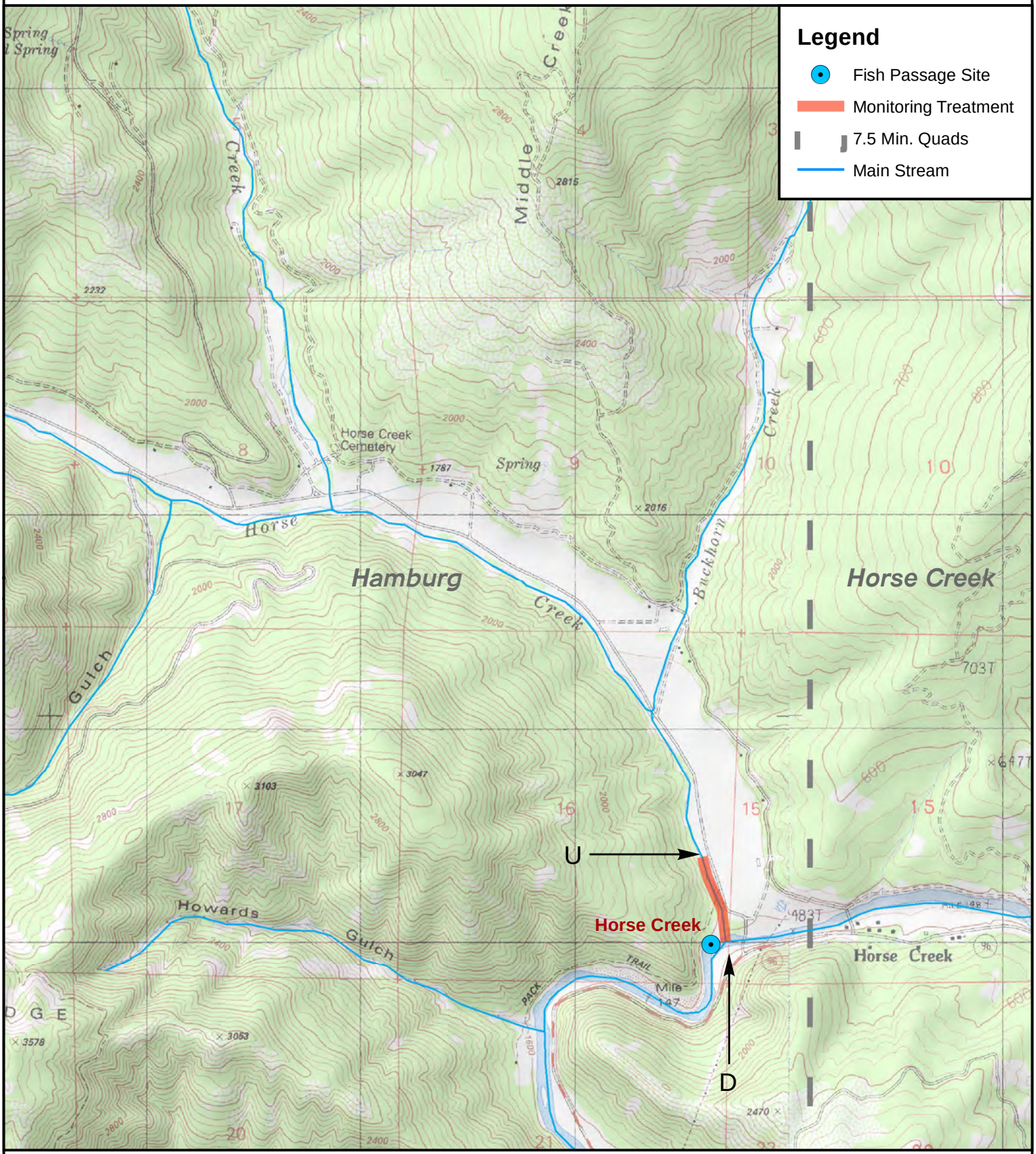
Quad name: Hamburg

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 30 of 37



Applicant: Salmon River Restoration Council

Stream name: Horse Creek

Quad name: Hamburg

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 31 of 37

Applicant: Salmon River Restoration Council

Stream name: Little Humbug Creek

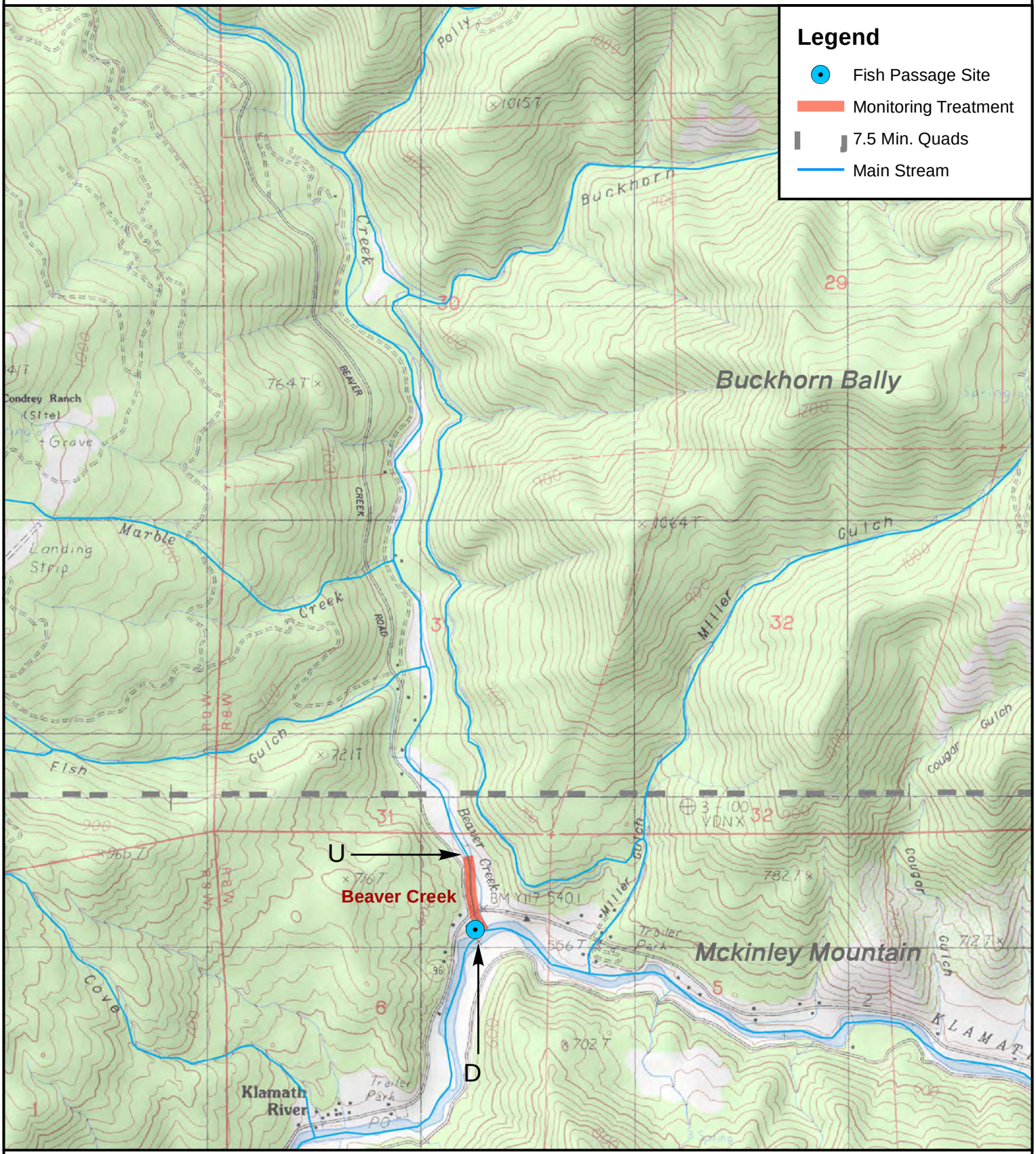
Quad name: Mckinley Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 32 of 37



Applicant: Salmon River Restoration Council

Stream name: Beaver Creek

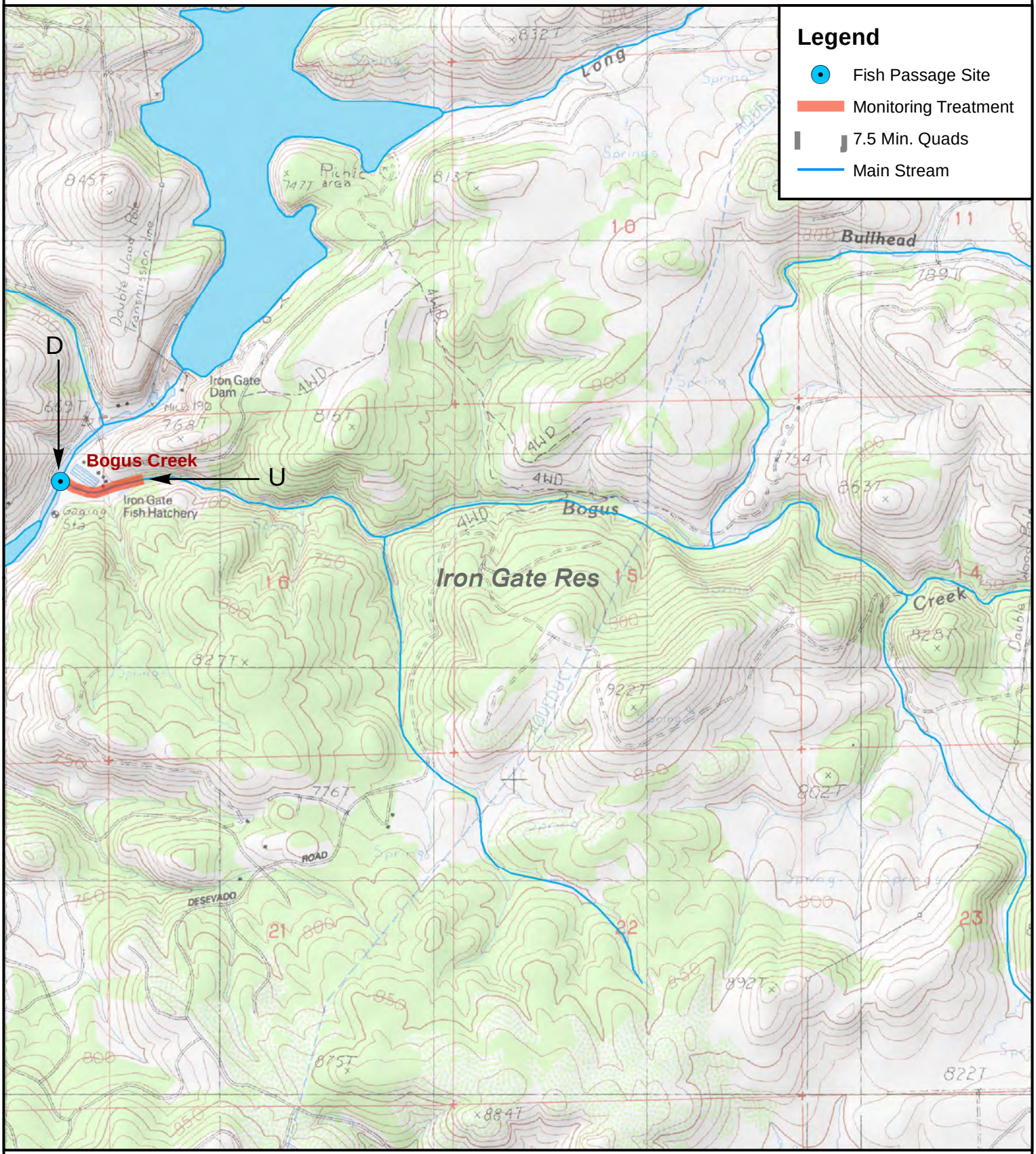
Quad name: McKinley Mountain

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 33 of 37



Applicant: Salmon River Restoration Council

Stream name: Bogus Creek

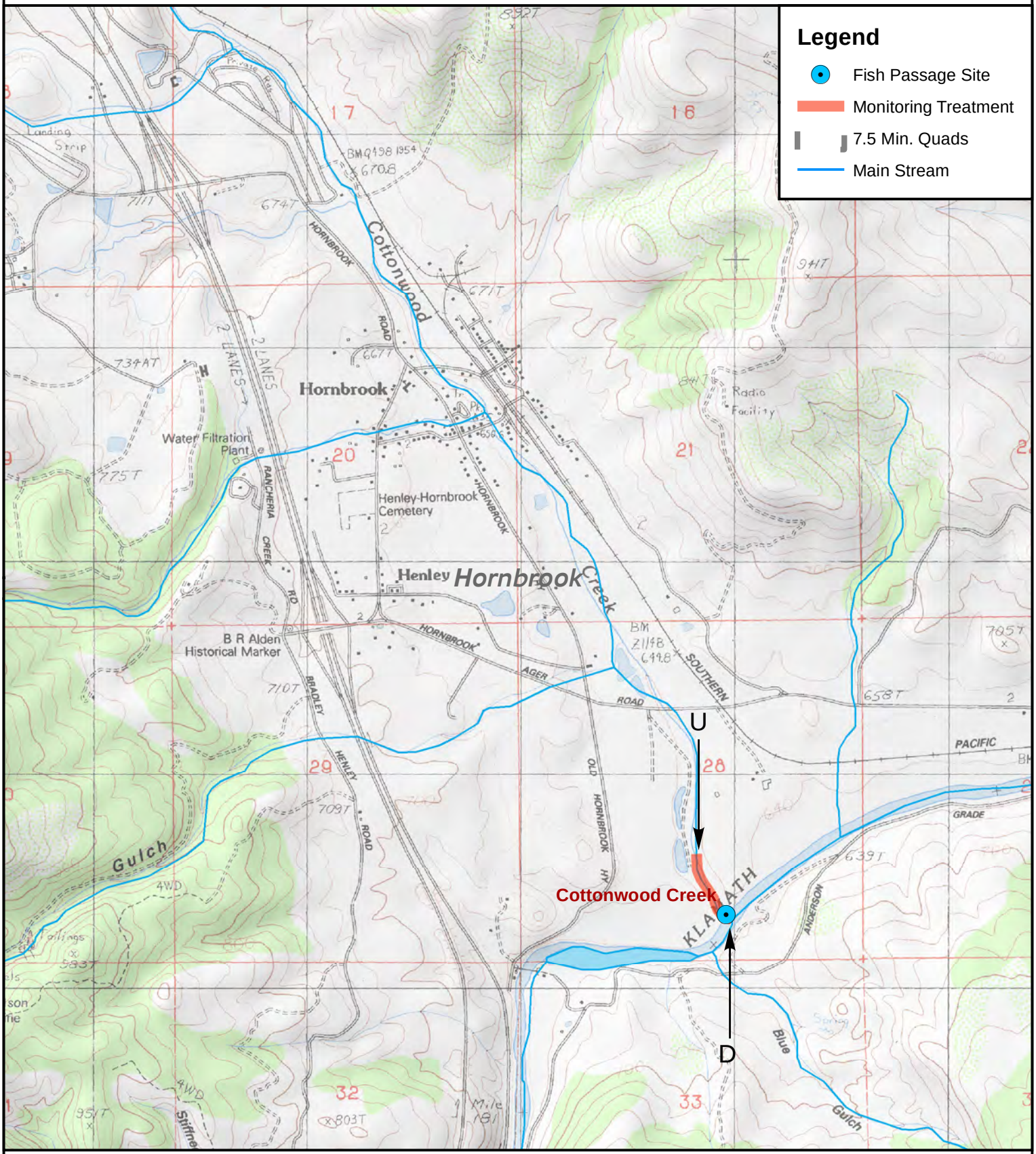
Quad name: Iron Gate Res

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 34 of 37



Applicant: Salmon River Restoration Council

Stream name: Cottonwood Creek

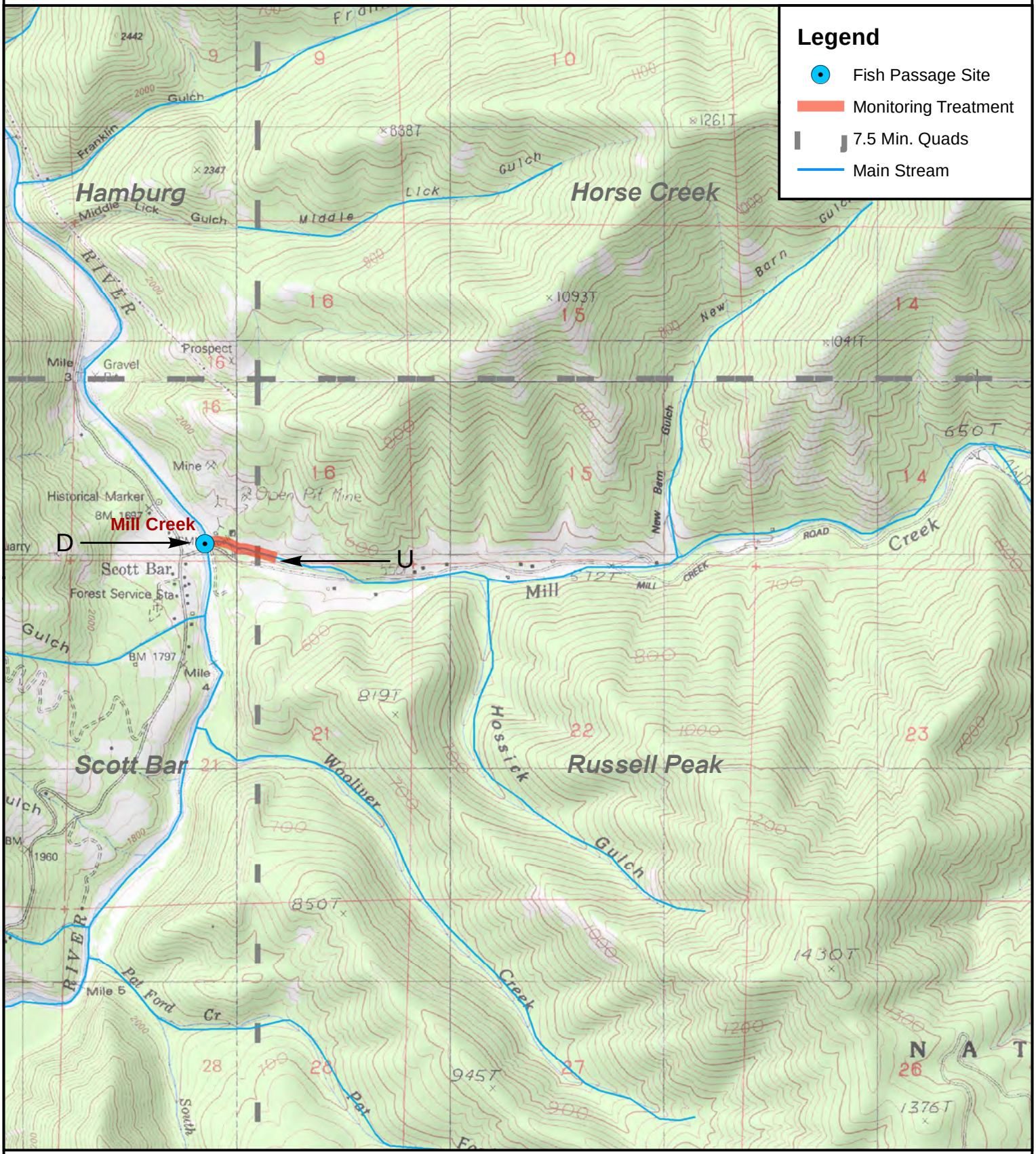
Quad name: Hornbrook

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 35 of 37



Applicant: Salmon River Restoration Council

Stream name: Mill Creek

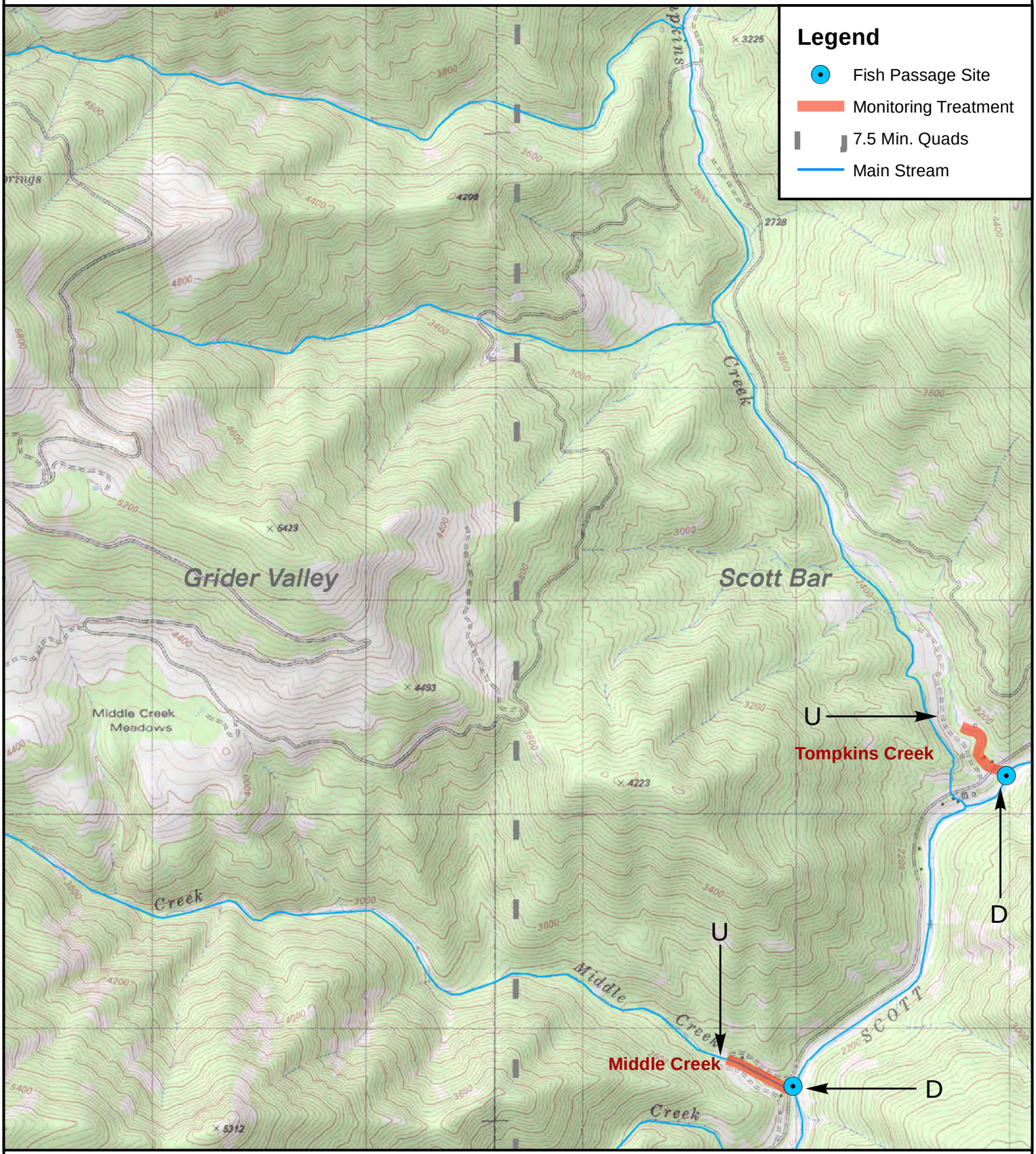
Quad name: Scott Bar, Russell Peak

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 36 of 37



Applicant: Salmon River Restoration Council

Stream name: Tompkins Creek, Middle Creek

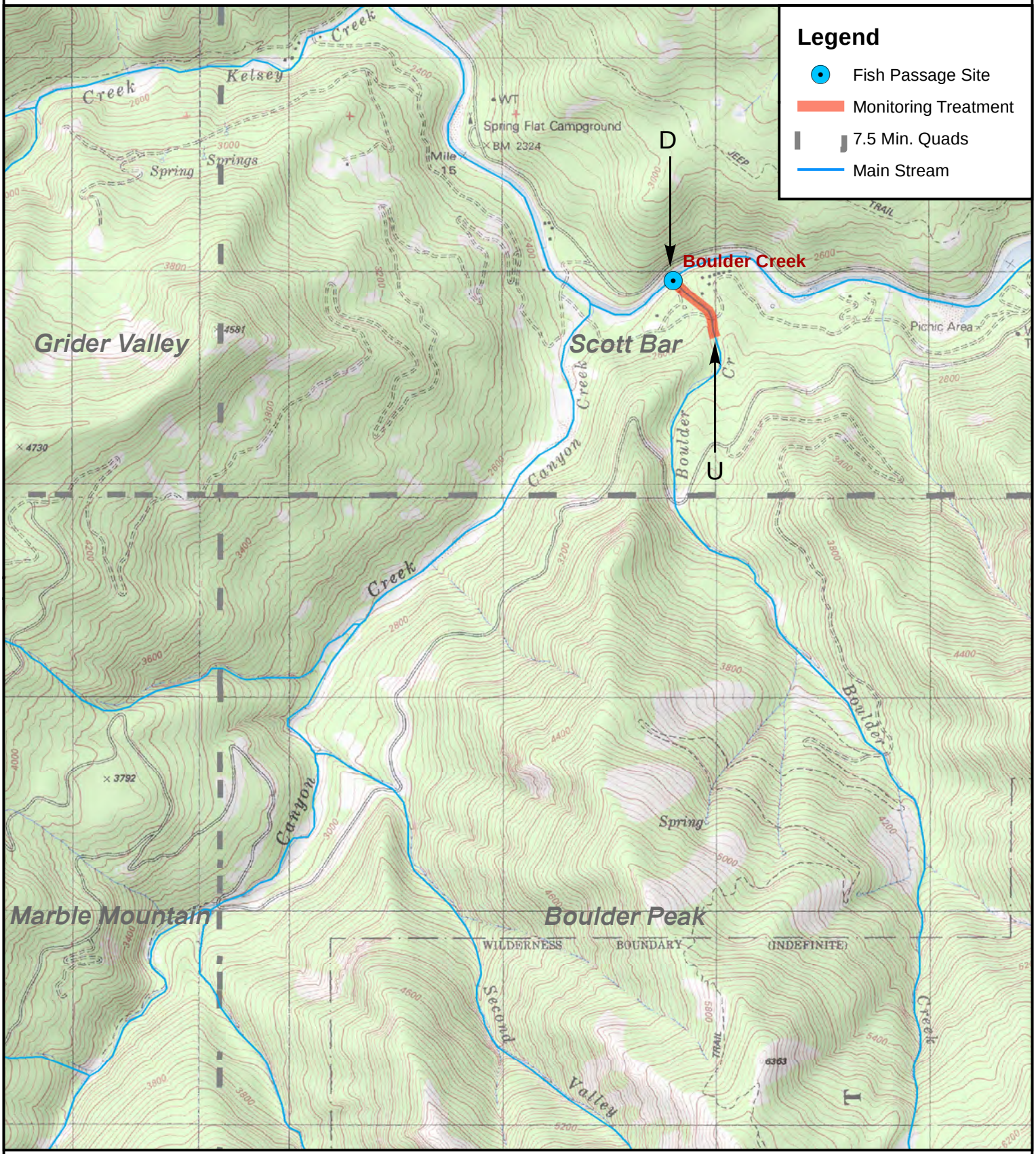
Quad name: Scott Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Salmon and Mid-Klamath Tributary - Fish Passage Improvement Project
Location Topographic Map Number 37 of 37



Applicant: Salmon River Restoration Council

Stream name: Boulder Creek

Quad name: Scott Bar

1 inch = 2,000 feet

0 1,000 2,000 4,000 Feet

N

Introduction:

The Salmon Protection and Watershed Network will implement the Large Woody Debris and Stream Enhancement on San Geronimo Creek Project. This project will install a minimum of 8 Large Woody Debris (LWD) structures consisting of a minimum of 30 logs with rootwads and plant native tree species along 550 feet of central San Geronimo Creek; and restore 3,500 sq. ft. of native riparian habitat following the removal of a storage shed, playground, and sandbox on the banks of the San Geronimo Creek Larsen Creek confluence.

The purpose of the project is to provide ample range of complex habitat opportunities to provide diverse refuge habitats for salmonid rearing, and spawning with additional benefits to sediment reduction, sorting, metering, and attenuation. This project will provide increased year-round complex rearing habitats (summer and winter) for juvenile native salmonids, improve health of gravel beds and increase opportunities for spawning salmonids, improve water quality conditions, and enhance riparian ecology to increase natural process of wood recruitment, thermal refugia, and insect prey for salmonids in the project area.

The only undammed headwaters within the Lagunitas Creek Watershed is the ten-square-mile San Geronimo Watershed, which is listed by NOAA in their Coho Recovery Plan as one of the top-ten high-priority "Core Conservation Areas" across the entire range for CCC ESU Coho Salmon (*Oncorhynchus kisutch*) (NOAA Final 2012), is considered the most important spawning and rearing habitat left in the State for wild Central California Coast (CCC) Coho Salmon (NOAA Final 2012). San Geronimo Creek is extremely important habitat for Coho Salmon and steelhead trout throughout the entire central California range. Therefore, this project is necessary to provide increased habitat complexity, winter/summer rearing for juveniles, spawning opportunity, improved geomorphic function, and improved riparian health to central San Geronimo Creek where in an average rainfall year, approximately 40% of Lagunitas Coho Salmon spawn, and approximately 33% of the total smolts rear in San Geronimo Creek. This project is needed to support the limiting factor for salmonid survival in the watershed- rearing and winter refuge habitat for juvenile Coho Salmon (Stillwater Sciences 2009).

The restoration elements will include the following, large woody debris installation, spawning gravel augmentation, structure removal, erosion control, and revegetation.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All

habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Volume II, Section VII – Project Implementation).

Objective(s):

The project objectives are to install several large woody debris structures consisting of anchored logs with rootwads in San Geronimo Creek, and; restore riparian habitat along San Geronimo Creek and Larsen Creek following the removal of creekside structures. The project goals are to increase winter survival of juveniles (the limiting factor for salmonids), improve spawning and spring/summer rearing habitat, and improve riparian health and function.

Project Description:

Location:

The project site is located 4.5 miles west of Fairfax, CA in Marin County on San Geronimo Creek and its adjacent confluence with Larsen Creek, across four (4) private residential properties and one (1) public school property. The project area is located adjacent to the San Geronimo Valley Community Center - located on San Geronimo Creek approximately 4 miles upstream of the confluence with Lagunitas Creek which flows into Tomales Bay. Project coordinates are: 38.0154 N Lat., 122.6748 W Long.

Project Set Up:

Permitting: SPAWN will obtain a California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement (1600), Marin County Creek and Grading Permits, and CDFW Scientific Collection Permit to handle fish for relocation. SPAWN will lead the permit application process with assistance from GeomorphDesign Civil Engineer. SPAWN will also contract with Resource Specialists Contractors to conduct archeology, botanical, and paleontology surveys. SPAWN personnel on this include the Project Supervisor, Project Manager, Project Associate, and Project Foreman.

Pre-Construction Services: SPAWN will lead the Contractor bidding and selection process, Civil Engineer will attend two pre-bid meetings; support of bid addenda and response to questions; evaluation of bids; and support of the channel dewatering system. As part of this effort SPAWN will consult with CDFW and other agencies to review measures to the dewatering system. SPAWN will conduct an environmental training for workers on special status species and procedures to follow a species is found, and; other environmental BMPs. SPAWN personnel and qualified contractors will perform pre-construction sensitive species surveys. If species are found CDFW will be contacted to

provide guidance on avoidance or relocation. All species survey results will be documented in a memo and submitted to CDFW. SPAWN staff on this task are Project Supervisor, Project Manager, Project Associate, Project Foreman, Volunteer Interns I, II, and Volunteers.

Project Construction: The project will be constructed by qualified and fully licensed contractors that will be vetted and selected by SPAWN with input from the GD Civil Engineer. Contractors must meet and demonstrate minimum qualifications for their bid to be acceptable for the project. Construction Contractor will implement mobilization/ demobilization, site access and staging, gravel augmentation, flow diversion/ de-watering, and large woody debris installation. Structure removal of the shed, playground, and sandbox will be performed by Demolition Contractor and SPAWN personnel. Debris hauling and disposal will be performed by Trucking Contractor. The qualifications necessary to bid are described in the Qualifications and Experience section. SPAWN will implement fish relocation, grubbing, erosion control, and revegetation. SPAWN personnel on this task include Project Manager, Project Associate, Project Foreman, Volunteer Interns I and II, and Volunteers.

Construction Management and Oversight: SPAWN will coordinate weekly construction meetings, on-site biological monitoring, keep the project in compliance with permits, and oversee construction. Civil Engineer will support construction oversight, field design adaptations, contractor inquiries, and review/ inspection of constructed features. SPAWN include Project Supervisor, Project Manager, Project Associate, and Volunteer Interns I and II, with support from Civil Engineer.

Erosion Control and Revegetation: SPAWN will implement the erosion control, revegetation, and irrigation. This includes seeding, erosion control, and planting. SPAWN will install all erosion control features and produce/acquire all seeds and container plants needed for the project. Container plants will be sourced from SPAWN's Native Plant Nursery. This will be completed by the SPAWN Project Supervisor, Project Manager, Project Associate, Project Foreman, Volunteer Interns I, II, and Volunteers.

Monitoring and Maintenance: SPAWN and Civil Engineer will perform per-and-post-construction monitoring to measure the function and form of large woody debris and riparian enhancement. The features to be monitored will be outlined in a monitoring plan prepared prior to implementation. Annual monitoring reports will be submitted to regulatory agencies. Maintenance will be performed by SPAWN monthly following construction. This includes erosion control improvement and site stabilization, irrigation repair, and planting replacement. This will be led by SPAWN Project Manager, Project Associate, Project Foreman, Volunteer Interns I, II, and Volunteers and supported by Civil Engineer.

Public Outreach: SPAWN will direct a public outreach effort for the local community of the San Geronimo Valley to learn about the project. The effort will aim to reach all 1,224 households through two (2) mailings and one interpretive signage at the school property once structures are removed. These materials will include details on the benefits of adding large woody debris to improve salmonid habitats, support species abilities to adapt to climate change and wildfires through maintaining resilient habitats. This task be carried out by SPAWN personnel including the Project Supervisor, Project Manager, and Communications Manager.

Project Administration: SPAWN will direct project reporting, budget management, and organization. SPAWN will retain a bookkeeper for the efforts needed for invoicing. SPAWN include Project Supervisor, Project Manager, and Project Associate.

Materials:

Heavy Machinery
1) Excavator, water pump, drill, backhoe, skid steer, dump truck
2) Used to for LWD installation/ anchoring, structure removal, and debris hauling.
3) The purpose is to perform the tasks safely and according to design specifications.
4) These are required for the project because the size and scope of the project and the materials to be moved are large and cannot be done otherwise.
5) All heavy machinery will be provided by the subcontractors.

Large Wood Structures
1) Imported logs, and rootwads ranging in diameter from 12 to 36 inches, and rebar, all-thread, washers, nuts, and epoxy.
2) These will be used to build and anchor LWD structures.
3) The purpose is to provide pool cover, habitat complexity, sediment sorting, and highwater refugia for salmonids.
4) The purpose is to create the habitat and maintain its project function.
5) All large wood structures will be purchased by the subcontractor

Rock Materials:
1) Various sizes rocks ranging from spawning gravel to 2-ton boulders will be imported.
2) The rock will be used as ballast for large wood structures, ingress/egress access, gravel augmentation.
3) The purpose of these are prevent failure of LWD, protect the channel banks and bed from equipment access, and increase gravel for spawning/rearing.

4) These materials are required in order to adequately create features that perform appropriately in perpetuity.
5) All rock materials will be purchased by the subcontractor.

Erosion Control Materials
1) Biodegradable mesh rolls, straw, and wattles, wooden stakes, and pins.
2) The rolls, wattles, and straw will be secured over disturbed areas.
3) The purpose of these materials is to protect bare, loose soil from erosion and provide conditions for vegetation to establish.
4) These materials are required to help protect disturbed areas form erosion and allow vegetation to grow.
5) All erosion control materials will be purchased by the applicant.

Revegetation Materials
1) Native seeds and plants collected from the watershed and raised at a local native plant nursery, compost, and irrigation hoses and emitters.
2) These will be broadcasted and planted throughout the project area and on disturbed sites. Compost will be raked into topsoil following structure removal.
3) The purposes are to establish native ecosystem qualities, effectively prevent erosion and provide wildlife habitat.
4) These materials are required in order to revegetate disturbed sites and provide lasting benefits to salmonids and other wildlife.
5) All regevetation materials will be purchased by the applicant.

Hand Tools
1) A variety of hand tools including shovels, trowels, digging bars, pruners, hammers, machetes, buckets, wheelbarrows, sledge hammers, rakes, and hand saws.
2) These tools will be used to prepare seeds beds, plant native vegetation install irrigation equipment, lay and secure erosion control materials, and remove invasive vegetation.
3) The purpose of these hand tools is to provide the means by which to perform the tasks detailed above effectively.
4) These hand tools are required for this project in order to carry out the following tasks correctly to ensure project viability and success. Without them the project would be difficult.
5) The applicant will purchase all hand tools.

Biological Field Equipment
1) These include a Biological Field Truck rental, electro-fisher, waders, buckets, coffer dam materials (sand bags, visqueen), invasive species disinfectants, cameras

2) These equipment will be used to assist CDFW biologists with fish relocation, conduct channel de-watering, perform pre-and-post construction monitoring, and provide protections against transfer of invasive aquatic species
3) The purpose of these equipment are to perform the duties described above effectively, safety, and successfully.
4) These equipment are necessary to carry out project obligations and oversee the correct implementation of project elements and monitoring.
5) All materials will be purchased by the applicant.

Outreach Materials:
1) Mailings, postage, and interpretive sign detailing project activities and habitat benefits.
2) The materials will be used to inform community members of the project actions through direct mailings and interpretive display.
3) The purpose of the outreach efforts are to increase awareness about the need for habitat restoration in the watershed and to demonstrate actions being taken by governments, non-profits, and private landowners to address the needs for habitat restoration to create resiliency to climate change, weather extremes, and wildfires.
4) These materials are required for the project in order to provide accurate information representing of the work being performed in the watershed with taxpayer dollars to protect endangered species and assist landonwers with a need for resilient habitats in the face of climate change.
5) The materials will be purchased by the applicant.

Tasks:

Task 1: Permitting
SPAWN will obtain the CDFW Lake and Streambed Alteration Agreement (1600), Marin County Creek and Grading Permits, and CDFW Scientific Collection Permit to handle fish for relocation. Applicant, with assistance from the Civil Engineer will be prepare an erosion and sediment control plan as required by Marin County permits. SPAWN will lead the permit application process with assistance from Geomorphic Design Civil Engineer. SPAWN will also contract with Resource Specialist Contractors to conduct archeology, botanical, and paleontology surveys. SPAWN personnel on this task include the Project Supervisor, Project Manager, Project Associate, and Project Foreman with assistance from GD Civil Engineer. Resource Specialist Contractors will be contracted to assist with this task and perform archeology, botanical, and paleontology surveys.

Task 2: Pre-Construction Services and Monitoring
SPAWN and Geomorphic design (GD) Civil Engineer will perform tasks required by agency permits. SPAWN will lead the Contractor bidding and selection

process. During the bidding process, GD will provide services including: attendance of two pre-bid meetings; support of bid addenda and/or response to questions, and; evaluation of bids. GD will support the construction contractor with design of the channel dewatering system and permit compliance. SPAWN will consult with CDFW and other agencies to review measures and incorporate feedback to the dewatering system. SPAWN will perform fish relocation using USFWS-and CDFW- approved biologists. This work will be supported with oversight from CDFW staff. SPAWN will conduct an environmental training for construction workers on; special status species in the project area; procedures to follow in the event a species is observed, and; other environmental BMPs and response protocols. SPAWN will perform pre-construction sensitive species surveys. If species are found CDFW will be contacted to provide guidance on avoidance or relocation. All species survey results will be documented in a memo and submitted to CDFW. SPAWN staff on this task are Project Supervisor, Project Manager, Project Associate, Project Foreman, Volunteer Interns I, II, and Volunteers. GD staff Civil Engineer will assist with this task.

Task 3: Construction

The project will be constructed by qualified and licensed construction contractor, demolition contractor, and trucking contractor using Heavy Machinery, Rock Materials, Large Woody Debris Structures, and Hand Tools. The construction contractor will construct the large woody debris structures, site access and staging, gravel augmentation, mobilization/demobilization, and erosion control BMPs. The demolition contractor will remove structures of the storage shed, playground, and sandbox with assistance from SPAWN personnel. The trucking contractor will haul away debris from structures. The contractors will be vetted and selected by the project applicant. SPAWN will implement clearing and grubbing, erosion control, revegetation, monitoring, and will assist contractors with LWD installation and structure removal. SPAWN will bill for mileage needed to travel personal vehicles to-and-from the work site s from office location. Volunteer Interns I and II will be supplied housing while they carry out work performed for this project. Costs for the Intern Housing Facility will be billed to this project for time Volunteer Interns I and II will be working on this project.

Task 3A: Mobilization/Demobilization & Access

The Construction Contractor will implement site mobilization and demobilization, and establish staging and access. Ingress/egress access ramps will be constructed with 60 cu yards of imported river rock and spawning gravel at the downstream end of the project area to connect the floodplain surface to the creek bed. Gravel will be laid over the channel to protect the bedload during construction and will remain in the channel following construction to augment the limited spawning gravel bedload in the project area. Erosion and sediment control BMPs and tree protection measures will be installed by the Construction Contractor with assistance from SPAWN personnel.

Task 3B Dewatering and Diversion
The flow in San Geronimo Creek will need to be bypassed around the construction site. The flow bypass will be accomplished using a temporary cofferdam installed across the creek upstream of the work area. Flow will be diverted around the work area in a pipe and discharged downstream of the project site. It is anticipated that a gravity flow system will be installed. The flow diversion/bypass system will be installed with mesh protections for aquatic species. Work areas will be dewatered using a pump(s) with sufficient capacity to maintain a dry work area. The isolated area will be cleared of aquatic species by SPAWN and CDFW biologists and relocated to pool areas downstream and out of the project. Dewatering activities will abide by all NPDES and state regulations and will not result in a significant increase in turbidity downstream. The contractor will provide measures to contain and clean all turbid water prior to discharging into the stream.

Task 3C Large Wood Structures
Large wood structures will be constructed with wood pieces consisting of a single log and rootwad, and a large wood structure which consists of three to four logs with rootwads. The large wood structures will be installed by placing logs on the bank and in the channel where desired, placing 1-2 ton boulders as ballast, and anchoring wood pieces to the boulders, to the bank, to existing trees, and to other logs. Steel all-thread rods with epoxy and 10' rebar may be used to anchor logs in the structures. The large wood structures will be constructed using Heavy Machinery including an excavator and hand tools. Qualified operators will operate heavy construction equipment. Clearing and grubbing will be done using hand tools. *See the Basis of Design Report for details on the specific large woody debris restoration elements.

Task 3D Structure Removal
Three structures located on the west bank of the Larsen/ San Geronimo Creek confluence will be removed and 3,500 sq. ft. on top of the bank will be restored to native riparian habitat. The structures to be removed include a 500 sq. ft. storage shed, playground, and 1,000 sq. ft. sand box. Electricity will be removed from the shed, all three structures will be demolished, and debris hauled away and disposed of at a recycling and waste facility. No reshaping of the banks will be done following structure removal because of underground sewer, water and electrical utilities; however, removing the sand will require a County grading permit. Following the removal of these structures by heavy machinery and hand tools, the site will be uncompacted and ripped with compost added, seeded with native riparian seed mix, covered and secured with biodegradable erosion control fabric, and planted with native riparian plants.

Task 4: Construction Management and Oversight

SPAWN and Geomorphic Design (GD) Civil Engineer will perform Construction Management and Oversight. SPAWN will coordinate weekly construction meetings, on-site biological monitoring, keep the project in compliance with permits, and oversee general construction. Civil Engineer will support construction oversight & technical components of the design, field design adaptations, contractor inquiries, and review/ inspection of constructed features. SPAWN include Project Supervisor, Project Manager, Project Associate, and Volunteer Interns I, with support from GD Civil Engineer.

Task 5: Erosion Control and Revegetation
SPAWN will implement the erosion control, revegetation, and irrigation. This includes seeding, erosion control, and planting. SPAWN will install all erosion control features and produce/acquire all seeds and container plants needed for the project. Container plants will be sourced from SPAWN'S Native Plant Nursery. SPAWN will coordinate directly with the landowner to develop the irrigation system. This will be completed by the SPAWN Project Supervisor, Project Manager, Project Associate, Project Foreman, and Volunteer Interns I, II, and Volunteers. Volunteer Interns I and II will be provided housing for their work on this project. Costs for the Intern Housing Facility will be billed to this project while the Volunteer Interns I and II are contributing time to this project.

Task 6: Post-Construction Monitoring and Maintenance
SPAWN and Geomorphic Design (GD) Civil Engineer will perform post-construction monitoring to SPAWN and Geomorphic Design (GD) Civil Engineer will perform post-construction monitoring to 11/01/2019 03/31/2023 measure the function and form of large woody debris and riparian enhancement. The features to be monitored will be outlined in a monitoring plan prepared prior to implementation. As-built topographic surveys will be conducted to capture new channel topography and bathymetry. SPAWN and Civil Engineer will perform post-project monitoring and prepare annual monitoring reports for submittal to regulatory agencies. The report will document compliance procedures and describe geomorphic and biological monitoring conducted by SPAWN and Civil Engineer. Maintenance will be performed by SPAWN monthly following construction. This includes erosion control improvement and site stabilization, irrigation repair, and planting replacement. This task will be carried out using biological field equipment and hand tools. This will be led by SPAWN Project Manager, Project Associate, Volunteer Interns I, II, and Volunteers and supported by GD sections and Civil Engineer.

Task 7: Project Administration
SPAWN will direct project reporting, budget management and project organization and will require printing and duplicating needed for reporting, permit acquisition, and project management – SPAWN will retain a bookkeeper for the

efforts needed for invoicing. SPAWN include Project Supervisor, Project Manager, and Project Associate. The bookkeeper will be a subcontractor.

Deliverables: Project specific reporting metrics.

Task 1: Permitting
June 2019- Submit Permit Applications to CDFW and Marin County (CDFW, Marin County Creek, Marin County Grading, CDFW SCP)
July 2019- Submit Erosion and Sediment Plan to Marin County and CDFW
August 2019 to October 2020 – Submit reports to regulatory agencies to demonstrate compliance with permit requirements during construction July 2019 – Pre-Construction Monitoring Report June 2019 – Dewatering/Diversion Plan submitted to CDFW for approval

Task 2: Pre-Construction Services and Monitoring
July 2019 and July 2020 (pre-project) Species Survey Documentation (memos), July 2019 – Contractor Bid Packet and Contractor Selection Report

Task 3: Construction
October 2019 and October 2020 (If two construction seasons are needed) – Project restoration elements constructed to as per Final engineering designs
August 2019 to October 2019 and August 2020 to October 2020 – Quarterly progress reports and weekly construction reports

Task 3A: Mobilization/Demobilization & Access

Task 3B Dewatering and Diversion

Task 3C Large Wood Structures

Task 3D Structure Removal

Task 4: Construction Management and Oversight
August 2019 to October 2019 and August 2020 to October 2020 (If two construction periods are needed) – Weekly project construction reports
August 2019 to October 2019 and August 2020 to October 2020 – Biological Species Monitoring Report
August 2019 to October 2019 and August 2020 to October 2020 – Biological species occurrence data with maps of observations, uploaded to CNDDB and provided to the grant manager

Task 5: Erosion Control and Revegetation

December 2019 and/or 2020 – Project site is stabilized, seeded, and erosion control fabric secured.
January 2020 or January 2021 – Site is planted with nursery plants

Task 6: Post-Construction Monitoring and Maintenance
March 2020 or March 2021 (If two year construction is needed) – Post Construction Monitoring Report
May 2020 - As-built drawings that include structure placement and alignment, cross-sections and longitudinal profiles.
December 2023 – Final Post Construction Monitoring Report

Task 7: Project Administration

Task 8 Public Outreach
November 2020 and November 2021 – Two (2) hard copy mailings printed and mailed to 2,000 community households in the immediate watershed area.
March 2022- Copies of the mailings will be prepared and submitted to CDFW, along with details of community responses, feedback, and correspondence regarding the mailing.
May 2022 – Installation of Interpretive sign at School Dist. Property

Timelines:

Task 1: Permitting
06/01/2019 to 10/31/2020

Task 2: Pre-Construction Services and Monitoring
06/01/2019 to 12/31/2019

Task 3: Construction
08/01/2019 to 12/31/2020

Task 3A: Mobilization/Demobilization & Access

Task 3B Dewatering and Diversion

Task 3C Large Wood Structures

Task 3D Structure Removal

Task 4: Construction Management and Oversight
07/31/2019 to 05/31/2020

Task 5: Erosion Control and Revegetation

10/01/2019 to 03/31/2023

Task 6: Post-Construction Monitoring and Maintenance
11/01/2019 to 03/31/2023

Task 7: Project Administration
06/01/2019 to 03/31/2023

Task 8: Public Outreach
09/01/2019 to 05/31/2022

Project time frame June 15 – October 31

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation

of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (San Geronimo (3812216) OR Inverness (3812217) OR Point Reyes NE (3812227) OR Petaluma (3812226) OR Petaluma River (3812225) OR Novato (3812215) OR San Rafael (3712285) OR Bolinas (3712286) OR Double Point (3712287))

Possible species within the San Geronimo quad and surrounding quads for 725680 Large Woody Debris and Stream Enhancement on San Geronimo Creek, Marin County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Adela oplerella Opler's longhorn moth	IILEE0G040	None	None	G2	S2	
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Allium peninsulare var. franciscanum Franciscan onion	PMLIL021R1	None	None	G5T1	S1	1B.2
Alopecurus aequalis var. sonomensis Sonoma alopecurus	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Amorpha californica var. napensis Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa phaea Point Reyes mountain beaver	AMAFA01012	None	None	G5T2	S2	SSC
Arctostaphylos montana ssp. montana Mt. Tamalpais manzanita	PDERI040J5	None	None	G3T3	S3	1B.3
Arctostaphylos virgata Marin manzanita	PDERI041K0	None	None	G2	S2	1B.2
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Caecidotea tomalensis Tomales isopod	ICMAL01220	None	None	G2	S2S3	
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Calicina diminua Marin blind harvestman	ILARAU8040	None	None	G1	S1	
Callophrys mossii bayensis San Bruno elfin butterfly	IILEPE2202	Endangered	None	G4T1	S1	
Callophrys mossii marinensis Marin elfin butterfly	IILEPE2207	None	None	G4T1	S1	
Campanula californica swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Castilleja affinis var. neglecta Tiburon paintbrush	PDSCR0D013	Endangered	Threatened	G4G5T1T2	S1S2	1B.2
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Ceanothus decornutus Nicasio ceanothus	PDRHA04440	None	None	G1	S1	1B.2
Ceanothus gloriosus var. porrectus Mt. Vision ceanothus	PDRHA040F7	None	None	G4T2	S2	1B.3
Ceanothus masonii Mason's ceanothus	PDRHA04200	None	Rare	G1	S1	1B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2
Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081	None	None	G2T1	S1	1B.2
Chorizanthe valida Sonoma spineflower	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4	S2	2B.1
Cirsium andrewsii Franciscan thistle	PDAST2E050	None	None	G3	S3	1B.2
Cirsium hydrophilum var. vaseyi Mt. Tamalpais thistle	PDAST2E1G2	None	None	G2T1	S1	1B.2
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Collinsia corymbosa round-headed Chinese-houses	PDSCR0H060	None	None	G1	S1	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Delphinium bakeri Baker's larkspur	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Delphinium luteum golden larkspur	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosthodon kochii Koch's cord moss	NBMUS2P050	None	None	G1	S1	1B.3
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum luteolum var. caninum Tiburon buckwheat	PDPGN083S1	None	None	G5T2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fritillaria lanceolata var. tristulis Marin checker lily	PMLIL0V0P1	None	None	G5T2	S2	1B.1
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gilia capitata ssp. chamissonis blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
Gilia capitata ssp. tomentosa woolly-headed gilia	PDPLM040B9	None	None	G5T1	S1	1B.1
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Hesperolinon congestum Marin western flax	PDLIN01060	Threatened	Threatened	G1	S1	1B.1
Heteranthera dubia water star-grass	PMPON03010	None	None	G5	S2	2B.2
Holocarpha macradenia Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Horkelia tenuiloba thin-lobed horkelia	PDROS0W0E0	None	None	G2	S2	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Ischnura gemina San Francisco forktail damselfly	IIODO72010	None	None	G2	S2	
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	

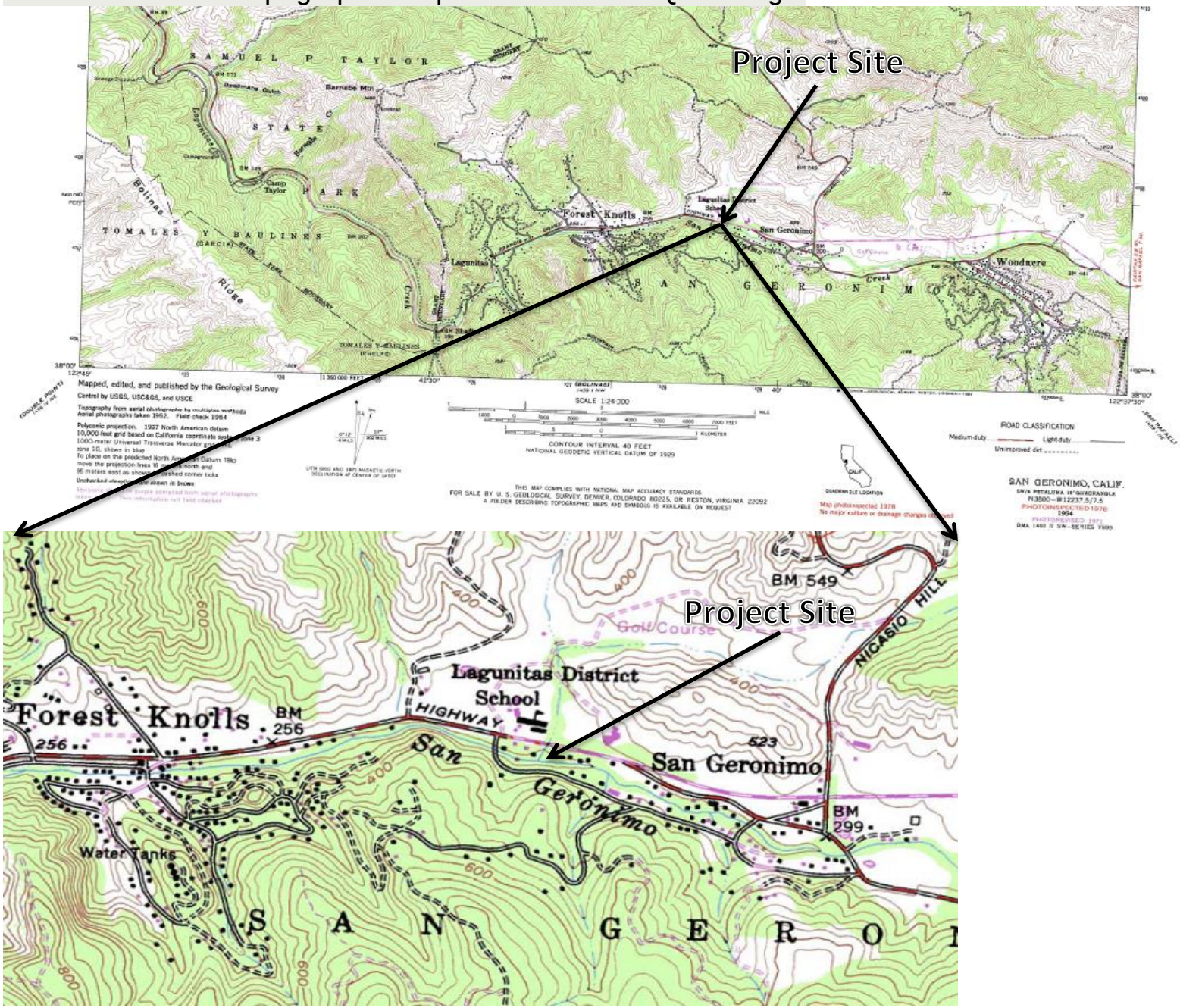
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lavinia symmetricus ssp. 2 Tomales roach	AFCJB19022	None	None	G4T2T3	S2	SSC
Lessingia micradenia var. micradenia Tamalpais lessingia	PDAST5S063	None	None	G2T2	S2	1B.2
Lichnanthe ursina bumblebee scarab beetle	IICOL67020	None	None	G2	S2	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Lilium maritimum coast lily	PMLIL1A0C0	None	None	G2	S2	1B.1
Lilium pardalinum ssp. pitkinense Pitkin Marsh lily	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Melospiza melodia samuelis San Pablo song sparrow	ABPBXA301W	None	None	G5T2	S2	SSC
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Mielichhoferia elongata elongate copper moss	NBMUS4Q022	None	None	G5	S4	4.3
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Navarretia rosulata Marin County navarretia	PDPLM0C0Z0	None	None	G2	S2	1B.2
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Northern Maritime Chaparral Northern Maritime Chaparral	CTT37C10CA	None	None	G1	S1.2	
Northern Vernal Pool Northern Vernal Pool	CTT44100CA	None	None	G2	S2.1	
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pentachaeta bellidiflora white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Phacelia insularis var. continentis North Coast phacelia	PDHYD0C2B1	None	None	G2T2	S2	1B.2
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GH	SH	1A
Plagiobothrys mollis var. vestitus Petaluma popcornflower	PDBOR0V0Q2	None	None	G4?TX	SX	1A
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Pomatiopsis binneyi robust walker	IMGASJ9010	None	None	G1	S1	
Quercus parvula var. tamalpaisensis Tamalpais oak	PDFAG051Q3	None	None	G4T2	S2	1B.3
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05016	Endangered	Endangered	G5T1	S1	FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Serpentine Bunchgrass Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
Sidalcea calycosa ssp. rhizomata Point Reyes checkerbloom	PDMAL11012	None	None	G5T2	S2	1B.2
Sidalcea hickmanii ssp. viridis Marin checkerbloom	PDMAL110A4	None	None	G3TH	SH	1B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Stebbinsoseris decipiens Santa Cruz microseris	PDAST6E050	None	None	G2	S2	1B.2
Streptanthus batrachopus Tamalpais jewelflower	PDBRA2G050	None	None	G2	S2	1B.3

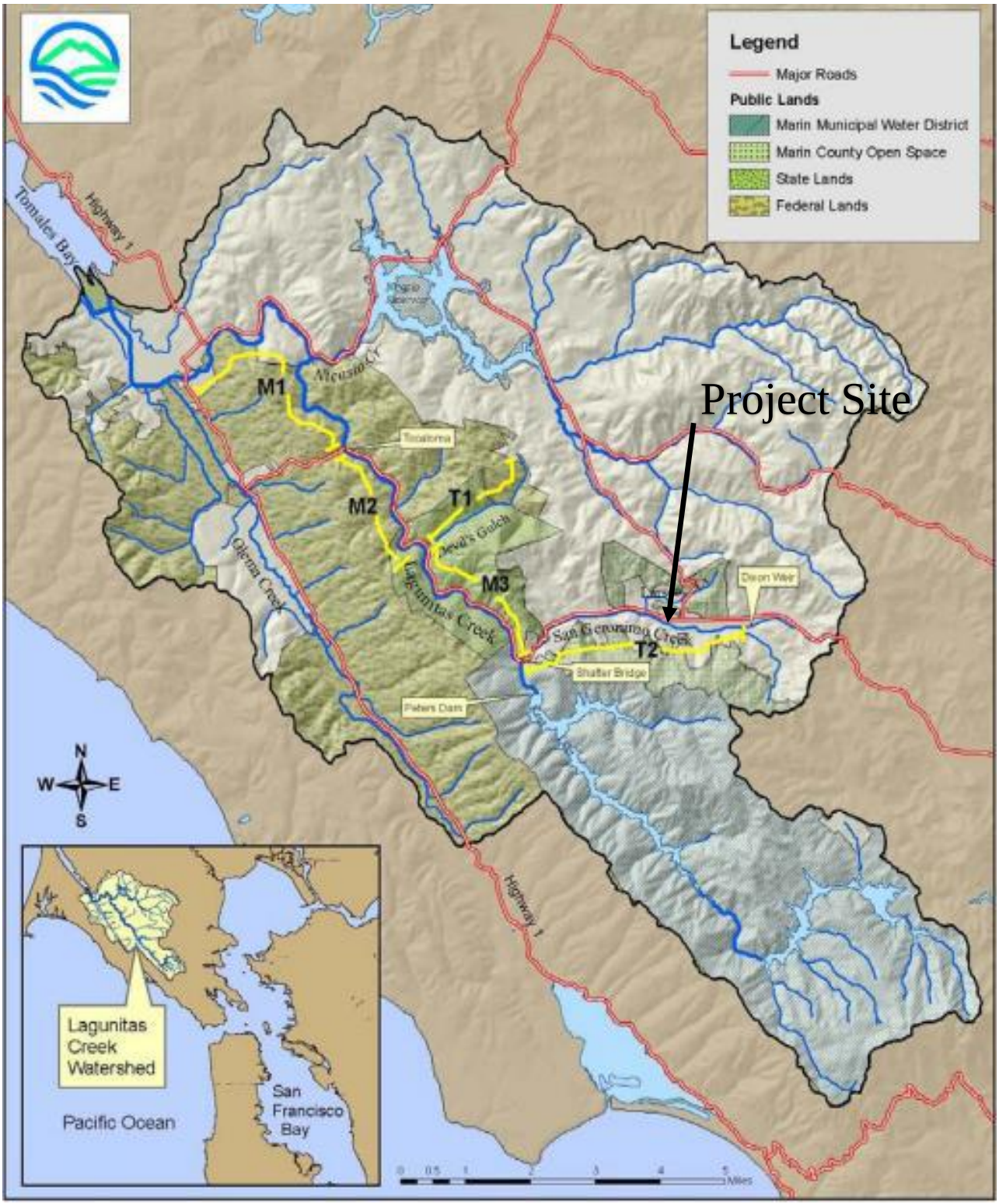
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Streptanthus glandulosus ssp. pulchellus Mt. Tamalpais bristly jewelflower	PDBRA2G0J2	None	None	G4T2	S2	1B.2
Syncaris pacifica California freshwater shrimp	ICMAL27010	Endangered	Endangered	G2	S2	
Talanites ubicki Ubick's gnaphosid spider	ILARA98030	None	None	G1	S1	
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trachusa gummifera San Francisco Bay Area leaf-cutter bee	IIHYM80010	None	None	G1	S1	
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Triphysaria floribunda San Francisco owl's-clover	PDSCR2T010	None	None	G2?	S2?	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Vespericola marinensis Marin hesperian	IMGASA4140	None	None	G2	S2	
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 135

Large Woody Debris and Stream Enhancement on San Geronimo Creek:
USGS 7.5 minute Topographic Map. San Geronimo Quadrangle



Large Woody Debris and Stream Enhancement on San Geronimo Creek



Introduction:

The Eel River Watershed Improvement Group (ERWIG) will install 16 instream features consisting of 56 logs, 41 of which will be key pieces, within 0.5 miles of Moody Creek. This project is necessary because currently Moody Creek supports populations of steelhead trout and Coho Salmon (*Oncorhynchus kisutch*) but the watershed has experienced significant impacts as a result of heavy logging practices since the 1800s. These deleterious activities included road and skid trail construction and riparian composition conversion (logging conifers from the riparian zone).

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, Part VIII (CDFG 1998) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

This project will create 16 instream features within 0.5 miles of Moody Creek, consisting of 56 logs, 41 of which will be key pieces. These structures will enhance spawning and rearing habitats by increasing pool complexity, depth, and frequency, sorting spawning gravels, and providing velocity refugia. The end result will provide habitat for all salmonid species that are found in Moody Creek.

Project Description:

Location:

Moody Creek is a tributary to Indian Creek, located northwest of Leggett, California and accessed via Highway 1. The project reach contains multiple sites starting approximately 200 feet upstream of the confluence of Moody Creek and Indian Creek. Project coordinates are: 39.95945 latitude, -123.87778 longitude at the approximate center point of the project reach.

Project Set Up:

Executive Director: Tasks 1 and 2. Agreement and subcontract oversight and reporting will be conducted by the Executive Director with assistance from the Project Manager. Project Manager: Tasks 1, 2, 3, 4, 5, and 6. The Project Manager will assist with Agreement and subcontract oversight, invoicing, and reporting. The Project Manager will manage all aspects of project implementation.

Subcontractors:
-Pacific Watershed Associates (PWA): Tasks 2, 3, 5, and 6. The implementation of the wood loading will be completed by PWA. PWA professionals under the responsible charge of Engineering Geologist, Thomas H. Leroy (California

Engineering Geologist #2593) and a PWA Principal, will provide project and construction oversight and Quality Assurance/Quality Control of project products. The PWA Project Manager will manage project layout, construction oversight, monitoring, and reporting. PWA Technical Staff will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring, and data entry. PWA Geographic Information System staff will provide field layout maps, digitize layout and as-built project data, and develop report maps. PWA Clerical Staff will track and monitor hours and create invoices during the project. PWA staff will be on-site to layout the heavy equipment construction treatments in the project area. All PWA work elements will be supervised by a PWA Principal. The final reporting of the project will be done by the PWA Engineering Geologist and PWA Project Manager closely. PWA will also carry out paleo review for California Environmental Quality Act (CEQA) requirements.

-California Conservation Corps (CCC). CCC Fish Habitat Assistant: Tasks 2, 3, and 5. Will participate in project preparation, implementation, and collecting metrics. Will provide logistical support to CCC Corpsmember crews ensuring tool and material needs are met without delay throughout the project duration. Additionally, the CCC Fish Habitat Assistant will provide onsite training and direction to CCC crews to ensure features meet the criteria set by the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). CCC Corpsmembers: Task 3. Under supervision of the CCC Conservationist 1 will anchor the structures according to design and anchoring specifications. CCC Corpsmembers will also move large wood into position using a grip hoist come along.

-Mendo-Boldt (MB) Licensed Excavator Operator (LEO): Tasks 2 and 3. Will be responsible for placing Large Woody Debris (LWD) at the features where access is available. MB Licensed Timber Operator (LTO): Task 3. Will fall trees identified by the RPF for use in the project, will buck up trees into specified logs, and will remove branches if necessary.

-Registered Professional Forester (RPF) (Linwood Gill): Task 2. Will carefully select trees in the riparian zone to fall according to project design specifications and best forestry practices.

-Humboldt State University Cultural Resources Facility: Task 2. Will conduct botanical and archeological review and surveys. Will produce reports for CEQA requirements.

Materials: Materials to complete this project consist of:

Anchoring materials: 10' by 1" threaded rod (rebar), steel nuts, steel washers. power tools, and timber bits.

Donated by Usal Redwood Forest Company/Redwood Forest Foundation Incorporated: Logs and rootwads (logs >1' diameter and key piece logs >2' diameter and 33' in length); Redwood tree seedlings;

Purchased by PWA: Seed and straw; Field and office supplies including flagging, measuring tapes, wooden stakes, weather resistant paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies; and log tongs.

Tasks: The following list of tasks will be accomplished to complete the goals:

Task 1. Agreement and Subcontract Oversight. Conduct agreement and subcontract oversight. Communicate and coordinate with the landowner to obtain entry permits, coordinate implementation schedules, obtain wood donation and purchase, and assess project implementation details. Upon receipt of the Preliminary Notice to Proceed, the Project Manager will submit the Notification of Lake or Streambed Alteration, hire subcontractors, and provide management and direction to subcontractors throughout the duration of the project. All reporting and billing will be pursuant to Agreement and regulatory guidelines.

Task 2. Project Preparation. Work with subcontractors to make sure all employees are trained on landowner concerns and protocols before they enter the property to begin project work. Ensure that all subcontractors understand that ONLY those designated to work on the project are allowed on the property. Work closely with subcontractors to ensure that no actions result in the delivery of sediment to the stream channel when staging and placing large wood in the stream. The Project Manager, the CCC Fish Habitat Assistant, and PWA will finalize site specific designs based on channel morphology and LWD availability. They will submit designs for landowner and Grantor's Project Manager approval. The Project Manager along with the CCC Fish Habitat Assistant and PWA will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along project reaches. The RPF will identify trees for falling. Pre-project photos and metrics will be collected. Tools and materials will be purchased prior to the start of implementation and on an as-needed basis throughout the project. Subcontractors will carry out paleontological, archeological and botanical surveys, background research and prepare reports for CEQA based on their findings. Billing and invoicing will take place in a prompt manner.

Task 3. Project Implementation. With approval from the Grantor's Project Manager and under the direction of the Project Manager, PWA, and the CCC Fish Habitat Assistant, site construction on 16 LWD features will begin. Some features may involve cutting down or uprooting trees in the riparian area to fall into the creek. This will be accomplished by the MB LTO/LEO. The MB LEO will place downed logs into the stream in accordance with design plans. When necessary, CCC members will move LWD into position using a come along. Site

construction, wood placement, and anchoring will be in accordance with the *California Salmonid Stream Habitat Restoration Manual*, Part VII (Flosi et al. 1998). The project will utilize living riparian trees as anchors by wedging the logs between them where feasible. CCC members under supervision of the CCC Conservationist 1 will anchor the sites according to design and anchoring specifications. CCC members will use one-inch threaded rebar to anchor logs to mature riparian trees and other logs. Holes will be drilled through the logs and their anchor trees using a drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be strung through the log and secured with nuts and washers. CCC members will be supervised by the CCC Fish Habitat Assistant and the Project Manager. Erosion control methods will be employed by the CCC as required at each structure and along equipment corridors to eliminate the possibility of sediment transport to the stream. Any tools that break down will be taken to a repair shop or replaced if necessary. To address concerns over invasive species this project will follow the ERWIG *Aquatic Invasive Species Decontamination Protocol*.

Task 4. Riparian Planting. To promote riparian vegetation impacted by project implementation, increase canopy cover above the creek, and to establish wood for future instream recruitment, a tree planting crew will return in the winter following project implementation to plant 200 redwood seedlings (*Sequoia sempervirens*), with a primary focus in areas lacking sufficient conifer cover or riparian vegetation.

Task 5. Post-Project Data and Photo Collection. Following implementation, photos will be taken of the project and metrics will be collected which satisfy the Agreement Annual Report(s) and Final Report.

Task 6. Reporting. With PWA, write and deliver Annual Report(s) and a Final Report to Grantor's Project Manager.

Deliverables:

Task 1. Agreement and Subcontract Oversight. Notification of Lake or Streambed Alteration, subcontracts, Final Landowner Access Agreements, invoices, and invoice progress reports.

Task 2. Project Preparation. Finalized design plans, pre-project photos and metrics.

Task 3. Project Implementation. 16 LWD structures containing 56 pieces of LWD made up of redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) logs.

Task 4. Riparian Planting. Two hundred planted redwood seedlings, with a >80% survival rate (160 net).

Task 5. Post-Project Data and Photo Collection. Post-project photos and metrics.

Task 6. Reporting. Annual reports and a Final Report.

Timelines:

Task 1. Agreement and Subcontract Oversight. June 3, 2019 to March 31, 2021.

Task 2. Project Preparation. June 3, 2019 to October 30, 2020.

Task 3. Project Implementation. June 17, 2019 to October 30, 2020.

Task 4. Riparian Planting. December 2, 2019 to February 26, 2021.

Task 5. Post-Project Data and Photo Collection. December 2, 2019 to February 26, 2021.

Task 6. Reporting. July 1, 2019 to March 31, 2021.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.* Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

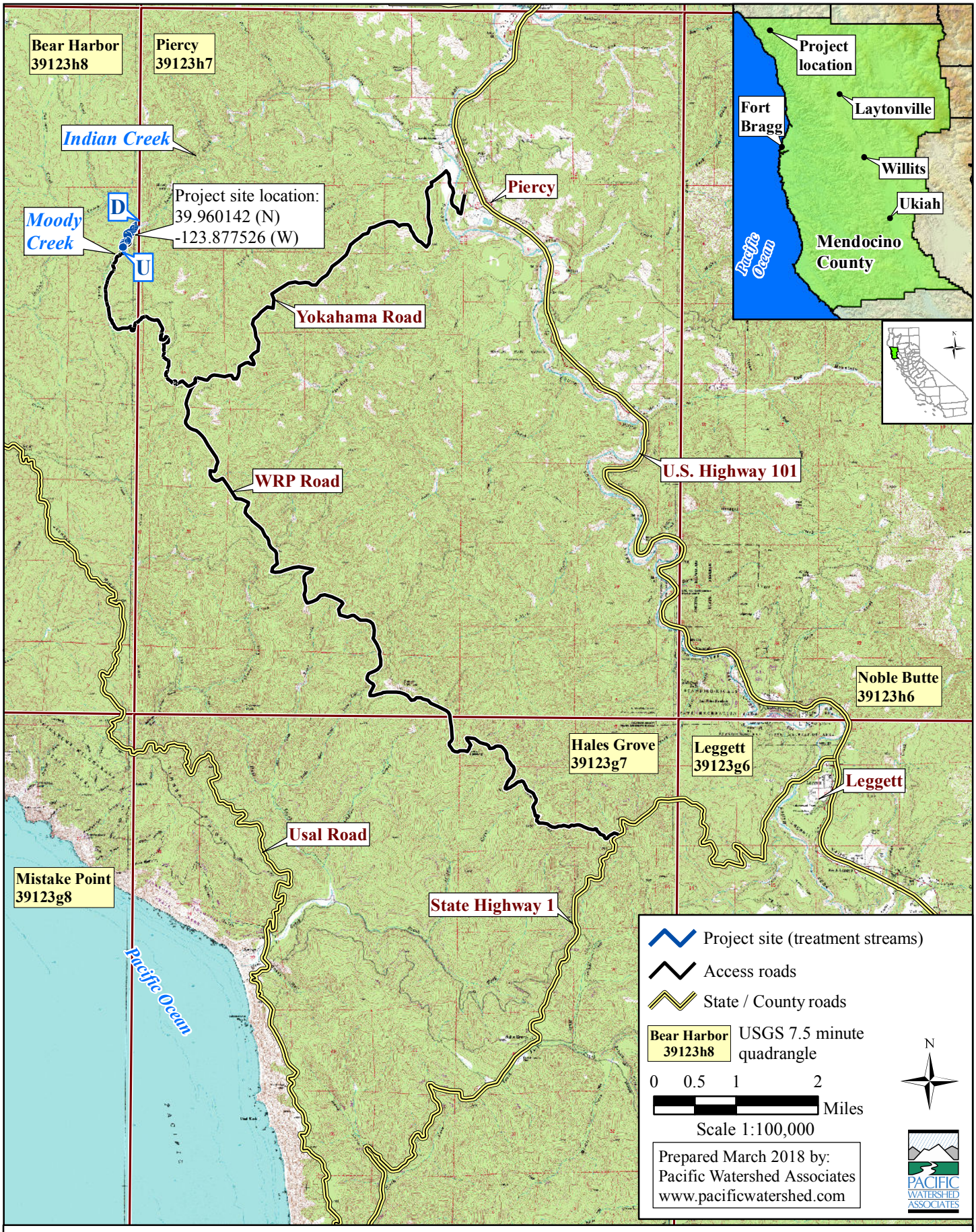
Query Criteria: Quad IS (Bear Harbor (3912388) OR Shelter Cove (4012411) OR Briceland (4012318) OR Garberville (4012317) OR Piercy (3912387) OR Hales Grove (3912377) OR Mistake Point (3912378))

Possible species within the Bear Harbor quad and surrounding quads for 725638 Moody Creek Instream Habitat Enhancement, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 39



Map 1. Project location topographic map for the Moody Creek Instream Habitat Enhancement Project, Mendocino County, California. Grantee: Eel River Watershed Improvement Group

Introduction:

The Eel River Watershed Improvement Group (Grantee) will implement the Redwood Creek Watershed Key Piece LWD Project. The lack of large wood in the stream channel has affected the quality and quantity of salmonid habitat within Redwood Creek and South Fork Redwood Creek by reducing the amount of large channel forming features and the loss of complex cover for salmonids. A California Department of Fish and Wildlife (CDFW; formerly California Department of Fish and Game) stream habitat inventory survey was conducted on Redwood Creek and South Fork Redwood Creek in 2003 and limiting factors to salmonids were identified. The stream habitat inventory reports show that the pools of Redwood Creek and South Fork Redwood Creek have low mean shelter ratings of 31 and 25 respectively. A pool shelter rating of approximately 100 is desirable and current conditions could be improved by the installation of large wood. Additionally, 200 conifer trees and 200 native plant species will be planted within the riparian area in order to improve canopy and riparian conditions and provide future large wood recruitment to the stream.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual*, 3rd Edition, Volume I, Parts VII, XI, and XII (Flosi et al 1998 and 2002).

Objective(s):

The specific objective of this Project is to improve the quality and quantity of spawning and rearing habitat for Coho Salmon (*Oncorhynchus kisutch*) by installing 31 instream features within a 5,650 foot section of Redwood Creek, consisting of 92 pieces of large wood, 35 of those being key pieces. In a 7,392 foot section of South Fork Redwood Creek, 25 instream features consiting of 71 pieces of large wood, 32 being key pieces, will be installed. These structures will enhance spawning and rearing habitats by increasing pool complexity, depth, and frequency, sorting spawning gravels, and providing velocity refugia. Between the two sites 400 native plants and trees will be planted in order to improve riparian vegetation conditions and provide for future large wood recruitment.

Project Description:

Location:

The project is located along a section of Redwood Creek and South Fork Redwood Creek, in the county of Mendocino, Sate of California. Redwood Creek is a tributary to Hollow Tree Creek in the South Fork Eel River Watershed, Mendocino County, CA. The Redwood Creek project reach starts approximately 8,970 feet upstream from the confluence with South Fork Redwood Creek and continues upstream 5,650 feet. Project boundaries are 39.7679º north latitude, -123.7692º west longitude at the downstream end; 39.7753º north latitude, -123.7801º west longitude at the upstream

end; Township 22 North, Range 17 West, and Section 8 of the Hales Grove 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map. The South Fork Redwood Creek project reach starts approximately 1,000 feet upstream from the confluence with Redwood Creek and continues upstream 7,392 feet. Project boundaries are 39.7719º north latitude, -123.7564º west longitude at the downstream end; 39.7583º north latitude, -123.7593º west longitude at the upstream end. Township 22 North, Range 17 West, and Section 9 and 16 of the Hales Grove 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

Project Set Up:

Grantee staff will provide all project oversight and administration. Subcontractor, Edwards Excavation & Restoration (EER), Equipment Transporter will bring heavy equipment to and from the worksite. EER Registered Professional Forester (RPF), will carefully select trees in the riparian zone to fall according to project design specifications and best forestry practices. EER Licensed Excavator Operator, will fell trees identified by the RPF for use in the project, buck up trees into specified logs, remove branches if necessary, and install large wood following approved designs. Subcontractor, California Conservation Corps (CCC) will provide the hand labor for the in-stream large wood structures. Subcontractor, Tree Planting Crew will plant 400 native riparian plant species. Subcontractor, Electrofisher, Ross Taylor & Associates (RTA) will set up block nets and move fish and other species from excavator crossing locations). Subcontractor, Humboldt State University's Cultural Resources Facility staff will conduct botanical and archeological surveys and prepare CEQA reports. Subcontractor, Paleontology survey crew will conduct paleontological surveys and prepare CEQA report.

Materials:

A total of 56 instream features, consisting of 163 pieces of large wood, will be constructed and anchored with 1" threaded rebar, nuts, washers, 5/8" galvanized cable, cable clamps, and waterproof epoxy glue, or by wedging into riparian trees without using anchoring materials. Approximately 200 conifer seedlings and 200 native riparian plants will be planted.

Tasks:

Task 1. Install Instream Habitat Features: Install 31 instream features within a 5,650 foot section of Redwood Creek, consisting of 92 pieces of large wood. Install 25 instream features within a 7,392 foot section of South Fork Redwood Creek, consisting of 71 pieces of large wood. Work will consist of the following:

- *Trees for large wood structures will be procured through felling riparian trees with a chainsaw and by salvaging from nearby areas.*

- *EER will fell trees directly into the stream channel as well as place them with equipment. Additionally, CCC crews will provide assistance at some sites to relocate and/or reposition logs to optimize placement in areas where equipment cannot access the stream. CCC will be responsible for bolting logs where necessary.*
- *Crews will construct instream log structures according to the site specific plans to be provided, using locally available logs or logs from other locations.*
- *Nuts, washers, plates, cable, glue and rebar will be ordered as applicable.*
- *Location of all project large will be documented.*
- *Various anchoring techniques, which will be approved by the CDFW Project Manager prior to the initiation of work, may be used to hold multiple logs together to form complex structures. Anchoring techniques will include wedging logs into existing rocks and logs along the riparian banks; anchoring to live mature trees growing on riparian banks; or anchoring to existing boulders. Anchoring materials will consist of 1" threaded rebar, cable, nuts and washers, and waterproof epoxy.*

Task 2. Erosion Control: Mulching will take place as features are completed on all exposed soils which may deliver sediment to a stream and in order to avoid unforeseen erosion.

Task 3. Riparian Planting: Approximately 400 native riparian species will be planted alogn the project reaches of Redwood Creek and South Fork Redwood Creek. Conifer species will include Coast Redwood (Sequoia sempervirens) and Douglas Fir (Pseudotsuga menziesii). Native plant species will include Grape (Berberis nervosa), Blue Blossom/Coast Lilac (Ceanothus thyrsiflorus), Salal (Gaultheria shallon), Toyon (Heteromeles arbutifolia), Oceanspray (Holodiscus discolor), Red Flowering Currant (Ribes sanguineum), California Rose (Rosa californica), Thimbleberry (Rubus parviflorus), Salmonberry (Rubus spectabilis), Western Azalea (Rhodedendron occidentalis), Pacific Blackberry (*Rubus ursinus*) and Evergreen Huckleberry (*Vaccinium ovatum*).

Deliverables:

A total of 31 instream features will be installed within a 5,650 foot section of Redwood Creek, consisting of 92 pieces of large wood. A total of 25 instream features will be installed within a 7,392 foot section of South Fork Redwood Creek, consisting of 71 pieces of large wood. A total of 400 native riparian plants will be planted along the project reach including 200 conifers and 200 native plant species.

Timelines:

June 15 through October 31 of the years 2019 and 2020 EER and CCC will install large wood features within approved project reaches. Erosion control will be installed as project features are completed.

December 1 through February 28 of 2019, 2020, and 2021, tree planting crews will plant conifer trees and native riparian plants within the project reaches.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW *Aquatic Invasive Species Decontamination Protocol*.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Project Managers.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hales Grove (3912377) OR Mistake Point (3912378) OR Bear Harbor (3912388) OR Piercy (3912387) OR Noble Butte (3912386) OR Leggett (3912376) OR Lincoln Ridge (3912366) OR Westport (3912367))

Possible species within the Hales Grove quad and surrounding quads for 725639 Redwood Creek Watershed Key Piece LWD Project, Mendocino County

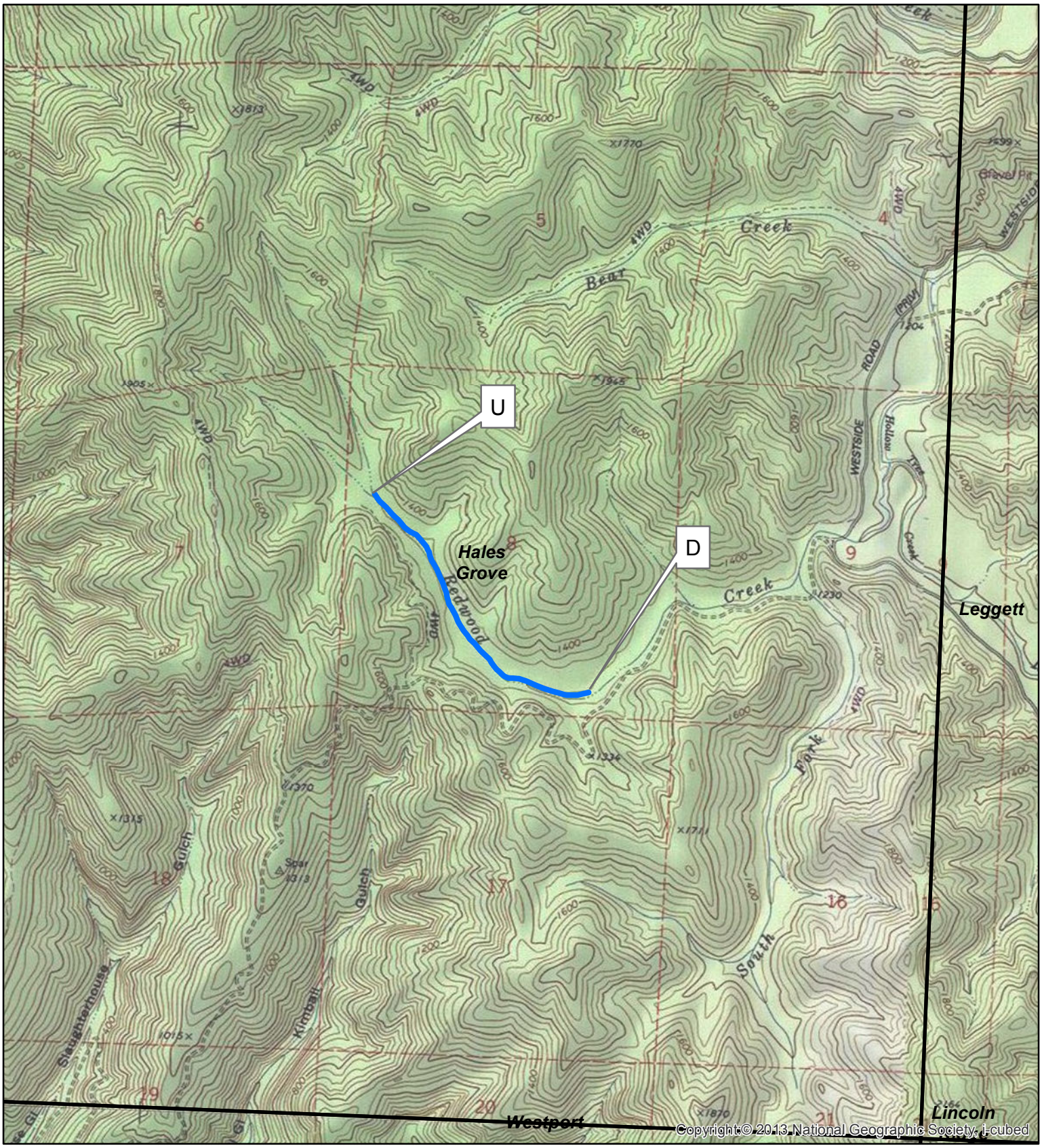
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arabis mcdonaldiana McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos stanfordiana ssp. raichei Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum kelloggii Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Gentiana setigera Mendocino gentian	PDGEN060S0	None	None	G2	S1	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
North Central Coast Fall-Run Steelhead Stream North Central Coast Fall-Run Steelhead Stream	CARA2631CA	None	None	GNR	SNR	
Northern Interior Cypress Forest Northern Interior Cypress Forest	CTT83220CA	None	None	G2	S2.2	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sedum laxum ssp. eastwoodiae Red Mountain stonecrop	PDCRA0A0L1	None	None	G5T2	S2	1B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Silene campanulata ssp. campanulata Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 54

Project Location Topographic Map
Redwood Creek Watershed Key Piece LWD Project
Redwood Creek Site
Hales Grove Quad, Mendocino County



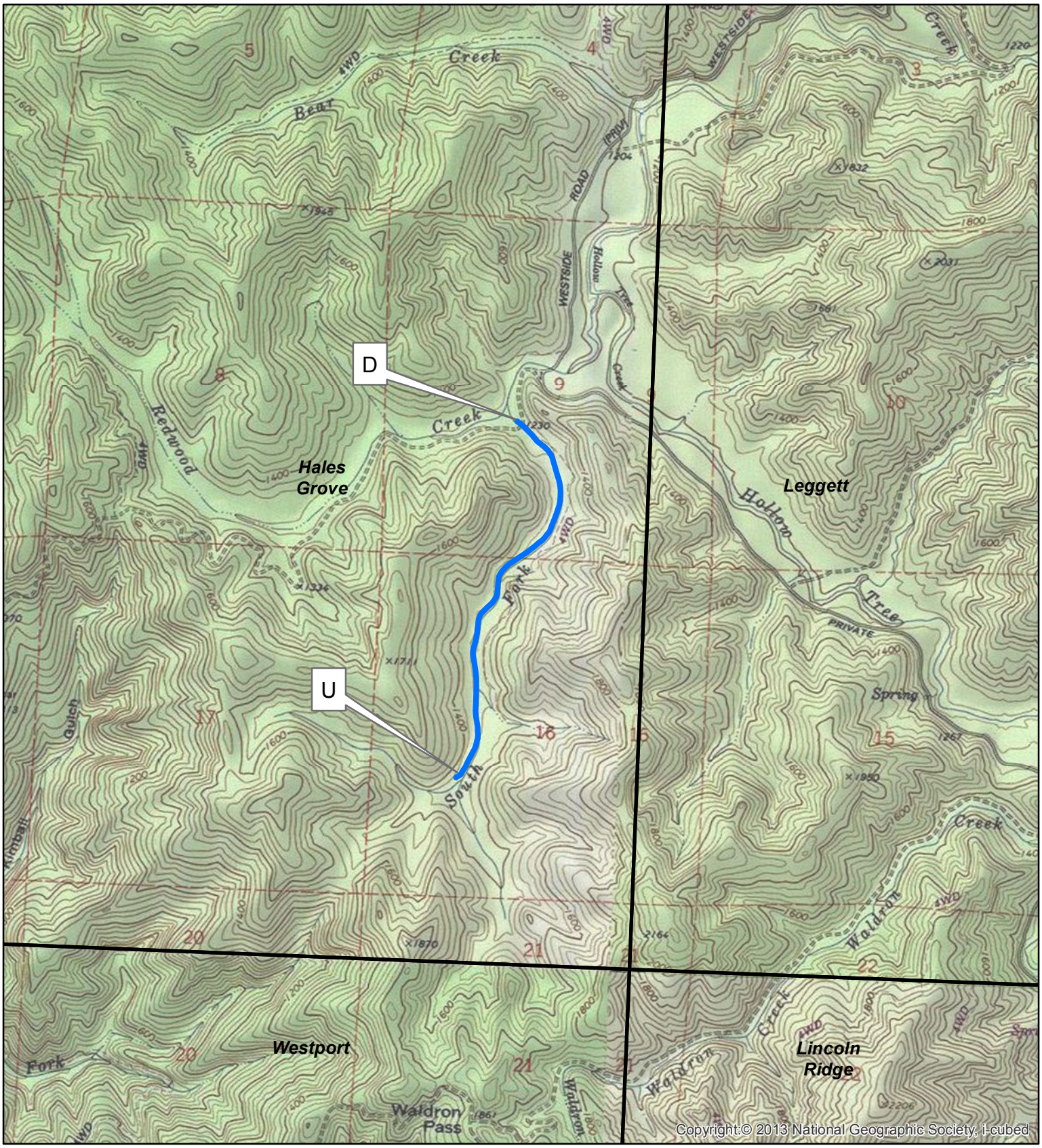
Redwood Creek Site Reach

Eel River Watershed Improvement Group
March 2018

0 0.5 1 Miles

N

Project Location Topographic Map
Redwood Creek Watershed Key Piece LWD Project
South Fork Redwood Creek Site
Hales Grove Quad, Mendocino County



South Fork Redwood Creek Site Reach

Miles
0 0.5 1

N

Eel River Watershed Improvement Group
March 2018

Introduction:

The Mendocino Land Trust (Grantee) will implement the Hare Creek and Bunker Gulch Coho Stream Habitat Enhancement Project. The lack of large woody debris large wood in the stream channel has affected the quality and quantity of salmonid habitat within Hare Creek and Bunker Gulch by reducing the amount of large channel forming features and the loss of complex cover for salmonids. A California Department of Fish and Wildlife (CDFW) stream habitat inventory survey was conducted on Hare Creek in 2017 and on Bunker Gulch in 2016 and limiting factors to salmonids were identified. The stream habitat inventory reports show that the pools of Hare Creek and Bunker Gulch have low mean shelter ratings of 17 and 13 respectively. A pool shelter rating of approximately 100 is desirable.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual*, Volume I and II, Parts VII, XI, and XII (Flosi et al 1998 and 2002).

Objective(s):

The specific objective of this project is to improve the quality and quantity of spawning and rearing habitat for Coho Salmon (*Oncorhynchus kisutch*) by installing 44 instream features within a 4,310 foot section of Hare Creek, consisting of 88 pieces of large wood. In a 4,980 foot section of Bunker Gulch, 34 instream features consisting of 69 pieces of large wood will be installed. The addition of these structures will enhance spawning and rearing habitats by providing cover, increasing pool complexity, increasing pool depth and frequency, sorting and collecting spawning gravels, increasing the quality and quantity of rearing habitat within the project reach, and by providing velocity refuge during peak winter flows for juvenile salmonids and migrating adult salmonids.

Project Description:

Location:

The project is located along a section of Hare Creek and Bunker Gulch, located in the county of Mendocino, State of California. The Hare Creek project reach starts at the confluence with Bunker Gulch, approximately 7.4 miles upstream from the confluence with the Pacific Ocean, and continues upstream 4,310 feet. Project boundaries are 39.3877º north latitude, -123.7320º west longitude at the downstream end; 39.3869º north latitude, -123.7203º west longitude at the upstream end. The Bunker Creek project reach starts at the confluence with Hare Creek and continues upstream 4,980 feet. Project boundaries are 39.3877º north latitude, -123.7320º west longitude at the downstream end; 39.3984º north latitude, -123.7249º west longitude at the upstream

end. Township 18 North, Range 17 West, and Section 26 of the Noyo Hill 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

Project Set Up:

Grantee staff will provide all project oversight and administration. Subcontractor, Humboldt State University Cultural Resources Facility staff will conduct sensitive plant and cultural resource surveys prior to construction. Subcontractor, California Conservation Corps (CCC) will provide the hand labor for the in-stream large wood features.

Materials:

A total of 78 large wood features, consisting of 132 pieces of large wood and root wads, will be constructed and anchored with 1" threaded rebar, nuts, washers, 5/8" galvanized cable, cable clamps, and waterproof epoxy glue, or by wedging into riparian trees without using anchoring materials. Trees left unanchored will be at least 1.5 times the average bankfull width per CDFW Stream Restoration Manual specifications for unanchored large wood (Part VII-23).

Tasks:

Task 1. Install Instream Habitat Features: Install 44 instream features within a 4,310 foot section of Hare Creek, consisting of 88 pieces of large wood. Install 34 instream features within a 4,980 foot section of Bunker Gulch consisting of 69 pieces of large wood. Work will consist of the following:

- Grantee will construct instream log structures according to the site specific plans to be provided, using locally available logs or logs from other locations.
- Nuts, washers, plates, cable, glue and rebar will be ordered as applicable.
- Location of all project large wood will be documented.
- Various anchoring techniques, which will be approved by CDFW prior to the initiation of work, may be used to hold multiple logs together to form complex structures. Anchoring techniques will include wedging logs into existing rocks and logs along the riparian banks; anchoring to live mature trees growing on riparian banks; or anchoring to existing boulders. Anchoring materials will consist of 1" threaded rebar, cable, nuts and washers, and waterproof epoxy.
- Available slash and woody debris will be installed into structures after site completion to provide immediate cover for salmonids present at time of construction.

Task 2. Erosion Control: Mulching will take place as sites are completed on all exposed soils which may deliver sediment to a stream in order to avoid unforeseen erosion.

Deliverables:

A total of 44 instream features will be constructed within a 4,310 foot section of Hare Creek, consisting of 88 pieces of large wood. A total of 34 instream features will be constructed within a 4,980 foot section of Bunker Gulch consisting of 69 pieces of large wood.

Timelines:

June 15 through October 31 of the years 2019, 2020, 2021, and 2022, California Conservation Corps will install large wood features within approved project reaches. Erosion control will be installed as project features are completed.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the CDFW.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW *Aquatic Invasive Species Decontamination Protocol*.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Project Managers.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Noyo Hill (3912346) OR Fort Bragg (3912347) OR Inglenook (3912357) OR Dutchmans Knoll (3912356) OR Sherwood Peak (3912355) OR Northspur (3912345) OR Comptche (3912335) OR Mathison Peak (3912336) OR Mendocino (3912337))

Possible species within the Noyo Hill quad and surrounding quads for 725655 Hare Creek and Bunker Gulch Coho Stream Habitat Enhancement Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos nummularia ssp. mendocinoensis pygmy manzanita	PDERI04280	None	None	G3?T1	S1	1B.2
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Blennosperma nanum var. robustum Point Reyes blennosperma	PDAST1A022	None	Rare	G4T2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Calileptoneta wapiti Mendocino leptonetid spider	ILARAU6040	None	None	G1	S1	
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Campanula californica swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
Carex californica California sedge	PMCYP032D0	None	None	G5	S2	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carex lenticularis var. limnophila lagoon sedge	PMCYP037A7	None	None	G5T5	S1	2B.2
Carex livida livid sedge	PMCYP037L0	None	None	G5	SH	2A
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex saliniformis deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
Carex viridula ssp. viridula green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chorizanthe howellii Howell's spineflower	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Collinsia corymbosa round-headed Chinese-houses	PDSCR0H060	None	None	G1	S1	1B.2
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Cornus canadensis bunchberry	PDCOR01040	None	None	G5	S2	2B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cuscuta pacifica var. papillata Mendocino dodder	PDCUS011A2	None	None	G5T1	S1	1B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC

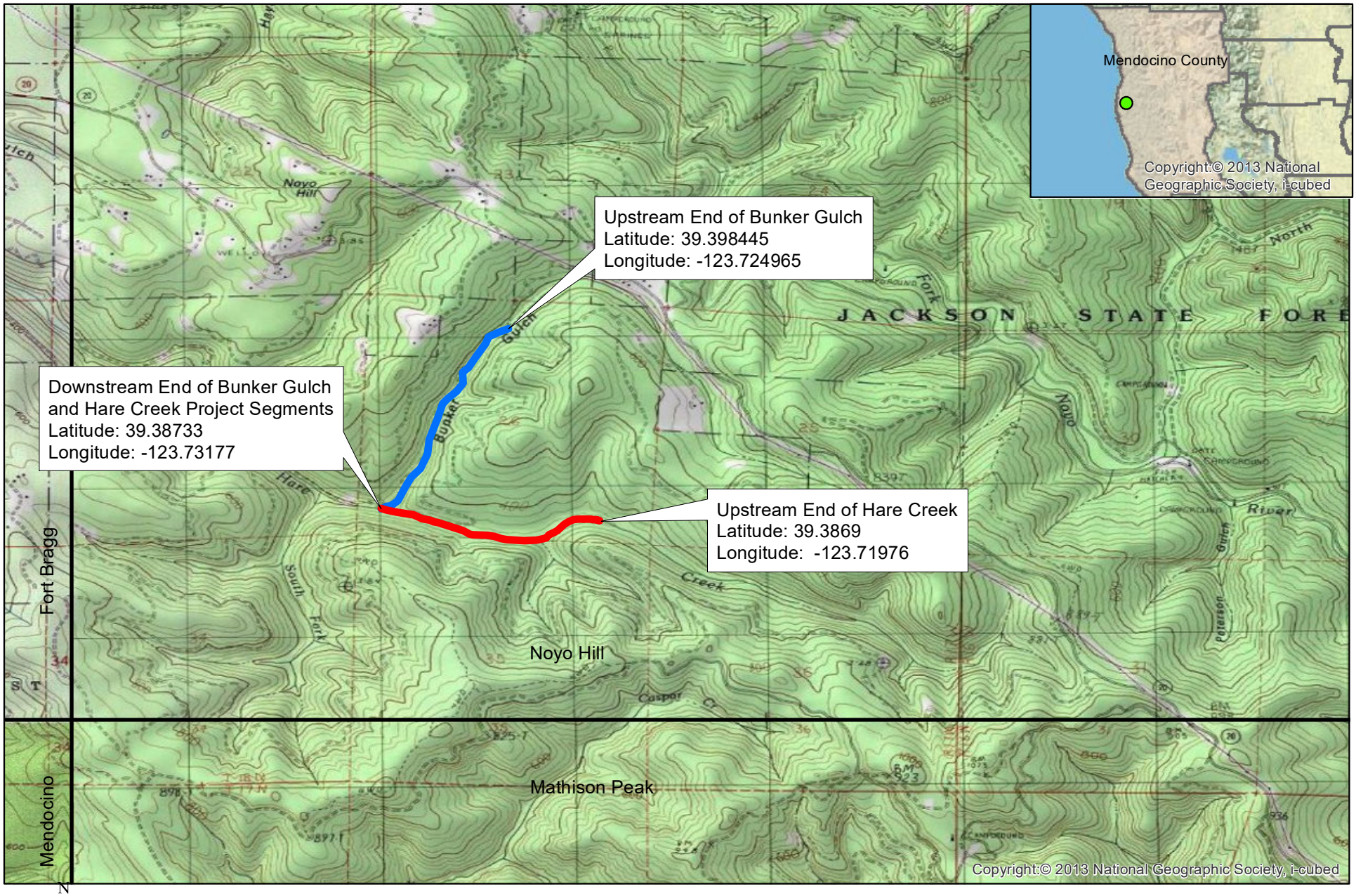
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron supplex supple daisy	PDAST3M3Z0	None	None	G2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fen Fen	CTT51200CA	None	None	G2	S1.2	
Fratercula cirrhata tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Grand Fir Forest Grand Fir Forest	CTT82120CA	None	None	G1	S1.1	
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Juncus supiniformis hair-leaved rush	PMJUN012R0	None	None	G5	S1	2B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia californica ssp. bakeri Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Lilium maritimum coast lily	PMLIL1A0C0	None	None	G2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Mendocino Pygmy Cypress Forest Mendocino Pygmy Cypress Forest	CTT83161CA	None	None	G2	S2.1	
Microseris borealis northern microseris	PDAST6E030	None	None	G5	S1	2B.1
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Noyo intersessa Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
Oceanodroma homochroa ashy storm-petrel	ABNDC04030	None	None	G2	S2	SSC
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Phacelia insularis var. continentis North Coast phacelia	PDHYD0C2B1	None	None	G2T2	S2	1B.2
Pinus contorta ssp. bolanderi Bolander's beach pine	PGPIN04081	None	None	G5T2	S2	1B.2
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Plebejus idas lotis lotis blue butterfly	IILEPG5013	Endangered	None	G5TH	SH	
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Puccinellia pumila dwarf alkali grass	PMPOA531L0	None	None	G4?	SH	2B.2
Ramalina thrausta angel's hair lichen	NLLEC3S340	None	None	G5	S2?	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Rhynchospora alba white beaked-rush	PMCYP0N010	None	None	G5	S2	2B.2
Sanguisorba officinalis great burnet	PDROS1L060	None	None	G5?	S2	2B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. purpurea purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
Speyeria zerene behrensii Behren's silverspot butterfly	IILEPJ6088	Endangered	None	G5T1	S1	
Sphagnum Bog Sphagnum Bog	CTT51110CA	None	None	G3	S1.2	
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trifolium trichocalyx Monterey clover	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 97

Mendocino Land Trust
Bunker Gulch and Hare Creek
Project Location Reach Map
Noyo Hill Quad, Mendocino County



Introduction:

The Conservation Fund (Grantee) will implement the Inman Creek Sediment Reduction Project, which will improve anadromous fish habitat conditions by decommissioning approximately 1.6 miles of road and associated crossings at two sites (worksites 1 and 2). The abandonment and stabilization of watercourse crossings with high sediment delivery risk will result in approximately 2,000 yds^3 of future sediment savings. Total acres of upslope to be treated is 3.9 acres. Pacific Watershed Associates conducted the road-related sediment source inventory.

The project is necessary because the salmonid habitat conditions in the Inman Creek watershed have degraded due to legacy logging activities that caused excessive delivery of sediment to the streams. Salmonid recovery plans recommend decreasing sediment input by reducing road densities and treating sediment sources. This project will implement sediment reduction activities at 23 identified features, along approximately 1.6 miles of road, largely designated as high or moderate treatment immediacy in the sediment source assessment. All hydrologically connected road surfaces are recommended for treatment in this proposal. The project will result in sediment savings of approximately 2,000 yds^3. Total acres of upslope area to be treated is approximately 3.9 acres.

The goal of road drainage treatments is to hydrologically disconnect the road from the stream system and disperse road surface runoff, facilitating infiltration into the native ground. Road decommissioning treatments include removing old or failed crossings, road outsloping, ripping the road surface, and cross road drain installation. All proposed road work will be constructed according to the guidelines and standards in the *Handbook for Forest, Ranch, and Rural Roads 2015* and the *California Salmonid Stream Habitat Restoration Manual*, Volume II Part X.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

All habitat improvement(s) will follow techniques in the *California Stream Habitat Restoration Manual* (Volume II, Part X – Upslope Erosion Inventory and Sediment Control Guidance).

Objective(s):

The project will decommission of 1.1 miles of road for sediment reduction at worksite 1 and 0.5 miles of road for sediment reduction at worksite 2.

Project Description:

Location:

The project is located in southern Mendocino County in the Inman Creek Planning Watershed. To access the project travel to Highway 128 between Booneville and Yorkville then generally west on Fish Rock Rd to the saddle at Squaw Rock. Work site 1 is adjacent to a class I tributary (fish bearing) of Inman creek. The distance from the downstream end of worksite 1 to the mainstem of Inman creek is less than 1,000 feet. Work site 2 is adjacent to a major class II tributary (non-fish bearing) with year round flow. The distance from the downstream end of worksite 2 to the confluence with the north fork of Inman Creek is approximately 7,500 feet. Project coordinates are for Worksite 1 and 2 respectively: 38.8822 N Lat., 123.4328 W Long.; 38.8970 N Lat., 123.4380 W Long.

Project Set Up:

The Conservation Fund(TCF) Personnel, TCF Forester: involved with pre-project development, will be responsible for the writing of the CDFW Lake and Streambed Alteration Agreement (1600 permit) application and provide oversight for CEQA surveys. TCF Forester will serve as project manager to be available or on-site during project implementation, and will provide post project follow up and data collection for final reporting. TCF Personnel, Accounting Staff: involved in budget development, tracking costs, project invoicing and final budget reporting. TCF Personnel, Program Coordinator: involved in grant tracking, project invoicing, annual progress reports and all aspects of final report writing. Subcontractor Pacific Watershed Associates (PWA), Licensed Geologist: will conduct the necessary paleontological investigations as part of the environmental review process required by CEQA, will be on-call during project implementation if questions arise, and will do an onsite final inspection of Project. Subcontractor PWA, Earth Scientist: will assist in the necessary paleontological investigations as part of the environmental review process required by CEQA. Subcontractor Humboldt State University: will conduct the necessary botanical and archaeological investigations as part of the environmental review process required by CEQA. Subcontractor, Licensed Heavy Equipment Subcontractor: Excavator to implement road treatments, Lowbed for equipment moving in and out, and Hand Labor for spreading straw, cutting brush or clearing roads with chainsaw.

Materials:

Straw for erosion control.

Tasks:

Task 1: Contract Oversight & Project Management
The Conservation Fund will conduct contract oversight. All reporting and billing will be pursuant to contract and regulatory guidelines. Upon final execution of the

Grant and prior to receiving a Final Notice to Proceed, TCF will deliver the landowner access agreements, subcontracts, and assure all permits are finalized. TCF Forester will coordinate with PWA to complete paleontological surveys, and coordinate with Humboldt State University to complete botanical and archaeological surveys, as required by CEQA. TCF Accounting Staff and TCF Program Coordinator will process invoices from subcontractors, develop, and submit invoices to the grantor. TCF Forester will administer the project in the field to ensure timeliness, completion, and conformance with restoration and land management goals. TCF Forester will provide direct oversight of project progress. TCF Forester will collect post-monitoring data. TCF Program Coordinator will generate a final report and submit it.

Task 2: Implementation of Proposed Treatment.
TCF Forester will administer the project in the field to ensure timeliness, completion, and conformance with restoration and land management goals and provide project supervision. The Subcontracted Licensed Heavy Equipment Contractor will provide equipment and work under the direction of TCF. Implementation of the proposed treatment includes the following action items:
Action 1: Heavy equipment will be moved in via Lowbed to worksite 1.

Action 2: At worksite 1, the Excavator will be used to decommission 1.1 mile of near stream road and associated crossings.

Action 3: At worksite 2, the Excavator will be used to decommission .5 mile of near stream road and associated crossings.

The following general guidelines apply to road abandonment treatments: Stream crossings shall be sloped back to 2:1 wherever possible or an otherwise stable configuration. Excavated spoils will be stored locally against the road cutbank where it will not deliver sediment. Road surface treatments to minimize long-term chronic erosion and facilitate revegetation will include a combination of one or all of the following measures:
1) Ripping of the road surface with mechanical rippers
2) Excavation of perched fill and unstable sidecast and placement against the truck road cutbank to create an outslope
3) Installation of oversized waterbars to provide road surface drainage.

Action 4: Labor will spread straw bales as erosion control within riparian zones. Equipment will be removed via Lowbed.

Deliverables: Project specific reporting metrics.

Task 1: Contract Oversight & Project Management
Grantor Notification of Lake or Streambed Alteration Agreement (1600) Application with a check for the cost of the 1600 permit. CEQA documentation. Progress Reports will be submitted with each invoice. Annual Reports submitted

by November 15 each year. Final Report accomplishments by Task which contains: general grant information, location of work, project access, landowner's name and address, a description and analysis of the restoration and planning, person hours expended, dates of work and the number of person hours expended, labeled before and after photos of selected restoration activities and techniques, grant dollars spent and contributed and/or in kind services used to complete the project, GIS generated maps of project achievements, a quantified description of the results of the project.

Task 2: Implementation of Proposed Treatment.

a. Report total miles of road treated;
b. Report total acres of upslope area treated;
c. Report for each work site indicate;
   Cubic yards of sediment prevented from entering the stream;
   Miles of road treated for road drainage system improvements;
   Miles of road decommissioned/abandoned;
   Number of upslope stream crossing treated (not for fish passage);
   Number of springs and landslides treated;
   Type and number of upland erosion/sediment control used;
   Scientific names of plant species planted;

Timelines:

Task 1: Contract Oversight & Project Management
06/03/2019 to 03/31/2021

Task 2: Implementation of Proposed Treatment.
06/03/2019 to 03/31/2021

Project time-frame (the season's work window). June 15 – October 31

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual*.

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites that are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Zeni Ridge (3812384) OR Eureka Hill (3812385) OR Cold Spring (3912315) OR Philo (3912314) OR Boonville (3912313) OR Ornbaun Valley (3812383) OR Gube Mountain (3812373) OR McGuire Ridge (3812374) OR Gualala (3812375))

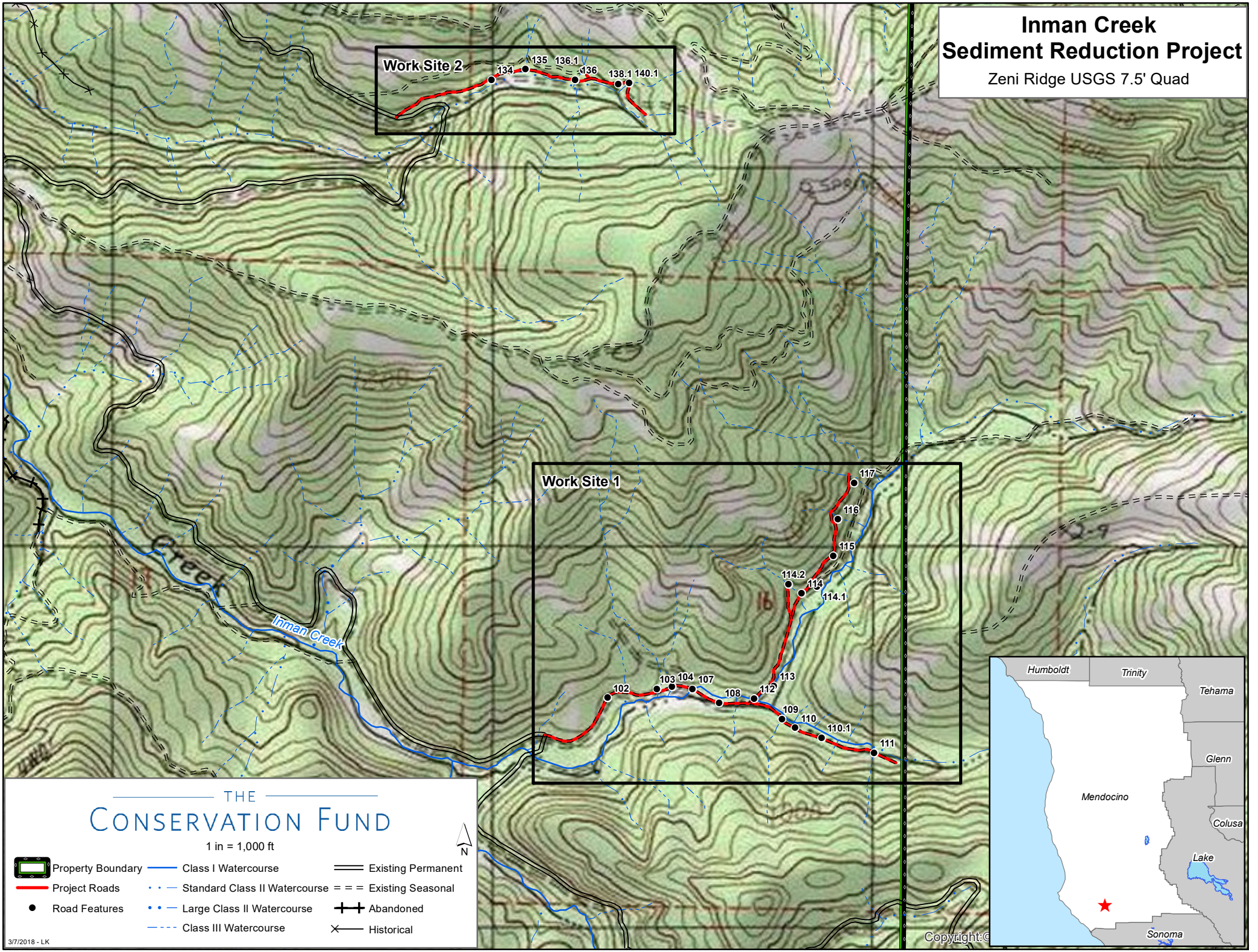
Possible species within the Zeni Ridge quad and surrounding quads for 725697 Inman Creek Sediment Reduction Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Aplodontia rufa nigra Point Arena mountain beaver	AMAFA01011	Endangered	None	G5T1	S1	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Campanula californica swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
Carex californica California sedge	PMCYP032D0	None	None	G5	S2	2B.3
Carex saliniformis deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Cerorhinca monocerata rhinoceros auklet	ABNNN11010	None	None	G5	S3	WL
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cuscuta pacifica var. papillata Mendocino dodder	PDCUS011A2	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron supplex supple daisy	PDAST3M3Z0	None	None	G2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Fratercula cirrhata tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
Fritillaria roderickii Roderick's fritillary	PMLIL0V0M0	None	Endangered	G1Q	S1	1B.1
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Glyceria grandis American manna grass	PMPOA2Y080	None	None	G5	S3	2B.3
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helminthoglypta arrosa pomoensis Pomo bronze shoulderband	IMGASC2033	None	None	G2G3T1	S1	
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Horkelia tenuiloba thin-lobed horkelia	PDROS0W0E0	None	None	G2	S2	1B.2
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasthenia californica ssp. bakeri Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Lavinia symmetricus parvipinnis Gualala roach	AFCJB19025	None	None	G4T1T2	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lilium maritimum coast lily	PMLIL1A0C0	None	None	G2	S2	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Potamogeton epihydrus Nuttall's ribbon-leaved pondweed	PMPOT03080	None	None	G5	S2S3	2B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. purpurea purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
Speyeria zerene behrensii Behren's silverspot butterfly	IILEPJ6088	Endangered	None	G5T1	S1	
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
Trifolium trichocalyx Monterey clover	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 57


Inman Creek
Sediment Reduction Project
Zeni Ridge USGS 7.5' Quad
Work Site 2
134
135
136.1
136
138.1
140.1
Work Site 1
117
116
115
114.2
114
114.1
113
112
107
108
104
103
102
109
110
110.1
111
Inman Creek
THE
CONSERVATION FUND
1 in = 1,000 ft
N
Property Boundary
Project Roads
Road Features
Class I Watercourse
Standard Class II Watercourse
Large Class II Watercourse
Class III Watercourse
Existing Permanent
Existing Seasonal
Abandoned
Historical
3/7/2018 - LK
Humboldt
Trinity
Tehama
Glenn
Mendocino
Colusa
Lake
Sonoma
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Introduction:

Trout Unlimited, Inc. (TU) will replace two culverted stream crossings on Gulch C. This project is necessary to address watershed plan and recovery actions that target the removal of fish passage barriers in the Noyo River Watershed. Coho Salmon (*Oncorhynchus kisutch*) in the Noyo River watershed are identified in the *Recovery Strategy for California Coho Salmon* (California Department of Fish and Game - CDFG 2004) as a key population for recovery. *The Recovery Plan for the Evolutionarily Significant Unit of Central California Coast Coho Salmon* lists the Action Step #NoR-CCC-6.1.1.1 "Assess and restore passage at barriers associated with the California Western Railroad" (National Oceanic and Atmospheric Administration Fisheries 2012).

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Final Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume II, Part XII (CDFG 2009) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objectives:

The objectives of the project are to restore access for salmonids to 1.3 miles of habitat upstream of two barriers and to improve the geomorphic function of Gulch C at the confluence with the Noyo River. This will be accomplished by replacing both culverts with new crossing structures. These structures were designed based on current standards, will meet fish passage requirements, and will convey the 100-year flood with associated sediment and large wood.

Project Description:

Location:

Gulch C is a tributary to the Noyo River, which drains to the Pacific Ocean in Mendocino County, California. Gulch C's legal description at the confluence with the Noyo River is T18N R15W S12 on the United States Geologic Survey Burbeck 7.5-minute quadrangle. Project coordinates are: 39.43111 latitude, -123.47477 longitude at the California Railroad crossing on Gulch C.

Project Set Up:

The TU North Coast Coho Project (NCCP) Project Director, Anna Halligan will be available on a full-time basis to Manage the project by providing Agreement oversight and project coordination. NCCP Project Manager, Elizabeth Mackey may assist with some aspects of grant administration and project coordination. In addition to the Project Manager, the Grants Administrator will assist with

processing invoices and vendor payments, grant tracking, and reporting. TU staff will establish subcontract agreements with Michael Love and Associates, Mendocino Railway, Ross Taylor and Associates, Humboldt State University Cultural Resources Facility, and Pacific Watershed Associates. Mendocino Railway will subcontract with AECOM and the subcontractor selected for Construction Services.

Mendocino Railway (MR) - The MR will take the lead on advertising, award, and administration of all rail related construction activities. MR will work closely with AECOM to lead Construction Services subcontractor selection, construction management and inspection, and provide project close-out tasks. MR will be responsible for submitting reimbursement requests to TU, and maintaining standard financial accounts, documents, and records of the project.

Soper-Wheeler Company (SWC) - SWC will provide access to the project site and will contribute the following materials to the project: rootwads, logs, trees/planting materials, and willow stakes. SWC conducts annual Northern Spotted Owl (*Strix occidentalis caurina*) surveys, and will provide annual results prior to implementation. SWC will also take the lead on guiding clearing and revegetation/planting activities.

Construction Services (CS) - With assistance from subcontractors, select a qualified construction firm with experience in construction of track support structures, specifically at sites with difficult access, to assist the MR with the project.. Based on preliminary inquiry the following firms may be considered during subcontractor selection Granite Construction, Inc., Rege Construction, Inc., Steelhead Constructors, and, Ken's Water Tender, Inc.

AECOM - THE AECOM Project Manager/Engineer of Record will oversee the preparation of the Request for Qualifications (RFQ), selection of the CS subcontractor, review of the potential CS subcontractor execution plan and subcontractor submittals, and provide support to the field inspector during construction as questions arise. The AECOM Staff En gineer and AECOM Senior Computer Aided Design Tech will update the plans and specifications as needed, prepare the RFQ package, and assist with review of CS subcontractor submittals. The AECOM Geotechnical Engineer will review potential CS subcontractor's qualifications, provide review of submittals, and provide onsite inspection of soil conditions prior to placement of the arch footings and mechanically stabilized earth wall. The AECOM Field Inspector will be onsite throughout construction to ensure adherence to the design plans, to track progress schedules, and to review CS subontractor invoices.

Michael Love and Associates - MLA'S Principal Engineer will assist AECOM with the CS subcontractor selection process, including reviewing proposals and being

part of the interview panel, will attend a pre-construction meeting and visit the construction site during key times when channel reconstruction is occurring, and will be available to respond to questions and review submittals during construction. MLA'S Project Engineer will assist with the CS subcontractor selection and updates to MLA plan sheets and notes; and will provide onsite construction observation during building of the stream channel through the new crossing. MLA staff will conduct the post-construction fish passage monitoring and preparation of the monitoring memorandum as part of project close-out.

Ross Taylor and Associates (RTA) - Working in close coordination with the Grantor Project Manager and other agency staff, RTA will provide fisheries/amphibian relocation services. This includes coordination with state and federal fishery agencies, coordination with CS subcontractor responsible for water management, relocation of fish and amphibians, and completion of required state and federal reporting.

Humboldt State University Cultural Resources Facility will provide the pre- project cultural resource and botanical resource investigation required to comply with the California Environmental Quality Act and its guidelines. A report detailing the regional prehistory, historic background, tribal consultations, botanical resources, study methods, findings and recommendations will be prepared.

Pacific Watershed Associates (PWA) - PWA qualified staff will assess potential paleontological resources.

Materials: Materials necessary for this project include:

External printing costs for reports and permits as well as final full-size designs for the field; postage; and office and field supplies.

Provided by subcontractors: Total station rental, current meter, concrete sampling/testing supplies and compaction tests, water management supplies, Super Cor plate circular pipe, trackbed subgrade reinforcement; class II aggregate base; geosynthetic fabric, Kernan bridge span, metal beam guard railing with steel post and terminal units, geo-synthetic reinforced earth abutment, rock slope protection (RSP) bridge, RSP Fabric, channel grade control rock, streambed material, coir matting; encapsulated soil lifts, willow stakes, logs, rootwads, trees/plants, and heavy equipment.

Provided by RTA. Electrofishing, 3" centrifugal pump (rental), and field equipment.

Tasks: The following list of tasks will be accomplished to complete the goals:

Task 1. Grant Administration:

Provide all subcontracting oversight and Agreement administration as pursuant to Agreement and regulatory guidelines. This includes but is not limited to obtaining permits, securing Agreement, Final Landowner Access Agreement, and subcontracts; scheduling, invoicing, reporting and agency and landowner communications. Upon final execution of the Agreement and prior to receiving a Final Notice to Proceed, deliver the Final Landowner Access Agreements, subcontracts, and ensure all permits are finalized. Required: Field/office supplies, permit fees, postage, and travel expenses.

Task 2. CS Subcontractor Selection:

With assistance from AECOM, MR, and MLA select a CS subcontractor to execute the works. The qualification based process will ensure that the selected company has the skills, personnel and understanding of the specific constraints of this project necessary to successfully execute the required works within the available timeframe. Procure CS through selection of the most highly qualified subcontractor and negotiation of a mutually acceptable subcontract. Complete the CS subcontractor selection process and subcontract negotiations to facilitate construction of the work at the earliest opportunity issuing the Notice-to-Proceed for the CS subcontract effective December 5, 2019. The first step will be to solicit interest from a select set of contractors located within the project geographic area and skilled in the crafts required for the anticipated construction activities. A list has been compiled based on experience with the railroad and/or the manufacturer of the track support structure systems being used [SuperCor]. The select set of contractors listed in the draft RFQ and others that may be identified prior to the issuance of the RFQ, will be required to produce verifiable evidence of their qualifications and experience in order to proceed to the next step in the process. With a panel made up of personnel from MR and other subcontractors, review the Statements of Qualification.

Following receipt of the responses, interviews will be conducted with one or more respondents prior to deciding on which firm(s) will proceed to the next step in the process. Once the successful firm(s) has been identified, MR will enter into a Preconstruction Services Agreement to produce a Project Execution Plan [PEP] demonstrating the firms' understanding of the project and how it would execute the work involved within both the temporal and environmental constraints that govern the project. Based on MR’s evaluation of the information provided by the firms, MR will select the CS subcontractor it considers the most highly qualified to deliver the project. The selected firm will then be requested to enter into negotiations for a subcontract for CS. The selected CS subcontractor will be required to prepare a cost estimate for the works described in their PEP. The estimate will be reviewed in detail with the schedule. Once an agreement is

reached on the cost and schedule, a subcontract will be signed and a subcontract Notice to Proceed will be issued. MLA will review draft subcontract documents prepared by AECOM, will be available to attend an on-site pre-selection meeting with perspective CS subcontractors to describe the design intent of the channel/fish passage improvements, and assist AECOM with preparing responses to questions and addendums when appropriate. MLA will be available to review subcontractor provided materials, such as construction estimates/bids and qualifications, and will provide recommendations to AECOM regarding selection of a preferred CS subcontractor. MLA will prepare a conformance set of construction drawings prior to onset of construction. Required: Field/office supplies, postage, and travel expenses.

Task 3. Construction and Engineering Oversight:

Task 3.1. Pre-Construction Surveys: A cultural and botanical resource investigation will be completed to comply with the California Environmental Quality Act and its guidelines. This will be accomplished by:
(1)Identifying and recording significant cultural/botanical resources within the project area,
(2)Offering a preliminary significance evaluation of the identified cultural/botanical resources,
(3)Assessing the potential impacts to cultural/botanical resources resulting from the implementation of proposed project activities, and
(4)Offering recommendations designed to protect resource integrity, as warranted.

Pre-field research will include conducting background and archival research at local libraries, historical societies, and any other repositories that might contain information about the project area. The field survey will consist of an intensive pedestrian reconnaissance (10 meter transects) of the project locations. A report detailing the regional prehistory, ethnographic/historic background, Native American consultation, botanical resources onsite, study methods, findings and recommendations will be prepared. Maps will be provided showing the cultural resources survey areas, any archaeological/botanical site locations, and historic imagery. The final report will be supplied to TU and the Grantor.

Qualified staff at PWA will assess potential paleontological resources. Additionally, if required, TU will work with SWC to collect northern spotted owl activity data prior to the initiation of construction activities. Required: Northwest Information Center Records Search, Quad Rental, Field Supplies, Mileage and other travel expenses.

Task 3.2. Construction Oversight: After MR subcontracts with a CS subcontractor, a kickoff meeting will be held to affirm the schedule and content of

the approved project execution plan. The CS will be required to submit quality control and health and safety plans. Coordination with the Grantor's Project Manager will occur, well in advance of construction, to establish common expectations for the implementation of the project and ensure that construction goes off with a minimum of delay. AECOM will coordinate construction of the project; provide daily construction management, oversight and inspection, and resolution of contractual issues. Construction observation will be provided by a qualified construction inspector on a full-time basis during the term of the field work. The project geotechnical engineer will visit the work at the beginning of the foundation preparation and during the placement of the engineered fill within the required limits of the arch structure. Compaction testing will be performed at reasonable intervals to confirm compliance with the specifications.

MLA Project Engineer will perform construction observation during the construction of the stream simulation channel bed and banks within the culvert crossing, and the 320 feet of restored channel that will contain 8 log step grade control features and 4 root wad structures. MLA will independently check the constructed grades of the channel bed and banklines during construction. The construction of the channel grade control structures and associated rock work will take up to three weeks to complete. MLA will be on-site for up to 15 full days during channel construction to ensure construction methods and results meet the design intent. When present on site, MLA Project Engineer will provide AECOM with written construction records that indicate what was accomplished, directions provided to the CS subcontractor and discussions of any deviations from the design plans and specifications with a rationale for the deviation. During construction the MLA's Principal Engineer will be tasked with providing consultation and design adjustments and responding to requests for information.

Construction may take approximately 16-19 weeks depending on the project start date. Construction activities may require dewatering and fish exclusion/relocation. Construction activities will include clearing and grubbing; track removal and reconstruction; excavation; removing the existing culverts; installing the new structures; channel and bank restoration; and site restoration (e.g. revegetation and erosion control).

RTA will perform fish/amphibian relocation and will secure any necessary permits that are required. Additionally, RTA will conduct any preconstruction surveys required as a condition of any secured permits. Required: Field supplies including total station rental and current meter, and travel expenses.

Task 4. Post Construction Close Out and Monitoring:

Upon completion of the construction work, MLA Project Engineer will perform a topographic survey of the channel and stream bed in the culvert. This survey will

establish a baseline for future monitoring and evaluation of the grade control structures and channel bed. MLA Project Engineer and MLA Staff Engineer will also conduct post-construction monitoring during two life stage design flows, following construction and prior to the end of Agreement to evaluate fish passage conditions through the stream simulation crossing and document channel adjustments. The monitoring will occur at a flow that is within the fish migration flow range. Thalweg elevation, water depths, and water velocities will be surveyed within the stream simulation channel and within an adjacent reference reach. The measurements are intended to determine if the stream simulation channel produces similar hydraulic conditions as the reference reach. Data collection for flow measurement will require a full day. MLA Project Engineer and MLA Principal Engineer will prepare a brief memorandum summarizing the methods and results of the post-construction fish passage monitoring.

AECOM will prepare construction oversight documentation files and deliver them to MR and TU. Project drawings will be updated to reflect any material change that occurred during the implementation of the design. Required: Field supplies including total station rental and current meter, and travel expenses.

Task 5. Reporting:

The Project Manager will write and deliver progress reports for invoicing, Annual Report(s), and Final Report to the Grantor's Project Manager. A draft final report will be submitted one month prior to the Agreement termination date. The final completion report will contain: (1) general grant information, (2) location of work, (3) project access, (4) participating landowner's name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including an As-Built Memo (8) labeled before and after photos of selected restoration activities and techniques, (9) grant dollars and cost share dollars spent and contributed and/or in-kind services used to complete the project, and (10) Geographic Information System generated maps of project achievements.

Deliverables:

Task 1 Grant Administration. Final Landowner Access Agreements, copies of Subcontracts, Copies of Permits, and Progress and Final Reports.

Task 2 Contractor Selection. Consultation meeting with perspective subcontractors Meeting Notes in digital portable document format (PDF) format (1); Construction Subcontract and Subcontract Notice to Proceed in digital PDF format (1).

Task 3 Construction and Engineering Oversight. Final Report for Cultural, Botanical, and Paleontological Resources (PDF); Kick off Meeting Notes in digital PDF Format (1).

Task 4 Post Construction Close Out and Monitoring. As-Built Survey and Memorandum in digital PDF format and hard copy (3); Technical memorandum summarizing the methods, results, and findings from the post project monitoring effort in digital PDF format and hard copy (3).

Task 5 Reporting. Progress Reports (PDF) Annual Reports (PDF) Final Report (cd and hard copy (1)).

Timelines:

Task 1 Grant Administration. June 01, 2019 to March 31, 2022.

Task 2 Contractor Selection. June 03, 2019 to December 31, 2019.

Task 3 Construction & Engineering Oversight. June 3, 2019 to October 31, 2020.

Task 4 Post Construction Close Out & Monitoring. November 2, 2020 to February 28, 2022.

Task 5 Reporting. June 3, 2019 to March 31, 2022.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the

California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Wildlife (CDFW), for adult and juvenile salmonid fish passage. The project will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and criteria for fish passage as described in Volume II, Part IX, of the *California Salmonid Stream Habitat Restoration Manual*. The engineered plans for the bridge (culvert) installation shall be visually reviewed and authorized by NOAA Fisheries or California Department of Fish and Wildlife engineers prior to commencement of work.

All habitat improvements will follow techniques described in the *California Salmonid*

Stream Habitat Restoration Manual, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Burbeck (3912344) OR Northspur (3912345) OR Sherwood Peak (3912355) OR Longvale (3912354) OR Willis Ridge (3912353) OR Willits (3912343) OR Laughlin Range (3912333) OR Greenough Ridge (3912334) OR Comptche (3912335))

Possible species within the Burbeck quad and surrounding quads for 725700 Gulch C Coho Salmon Fish Passage Improvement Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Alisma gramineum grass alisma	PMALI01010	None	None	G5	S3	2B.2
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Blennosperma bakeri Sonoma sunshine	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brasenia schreberi watershield	PDCAB01010	None	None	G5	S3	2B.3
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Fritillaria roderickii Roderick's fritillary	PMLIL0V0M0	None	Endangered	G1Q	S1	1B.1
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hesperolinon adenophyllum glandular western flax	PDLIN01010	None	None	G2G3	S2S3	1B.2
Horkelia tenuiloba thin-lobed horkelia	PDROS0W0E0	None	None	G2	S2	1B.2
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Limnanthes bakeri Baker's meadowfoam	PDLIM02020	None	Rare	G1	S1	1B.1
Lupinus milo-bakeri Milo Baker's lupine	PDFAB2B4E0	None	Threatened	G1Q	S1	1B.1
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Potamogeton epihydrus Nuttall's ribbon-leaved pondweed	PMPOT03080	None	None	G5	S2S3	2B.2
Ramalina thrausta angel's hair lichen	NLLEC3S340	None	None	G5	S2?	2B.1
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Speyeria zerene behrensii Behren's silverspot butterfly	IILEPJ6088	Endangered	None	G5T1	S1	
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC

Selected Elements by Scientific Name

California Department of Fish and Wildlife

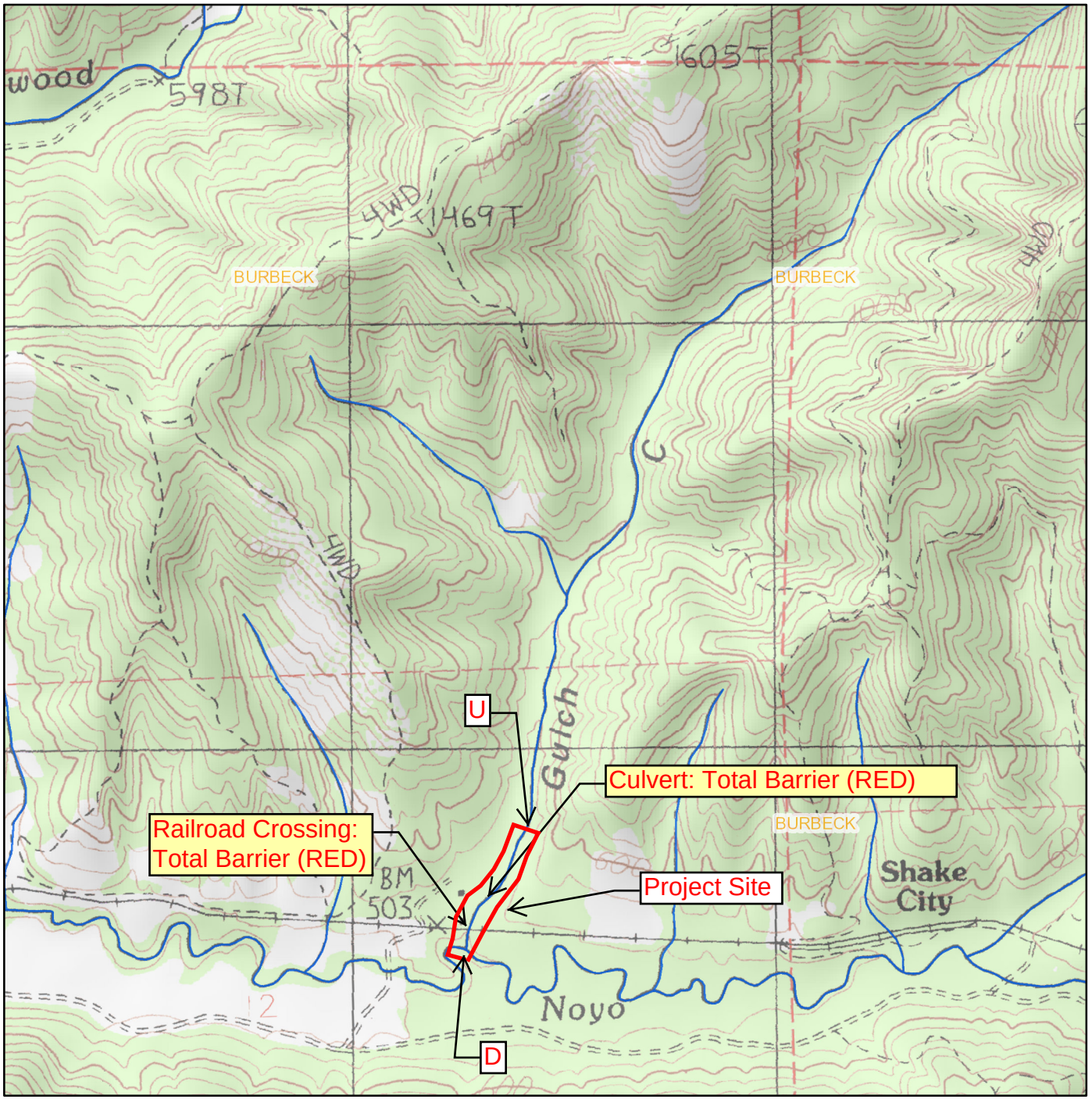
California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
Valley Oak Woodland Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 43

Topographic Map: Gulch C Coho Salmon Fish Passage Improvement Project

USGS Burbeck Quad



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March 21, 2015

Applicant: Trout Unlimited

Author: L.Bolton

Introduction:

Trout Unlimited, Inc. (Grantee) will implement the Dutch Charlie Creek Sediment Reduction and Fisheries Recovery Project. The purpose of this project is to prevent erosion and minimize future sedimentation to Dutch Charlie Creek, which provides critical habitat for Coho Salmon (*Oncorhynchus kisutch*). The project is necessary because salmonid habitat conditions in Dutch Charlie Creek are degraded due to past industrial timber production, which has left a significant network of roads and skid trails in the watersheds and significant disturbance within the stream network.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Volume II, Part X).

Objective(s):

This project will result in the permanent removal of 7.23 miles of streamside road which represents the vast majority of the streamside road under Lyme Timber Company management in the Dutch Charlie Watershed. It will reduce future impacts from the road system to the watershed by eliminating approximately 11,304 cubic yards of future potential sediment from the decommissioned road system. Large wood from the decommissioned roads will be placed in the adjacent stream channels.

Project Description:

Location:

The Dutch Charlie Creek watershed is located east of Branscomb, California in the upper South Fork Eel River Watershed. Specifically, the proposed project includes road removal in 9 tributaries located throughout the watershed including Eagle Creek and Thompson Creek. The first tributary proposed for road removal intersects the mainstem approximately 1 mile upstream of its confluence with the South Fork Eel River. From there streamside road removal will occur in every significant tributary intersecting Dutch Charlie Creek over the next 2 miles. Project coordinates are 39.681204 North latitude and 123.717211 West longitude.

Project Set Up:

There are three fundamental tasks that need to be completed to accomplish this project: (A) project administration, (B) implementation of the road decommissioning, and (C) final reporting. The Trout Unlimited Project Manager will provide all contracting oversight and project administration including but not

limited to: obtaining permits; securing contracts (grantors, subcontractors, landowner, etc.); scheduling; implementation oversight; invoicing and reporting; and agency and landowner communications. This task will occur throughout the life of the project. Elizabeth Mackey will be available on a full time basis to manage this project. Anna Halligan may also assist with some aspects of grant management, administration, and project coordination. In addition to the Trout Unlimited (TU) Project Manager, the TU Conservation Grants Coordinator will assist in processing invoices and vendor payments, grant tracking, and reporting. The implementation of the road decommissioning will be completed by Pacific Watershed Associates (construction manager). Lyme Redwood Forest Company (Lyme) will take the lead on contracting with a qualified heavy equipment operator for the proposed work. PWA staff will be on-site to layout the proposed heavy equipment construction treatments in the project area. PWA professionals under the responsible charge of Engineering Geologist, Thomas H. Leroy (CEG #2593), will provide project and construction oversight and QA/QC of project products. The PWA Project Manager (Staff Scientist) will manage project layout, construction oversight, monitoring, and reporting. PWA Technical Staff will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring, and data entry. PWA GIS staff will provide field layout maps, digitize layout and as-built project data, and develop report maps. PWA clerical staff will track and monitor hours and create invoices during the project. The PWA Biologist will manage all amphibian monitoring and mitigation. A PWA Paleontologist will employed to survey for fossil resources as part of CEQA. All PWA work elements will be supervised by a PWA Principal. Revegetation will be conducted by Martin Maskill, revegetation specialist. Ross Taylor Associates (RTA) will conduct Electrofishing and fish exclusion if required. The final reporting of the project will be done by the PWA Engineering Geologist and Staff Scientist closely involved in the project, with assistance and oversight from Trout Unlimited's Project Manager. The final summary report will include project accomplishments such as the final project budget, photographic monitoring, as-built road logs, and other project information as required by the grant contract.

Materials: The project includes the following materials:

- Trees (planting): Approximately 798 trees will be planted by specialized laborers.
- Straw: Approximately 98 bales of straw mulch will be used to protect and promote growth of native seedlings used in re-planting areas disturbed by restoration activities but not covered by tree slash. Straw will also be used for short term erosion control.
- Seed: Approximately 68 pounds of native seed will be used to re-plant bare earth areas and reduce surface erosion in areas that have been disturbed by restoration activities.

- Debris/Trash Pump: Implementation of the proposed project is estimated to require the use/rental of one pump for most of the work season. Pumps are used during construction to pump clean stream flow around the construction features and manage turbidity.
- Pressure washer: A (hot water) pressure washer is used to decontaminate heavy equipment between each use in different waterbodies and watersheds to prevent the spread of invasive species as per the equipment decontamination methods stated in the attached decontamination protocol.
- Rip-rap: Approximately 220 cubic yards of clean rip-rap or large wood will be used to stabilize locations that are prone to erosion or failure. It will be used to prevent the upstream migration of headcuts or other erosional features and to prevent sediment delivery to streams.
- Culvert: The project will require 300 feet of 6 foot flex pipe as part of the stream dewatering to assure water quality protection in active construction areas.
- Gasoline: Implementation of the proposed project will require the use of 300 gallons of gasoline and 17,512 gallons of diesel for operating pick-up trucks, pumps and heavy equipment that will be used to remove the road system.
- Miscellaneous field and office supplies: Many small field and office supplies will be used to complete the project including: photographic supplies, flagging, wood stakes, field maps, mylar overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, and postage.
- Contractor Mileage: One-way contractor mileage is required for transportation costs to get the contractor (heavy equipment operators) to the project site on a daily basis. Mileage and per diem (sub-contractor): PWA staff require mileage, lodging ($90 per night) and per diem to accommodate travel needs to visit the site and meet with partners. Mileage (TU): Trout Unlimited Project Manager requires mileage reimbursement for five round trips to the project site.
- Field/Office Supplies (TU/PWA): Supplies that will be required for TU and PWA staff members to assist subcontractors with project site monitoring and assessments and pre-construction layout, as well as materials needed for TU to complete grant administration tasks such as hosting meetings, scheduling, and managing budgets. These may include (but are not limited to): flagging, measuring tapes, wooden stakes, rite-in-the-rain paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies.
- Printing/Duplication (TU/PWA): Supplies that are required for printing items related to grant and project administration, such as reports, invoices, meeting handouts, and maps. These items may include (but are not limited to): paper, ink, and toner. This item also includes costs associated

with external printing or copying services that may be required to produce reporting and meeting materials.

- Postage (TU): This includes supplies and costs for sending or shipping grant administration items such as reports, permit applications, invoices, and contracts.

Tasks: The Grantee will complete the following tasks:

Task 1. Grant Oversight: Grant oversight will be conducted by Grantee. All reporting and billing will be pursuant to grant and regulatory guidelines. Upon final execution of the Grant and prior to receiving a Final Notice to Proceed, Grantee shall deliver the following items to the Grantor Project Manager identified in Section 6.04 – Contacts:

- Final Landowner Access Agreement as per the requirements of the 2018 Proposal Solicitation Notice, Appendix E, Funding Approval Submissions. Written permission must be obtained from landowner for access to perform grant work.
- Subcontractor Agreements. If a subcontractor is to be used, then a written copy of the sub agreement(s) shall be submitted to the Grantor Project Manager. The subcontract shall include specific language which establishes the rights of the auditors of the State to examine the records of the subcontractor relative to the services and materials provided under the grant.

A Preliminary Notice to Proceed can be requested from the Grantor Project Manager, if necessary, to prepare for project implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement).

A Final Notice to Proceed will be delivered to the Grantee when Final Landowner Access Agreement and subcontracts are delivered to Grantor Project Manager, and when all required permits have been finalized (e.g., 401 State Water Quality Control Board Permit, Streambed Alteration Agreement).

The Grantee shall notify the Grantor Project Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. Project Implementation:

Task 2.01. Road Decommissioning: Decommission 72 sites and approximately 7.23 miles of road with the potential to deliver sediment to streams. Treat 14 potential or existing fill slope landslide features saving approximately 3,025 cubic yards of future sediment delivery. Treat 49 stream crossings to save approximately

5,597 cubic yards of road-related sediment from delivery to local streams. Treat 9 other sites such as springs, bank erosion, and skid runoff sites, saving approximately 984 cubic yards of sediment. The following road decommissioning treatments will be implemented where appropriate:

- Excavation of in-place stream crossings at locations where roads or landings were built across stream channels. This includes complete excavation of the fill, including the culvert or Humboldt log crossing so the original stream bed and side slopes are exhumed. A stream crossing excavation includes removing the culvert and the underlying and the adjacent fill material. Complete excavation of stream crossing fills, includes 100 year flood channel bottom widths and 2:1 or otherwise stable side slopes. When possible the excavated spoil will be stored at nearby stable locations where it will not erode. If there is a limited amount of stable storage locations at the excavation site the crossing fill material will be hauled off-site for storage.

- Road surface treatments: 1) ripping of the surface of the road or landing using mechanical rippers to reduce surface runoff and improve revegetation; 2) in-place outsloping or the excavation of unstable side cast material that could fail and deliver sediment to a stream along the outside edge of a road prism or landing and the replacement of the spoil on the roadbed against the corresponding adjacent cutbank, or in close proximity of the site; 3) exported out-sloping which involves not placing the material against the cutbank so the material is end hauled to a spoil disposal site; 4) installation of cross drains or deep water bars at 50, 75, 100 or 200 foot intervals or as necessary at springs and seeps to disperse road surface runoff. The cross road drains provide road surface drainage and prevent the collection of concentrated runoff on the former roadbed.

Task 2.02. Riparian Planting: Plant redwood *(Sequoia sempervirens)* in disturbed areas of the project.

Task 2.03. Erosion Control: Mulching and seeding will take place as features are completed to avoid unforeseen erosion. Seeding and mulching will take place on all exposed soils which may deliver sediment to a stream. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years.

Woody debris will be concentrated on finished slopes adjacent to stream crossings.

Task 3. Post-Project Data and Photo Collection: Following implementation, post-project photos will be taken and metrics shall be collected which satisfy the Grant Agreement Annual Progress Report(s) and Final Report.

Task 4. Reporting: Write and deliver progress reports for invoicing, Annual Progress Report(s), and a Final Report to Grantor Project Manager.

Deliverables:

The following items will be considered deliverables and shall be delivered during the life of this grant:

- Final Landowner Access Agreements
- Grantor Notification of Lake or Streambed Alteration Application with a check for the cost of the 1600 permit
- As-built Road Logs for permanent road decommissioning of 7.23 mi of inner gorge and streamside riparian road in Dutch Charlie Creek watershed
- Direct treatment of 72 site specific erosional features along the decommission road alignment; prevention of 11,304 cubic yards of anthropogenic related sediment from entering the Moody stream system
- Road Logs and final Performance measures to be included in the Final Report
- Progress Report submitted with each invoice
- Annual Report, November 15
- Final Report

The project is expected to deliver the following quantitative results:

Miles of road treated (total)	7.23 miles
Acres of upslope area treated (total)	21.7 acres

Miles of road decommissioned/abandoned	7.23 miles
Type(s) of upland erosion and sediment control	Road decommissioning
Cubic yards of sediment prevented from entering the stream	11,304 cubic yards
Number of stream crossings treated	49

Timelines:

Project will be completed according to the following timeline:

- Task 1: Administer and manage the project throughout the entirety of the agreement term June 2019 to February 28, 2021.
- Task 2: Project implementation from June 2019 to February 28, 2021.
- Task 3: Post-construction data collection. Post-treatment data collection, road logs and maps showing as built road conditions, and photographic monitoring will be completed to fulfill reporting requirements October 2019 to February 2021.
- Task 4: Reporting. Data analysis and report writing October 2019 to February 2021.
- Final Reporting: The implementation report will be completed and submitted no later than February 28, 2021.

If unable to complete the approved project within the time frame, an amendment for a time extension may be requested following Section 5.10 – Amendments, and if funding source(s) are available for the requested time extension.

November 15 of each year of implementation, post-project description, photos and quantitative metrics shall be delivered to the Grantor Project Manager in an Annual Report, following the guidelines presented in Section 7.01 - Progress Reports.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual

project start and end dates, within this timeframe, are at the discretion of the Grantor.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and oversee the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.
- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible.
- All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- The Grantee will provide fish relocation data to the Grantor Project Manager on a form provided by the Grantor.
- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual.*

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished

slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites which are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Lincoln Ridge (3912366) OR Westport (3912367) OR Hales Grove (3912377) OR Leggett (3912376) OR Tan Oak Park (3912375) OR Cahto Peak (3912365) OR Sherwood Peak (3912355) OR Dutchmans Knoll (3912356) OR Inglenook (3912357))

Possible species within the Lincoln Ridge quad and surrounding quads for 725708 Dutch Charlie Creek Sediment Reduction and Fisheries Recovery Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Alisma gramineum grass alisma	PMALI01010	None	None	G5	S3	2B.2
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos manzanita ssp. elegans Konocti manzanita	PDERI04271	None	None	G5T3	S3	1B.3
Arctostaphylos stanfordiana ssp. raichei Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Brasenia schreberi watershield	PDCAB01010	None	None	G5	S3	2B.3
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2

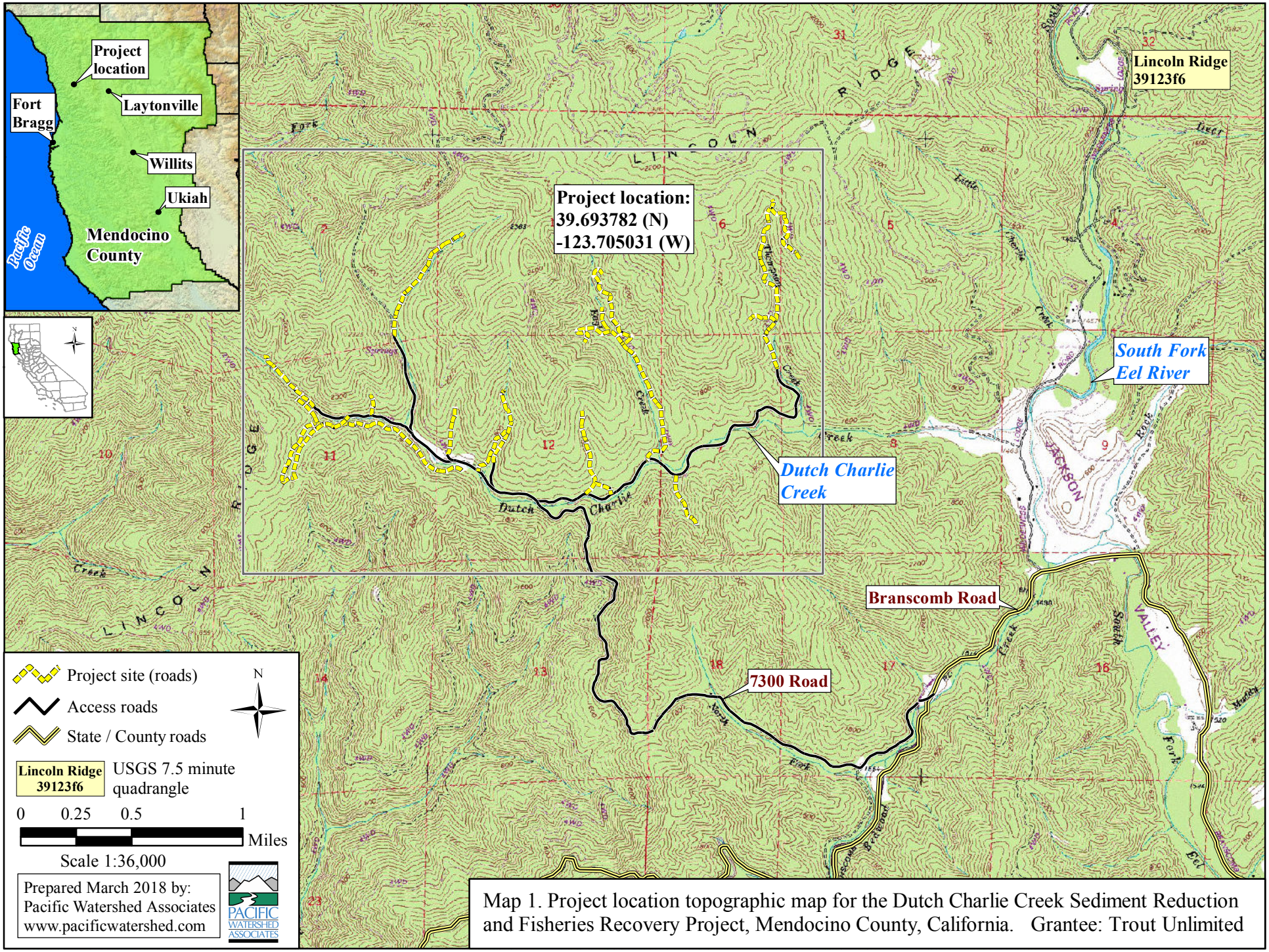
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Campanula californica swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex saliniformis deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
Carex viridula ssp. viridula green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chorizanthe howellii Howell's spineflower	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Collinsia corymbosa round-headed Chinese-houses	PDSCR0H060	None	None	G1	S1	1B.2
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum kelloggii Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fen Fen	CTT51200CA	None	None	G2	S1.2	
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Grand Fir Forest Grand Fir Forest	CTT82120CA	None	None	G1	S1.1	
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia californica ssp. bakeri Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lilium maritimum coast lily	PMLIL1A0C0	None	None	G2	S2	1B.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
North Central Coast Fall-Run Steelhead Stream North Central Coast Fall-Run Steelhead Stream	CARA2631CA	None	None	GNR	SNR	
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Noyo intersessa Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Phacelia insularis var. continentis North Coast phacelia	PDHYD0C2B1	None	None	G2T2	S2	1B.2
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Potamogeton epihydrus Nuttall's ribbon-leaved pondweed	PMPOT03080	None	None	G5	S2S3	2B.2
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Rhynchospora alba white beaked-rush	PMCYP0N010	None	None	G5	S2	2B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. purpurea purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
Silene campanulata ssp. campanulata Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2

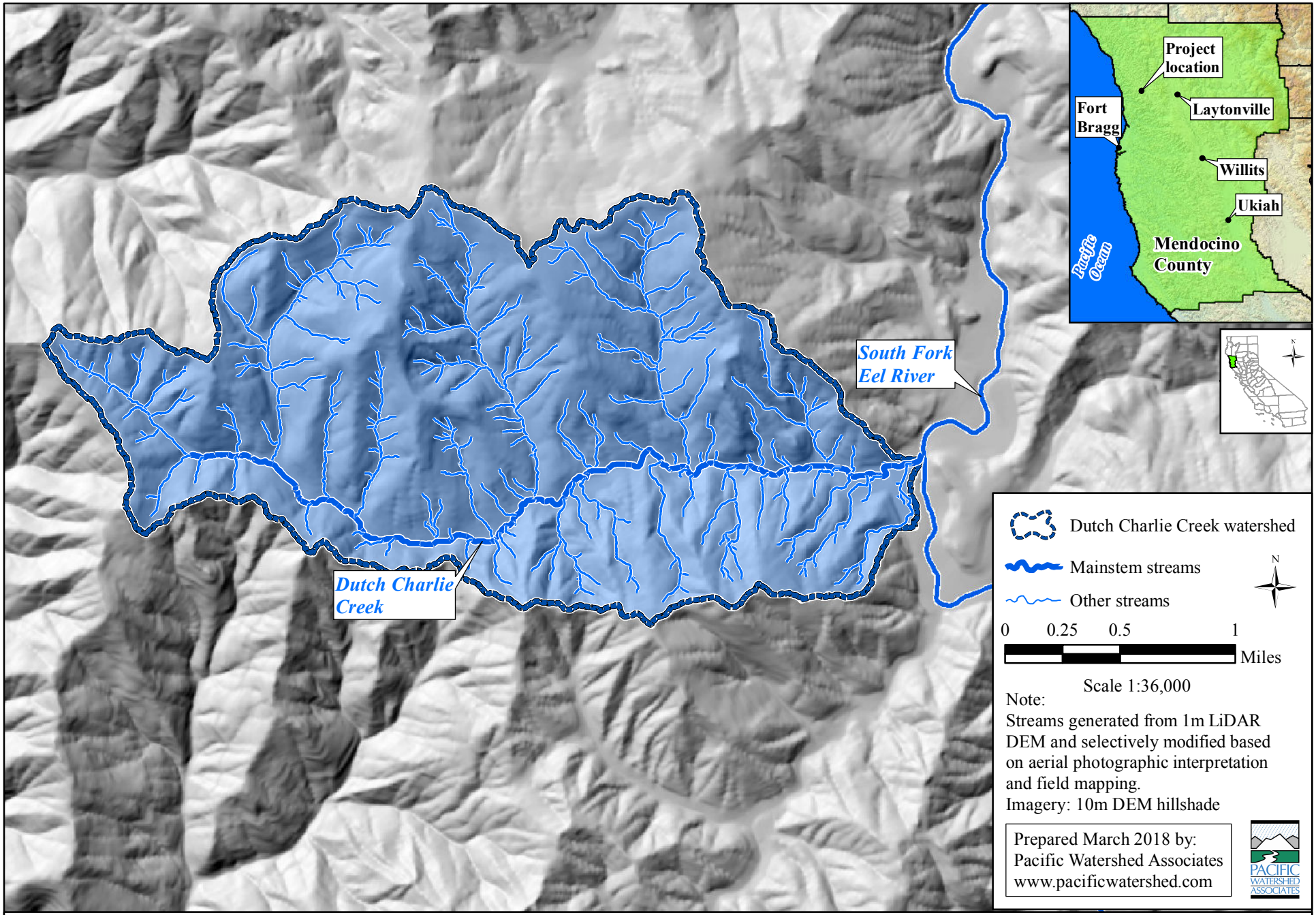
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 83



Map 1. Project location topographic map for the Dutch Charlie Creek Sediment Reduction and Fisheries Recovery Project, Mendocino County, California. Grantee: Trout Unlimited

Grantee: Trout Unlimited



Map 2. Watershed map for the Dutch Charlie Creek Sediment Reduction and Fisheries Recovery Project, Mendocino County, California. Grantee: Trout Unlimited

Moody Creek Sediment Reduction and Coho Habitat Enhancement Project 2018

Introduction:

Trout Unlimited, Inc. (Grantee) will decommission 3.08 miles of riparian road along Moody Creek including 8 potential fill failures, 15 stream crossings, and 7 other features to include springs, swales, bank erosion, and road runoff/hillslope gully sites, preventing approximately 11,370 cubic yards of sediment from delivery while treating approximately 4.43 acres of upslope area.

This project is necessary because the Moody Creek Watershed supports populations of anadromous salmonids including Coho Salmon and steelhead trout. The *Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon.* SONCC action ID SONCC-SFER.8.1.15 recommends that all streams where Coho Salmon (*Oncorhynchus kisutch*) would benefit immediately should implement plans to reduce sediment delivery to streams. The plan further indicates that roads represent the number one threat to Coho Salmon in the South Fork Eel River Watershed as indicated by the threat characterization as "very high" for all but the adult life stages of Coho Salmon. Additionally, "Altered sediment supply" is considered a very high stressor to almost all life stages of Coho Salmon. The *Stream Inventory Report Moody Creek* (CDFG 2008) recommends treating active and potential sources of road related sedimentation and increasing woody cover in the mainstem channel. Moody Creek is part of the Indian Creek tributary group which was recently identified by the Salmon Habitat Restoration Priorities team as a Tier 1 priority for restoration.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Final Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume II, Part X (CDFG 2002) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

This project will result in the permanent removal of 3.08 miles of riparian road along Moody Creek. This represents approximately 60% of the streamside road in the watershed under Redwood Forest Foundation Incorporated (RFFI) management. The project will reduce future anthropogenic sediment impacts from the road system to the watershed by preventing approximately 11,370 cubic yards of potential sediment delivery to Moody Creek.

Project Description:

Location:

The Moody Creek Watershed is located west of Leggett California in the upper South Fork Eel River Watershed. Moody Creek is a tributary to Indian Creek,

tributary to South Fork Eel River, tributary to the Eel River, which drains to the Pacific Ocean, located in Mendocino County, California. Moody Creek's legal description at the confluence with Indian Creek is T24N R18W S05. Its location is 39.9613 north latitude and 123.8744 west longitude. Moody Creek is located in the Bear Harbor United States Geologic Survey 24k Quad. Moody Creek intersects Indian Creek approximately 6.3 miles upstream of its confluence with the South Fork Eel River. From there streamside road removal on both sides of the mainstem will occur for approximately 1.3 stream miles.

Project Set Up:

The Grantee will be responsible for grant oversight and project administration. The Project Manager will provide all Agreement and subcontracting oversight and project administration including obtaining permits; securing the Agreement, subcontracts, Final Landowner Access Agreement, etc.; scheduling; implementation oversight; invoicing and reporting; and agency and landowner communications. North Coast Coho Project (NCCP) Project Director, Anna Halligan will be available on a full-time basis. NCCP Project Manager, Elizabeth Mackey may assist with some aspects of grant administration and project coordination. The Grants Administrator will assist with processing invoices and vendor payments, grant tracking, and reporting.

The implementation of the road decommissioning will be completed by subcontractor Pacific Watershed Associates (PWA). PWA professionals under the responsible charge of Engineering Geologist, Thomas H. Leroy (California Engineering Geologist #2593), will provide project and construction oversight and Quality Assurance/Quality Control of project products. The PWA Project Manager will manage project layout, construction oversight, monitoring, and reporting. The PWA Biologist will assist in fish and frog relocation. Prior to implementation the PWA Senior Scientist will conduct a paleontological review of the site. PWA Technical Staff will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring, and data entry. PWA Geographic Information Systems (GIS) Staff will provide field layout maps, digitize layout and as-built project data, and develop report maps. PWA Clerical Staff will track and monitor hours and create invoices during the project. PWA staff will be on-site to layout the heavy equipment construction treatments in the project area. All PWA work elements will be supervised by a PWA Principal. The final reporting of the project will be done by the PWA Engineering Geologist closely involved in the project, with assistance and oversight from the Project Manager. The final summary report will include project accomplishments such as the final project budget, photographic monitoring, as-built road logs, and other project information as required by the Agreement.

Mendo-Boldt Industries (MBI) will be the heavy equipment subcontractor. MBI will be providing all heavy equipment for the project including Excavator, Dozer, Water Truck, Dump Truck, Low Boy, Pilot Car, and Truck and trailer. MBI will also supply Laborers.

Revegetation will be conducted by Martin Maskill.

Fish and amphibian relocation and monitoring will be implemented by Ross Taylor and Associates (RTA). A qualified RTA Biologist and PWA Biologist will conduct fish relocation and fish exclusion activities and any required amphibian monitoring.

A professional botanist from North Coast Resource Management (NCRM) will conduct a botanical survey of the site. This will include a records search of the California Natural Diversity Database and spring floristic survey.

Certified Foresters with RFFI will conduct a cultural resource survey which will be provided in conjunction with a botanical resource survey and the PWA paleontological report.

Materials:

The following materials are necessary for project implementation:

- RFFI will provide 767 trees as in-kind cost share.
- The subcontractors will supply approximately 71 bales of straw; approximately 68 pounds of native seed; debris/trash pump; pressure washer; approximately 60 cubic yards of clean rip-rap; 300' of 6" flex pipe; miscellaneous field and office supplies including photographic supplies, flagging, wood stakes, field maps, acetate overlays for field maps, flagging, measuring tapes, wooden stakes, weather resistant paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies; printing supplies including paper, ink, toner and external printing or copying services; electrofishing gear; 3" centrifugal pump; field equipment.
- The Grantee will purchase supplies including photo duplication for final reports, copying/binding for final reports, report maps, and postage.

Tasks: The following list of tasks will be accomplished to complete the goals:

Task A: Grant Oversight and Project Administration:

Provide all Agreement and subcontract oversight and administration as pursuant to Agreement and regulatory guidelines. This includes obtaining permits,

securing the Agreement and subcontracts, scheduling, implementation oversight, invoicing, reporting, and agency and landowner communications. Upon Final execution of the Agreement and prior to receiving a Final Notice to Proceed, Grantee personnel will deliver the Final Landowner Access Agreements, subcontracts, and ensure all permits are finalized. Additionally, the Grants Administrator will be available to assist with invoicing and vendor payment. Required: Project Manager, Grants Administrator. The Grantee's travel needs for site visits and meeting with partners (this includes lodging and per diem), mileage, field/office supplies, printing/duplication, and postage.

Task B: Implementation of Road Decommissioning: PWA will be responsible for executing project implementation as described in the following sub tasks:

Task B-1: Pre-project layout:

PWA will coordinate with RFFI and NCRM to conduct the appropriate surveys for cultural and botanical resources and northern spotted owls. PWA will flag heavy equipment access routes and construction boundaries as well as spoils disposal sites, equipment exclusion areas for biologic or cultural resource protection, and large wood staging areas. They will also document the existing conditions on a subset of the stream crossings and setup photo point monitoring stations at the construction locations for final reporting. Pre-construction monitoring will be performed by PWA in a manner consistent with Grantor guidelines and as required by the Forest Land Anadromous Restoration (FLAR) program. PWA Staff Required: PWA Engineering Geologist, PWA Project Manager, PWA Technical Staff, PWA GIS Staff, and PWA Clerical Staff.

Task B-2: Road opening, feature treatment, and erosion control:

PWA will work with the MBI heavy equipment operators to reopen the road sites for equipment access and decommissioning treatments. Exclusionary fencing for salmonids and other aquatic species will be installed as deemed necessary by the Grantor's Project Manager and the PWA Project Manager. All equipment, vehicles and materials used to implement this project will be cleaned and treated in accordance with the Grantee's *Aquatic Invasive Species Decontamination Plan*. The project may require fish/amphibian exclusion and relocation. This will be conducted by a RTA and/or PWA qualified biologist. PWA Staff Required: PWA Principal Geologist, PWA Engineering Geologist, PWA Project Manager, PWA Technical Staff, PWA GIS Staff, and PWA Clerical Staff. Biologist Required: RTA Consultant/Principal Investigator and RTA Field Staff. MB Equipment and Staff: Lowboy, Excavator, Bull Dozer, Dump Truck, Water Truck, Truck with trailer, and Laborers.

Task B-2-1: Low bed trucks will be used to move heavy equipment in and out of the project area at the beginning and end of the work season, these will require a pilot car to move through the road system. Heavy Equipment Required: Lowboy and Pilot Car.

Task B-2-2: An excavator and bulldozer will be used to reopen the road for decommissioning by removing the vegetation and developing temporary stream crossings where necessary. A gasoline powered water pump will be used to protect water quality during installation of temporary crossings and managed by a MBI Laborer. PWA Staff Required: PWA Principal Geologist, PWA Engineering Geologist, PWA Project Manager, PWA Technical staff, PWA GIS staff, and PWA Clerical staff. MBI Heavy Equipment and Staff Required: Excavator, Bulldozer, and MBI Laborer.

Task B-2-3: The excavator, bulldozer and dump truck will be used to remove the anthropogenic road fill material from the stream crossing decommissioning features and other features specified for treatment. Similarly, they will be used to treat and restore all road surface drainage as they work their way out from the end of the road. A gas powered water pump will be used to divert flow and protect water quality during decommissioning of live stream crossings; these will be managed by a MBI Laborer. Concurrently working with the excavator and bulldozer, the dump truck will deliver rock to specific treatment areas for placement by the excavator and end haul spoil from decommission areas to designated spoil disposal sites. The water truck will be used for dust abatement, MBI Laborers will spread seed and straw, and trees will be planted at completed construction sites. In accordance with the invasive species protocol all heavy equipment will be cleaned before and after entering/leaving the work area. PWA Staff Required: PWA Principal Geologist, PWA Engineering Geologist, PWA Project Manager, PWA Technical staff, PWA GIS Staff, and PWA Clerical Staff. MBI Heavy Equipment and Staff Required: Excavator, Bulldozer, Dump Truck, Water Truck, and MBI Laborer.

Task B-2-4: Post-construction monitoring, including photographic monitoring, and stream crossing profiles, will be performed by PWA consistent with the Grantor guidelines and as required by the FLAR focus. PWA Staff Required: PWA Project Manager, PWA Technical Staff, and PWA GIS Staff.

Task C: Reporting:

PWA will conduct post-decommissioning surveys on a subset of the stream crossings and reoccupy photo points to document pre- and post-conditions at the

feature locations. PWA will develop a report that documents the work completed with actual performance measures (by feature) and the total costs to implement the project. PWA Staff Required: PWA Principal Geologist, PWA Engineering Geologist, PWA Project Manager, PWA Technical Staff, and PWA GIS Staff.

Deliverables:

Task A - Grant Oversight and Project Administration: Project deliverables will include the information outlined in the tasks as well as everything that will be delivered to the Grantor's Project Manager during the life of the project: Final Landowner Access Agreements; Notification of Lake or Streambed Alteration and payment; Progress Reports submitted with invoices; and Annual Reports. The project deliverables will also include any invoices, additional progress reports or any other documentation pursuant to the Agreement, including a Final Report and final budget.

Task B - Implementation of Road Decommissioning: Cultural and Botanical Resource Reports. As-built Road Logs for permanent road decommissioning of 3.08 miles of inner gorge and streamside riparian road in the Moody Creek Watershed; direct treatment of 33 erosional features along the decommissioned road alignment; prevention of 11,370 cubic yards of anthropogenic related sediment from entering the Moody Creek Watershed. Road Logs and final performance measures to be included in the Final Report.

Task C - Reporting: Upon completion of the project, the Grantee and PWA will submit a written completion report which contains: (1) general Agreement information, (2) location of work, (3) project access, (4) participating landowners name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built road logs, (7) dates of work and the number of person hours expended, (8) labeled before-and-after photos of selected restoration activities and techniques, (9) grant dollars spent and contributed and/or in-kind services used to complete the project, (10) GIS generated maps and shapefiles of the project area, and (11) monitoring checklists, databases, spreadsheets and any other data products produced under this Agreement.

Timelines:

Task A - Grant Oversight and Project Administration: June 01, 2019 to February 28, 2021.

Task B - Implementation of Road Decommissioning: June 17, 2019 to October 30, 2020.

Task C - Reporting: October 30, 2020 to February 28, 2021.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife's *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual.*

c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the California Salmonid Stream Habitat Restoration Manual, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual.*

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites that are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

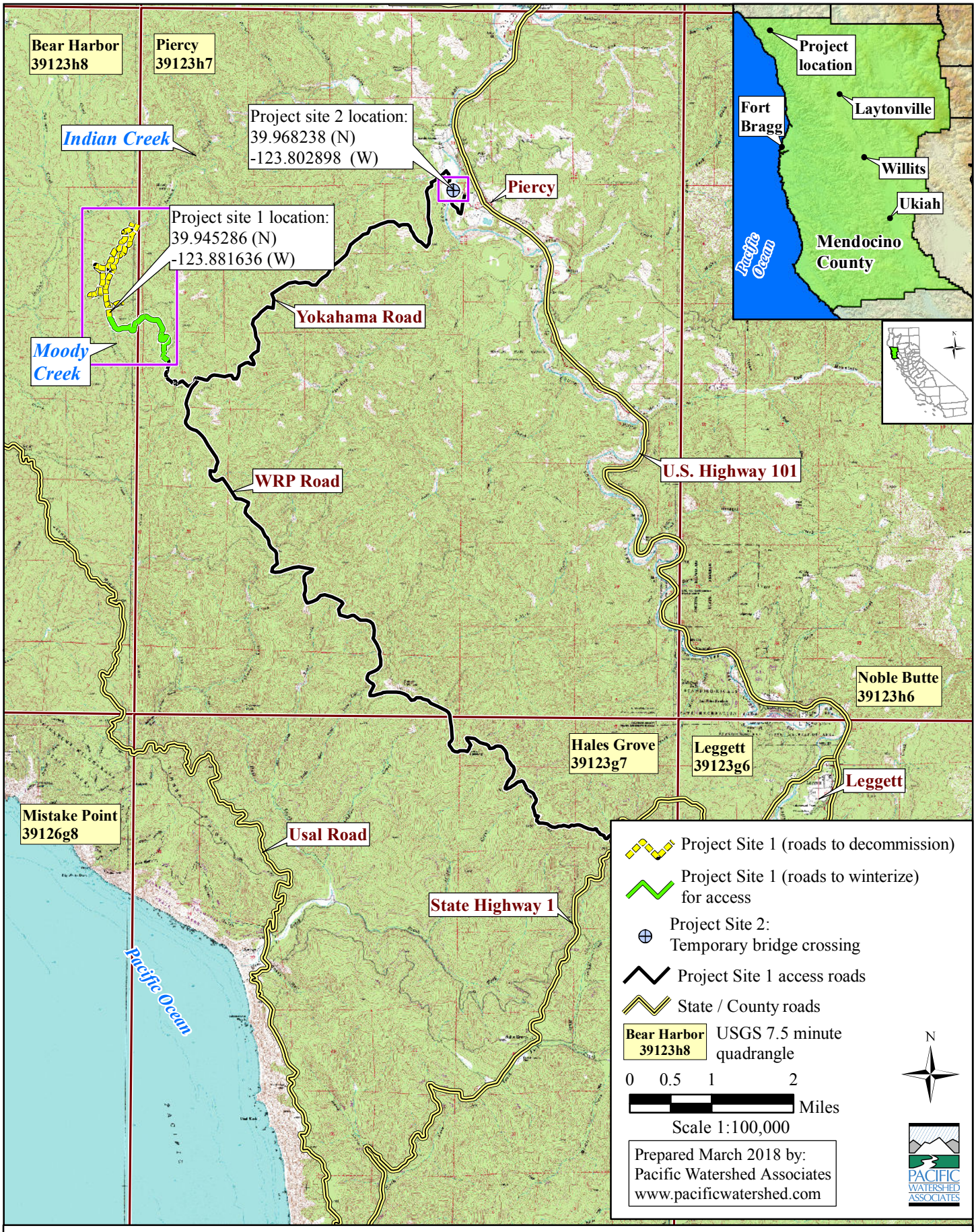
Query Criteria: Quad IS (Bear Harbor (3912388) OR Shelter Cove (4012411) OR Briceland (4012318) OR Garberville (4012317) OR Piercy (3912387) OR Hales Grove (3912377) OR Mistake Point (3912378))

Possible species within the Bear Harbor quad and surrounding quads for 725709 Moody Creek Sediment Reduction and Coho Habitat Enhancement Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 39



Map 1. Project location topographic map for the Moody Creek Sediment Reduction and Coho Recovery Project, Mendocino County, California. Grantee: Trout Unlimited

Introduction:

Trout Unlimited, Inc. (Grantee) will decommission 2.48 miles of road to prevent potential future delivery of 2,750 cubic yards of sediment to Soldier Creek. Twelve acres of upslope area will be treated including eight (8) stream crossings and four (4) potential fill failures.

This project is necessary because sediment that is eroded from the road directly impacts juvenile rearing and adult spawning habitats by creating turbid conditions during the winter months and simplifying the habitat during the summer months. Currently, the Soldier Creek Watershed supports populations of anadromous salmonids including steelhead trout. The *Coastal Multispecies Final Recovery Plan: California Coastal Chinook Salmon ESU, Northern California Steelhead DPS and Central California Coast Steelhead DPS* Action Step UC-NCSW-23.2.3.1 recommends reducing road densities by 10% over the next 20 years. Additionally, Action Step UC-NCSW-23.1.2.4 recommends decommissioning riparian road systems that deliver sediment into adjacent watercourses.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Final Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume II, Part X CDFG (2002) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

This project will result in the permanent removal of 2.48 miles of streamside riparian road which represents almost 100% of the streamside road under RFFI management along Soldier Creek. It will also reduce future anthropogenic sediment impacts from the streamside road system to the watershed by eliminating approximately 2,750 cubic yards of future potential sediment from the decommissioned road system and normalizing the hillside hydrology.

Project Description:

Location:

The Soldier Creek Watershed is located west of Leggett, California in the Usal Creek Watershed. Soldier Creek intersects Usal Ceek approximately 2.4 miles upstream of its confluence with the Pacific Ocean. Streamside road removal will occur on the mainstem for approximately 2.48 stream miles. The project is located in the Hales Grove United States Geologic Survey 24k Quad. Project coordinates are: 39.86061 north latitude, -123.82399 west longitude at the center of the work area on the mainstem of Soldier Creek.

Project Set Up:

The Project Manager will provide all Agreement and subcontract oversight and project administration including obtaining permits; securing Agreement, subcontracts, Final Landowner Access Agreement, etc.; scheduling; implementation oversight; invoicing and reporting; and agency and landowner communications. North Coast Coho Project (NCCP) Project Director, Anna Halligan will be available on a full-time basis. NCCP Project Manager, Elizabeth Mackey may assist with some aspects of Agreement administration and project coordination. In addition to the Project Manager, the Grants Administrator will assist with processing invoices and vendor payments, Agreement tracking, and reporting.

The implementation of the road decommissioning will be completed by Pacific Watershed Associates (PWA). PWA professionals under the responsible charge of Engineering Geologist, Thomas H. Leroy (Certified Engineering Geologist #2593), will provide project and construction oversight and Quality Assurance/Quality Control of project products. The PWA Project Manager will manage project layout, construction oversight, monitoring, and reporting. The PWA Biologist will assist in fish and frog identification and measure implementation. PWA Technical Staff will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring, and data entry. The PWA Senior Scientist will conduct a paleonotolgical survey prior to implementation. PWA Geographic Infromation Systems (GIS) Staff will provide field layout maps, digitize layout and as-built project data, and develop report maps. PWA Clerical Staff will track and monitor hours and create invoices during the project. PWA staff will be on-site to layout the heavy equipment construction treatments in the project area. All PWA work elements will be supervised by a PWA Principal. The final reporting of the project will be done by the PWA Engineering Geologist and PWA Staff Scientist closely involved in the project, with assistance and oversight from the PWA Project Manager.

Mendo-Boldt Industries (MBI) will be the heavy equipment subcontractor. MBI will be providing MBI Laborers and all heavy equipment for the project including Excavator, Dozer, Water Truck, Dump Truck, Low Boy, Pilot Car, and Truck and trailer.

Revegetation will be conducted by Martin Maskill.

Fish identification, relocation and monitoring will be implemented by Ross Taylor and Associates (RTA). A qualified RTA Biologist and PWA Biologist will conduct electrofishing and fish exclusion and required amphibian monitoring (if necessary).

A qualifed botanist with North Coast Resource Management (NCRM) will conduct a botanical survey which will include a records search within the California Natural Diversity Database and a spring floristic survey.

Certified Foresters with RFFI will conduct a cultural resource survey which will be provided in conjunction with a botanical resource survey and the PWA paleontological report. RFFI will also provide planting materials (e.g. trees) and rock required to complete this project. These services will be contributed as in-kind cost share.

Materials: The following materials are necessary to implement the project:

Approximately 528 trees will be provided by RFFI as cost share.

Materials secured by MBI include approximately 30 bales of straw, approximately 35 pounds of native seed, debris/trash pump, pressure washer, and 300' of 6" flex pipe.

PWA will secure field and office supplies including photographic supplies, flagging, wood stakes, field maps, acetate overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, and postage.

Field/office supplies include flagging, measuring tapes, wooden stakes, weather resistance paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies. Printing/Duplication supplies may include paper, ink, and toner. This item also includes costs associated with external printing or copying services that may be required to produce reporting and meeting materials. Postage: This includes supplies and costs for sending or shipping Agreement administration items such as reports, permit applications, invoices, and subcontracts.

Monitoring supplies (RTA): Electrofishing gear to conduct fish relocations; 3" centrifugal pump for drawing down larger pools; and field equipment.

Tasks: The following list of tasks will be accomplished to complete the goals:

Task A - Grant Oversight and Project Administration:

Provide all Agreement and subcontracting oversight and administration as pursuant to Agreement and regulatory guidelines. This includes obtaining permits, securing subcontracts, scheduling, implementation oversight, invoicing, reporting, and agency and landowner communications. Upon final execution of

the Agreement and receipt of the Preliminary Notice to Proceed, deliver the Final Landowner Access Agreements, subcontracts, and ensure all permits are finalized. Additionally, the Grants Administrator will be available to assist with invoicing and vendor payment. Required Personnel: Project Manager, Grants Administrator. Required: Travel for site visits and meeting with partners (this includes lodging and per diem), mileage, field/office supplies, printing/duplication, and postage.

Task B - Implementation of the road decommissioning:

PWA will be responsible for executing project implementation. The team will stay at local hotels. The PWA Clerical Staff will compile invoices and track budgets throughout the lifetime of the project.

Task B-1: Pre-project layout: PWA will coordinate with RFFI to conduct the appropriate surveys for northern spotted owl, if applicable. NCRM will conduct floristic surveys, and provide the results to the Grantee, PWA, and the Grantor. PWA will flag heavy equipment access routes and construction boundaries as well as spoils disposal sites, equipment exclusion areas for biologic or cultural resource protection, and large wood staging areas. They will also document the existing conditions on a subset of the stream crossings and set up photo point monitoring stations at the construction locations for final reporting. Pre-construction monitoring will be performed by PWA in a manner consistent with Grantor guidelines and as required by the Forest Land Anadromous Restoration (FLAR) focus. Prior to implementation all required floristic, biotic, cultural, and paleontological survey information will be provided to the Grantee and the Grantor.

Task B-2: Road opening, feature treatment, and erosion control: PWA will work with the MBI heavy equipment operators to reopen the road sites for equipment access and decommissioning treatments. All treatment prescriptions in the project will follow guidelines *California Salmonid Stream Habitat Restoration Manual*, Parts X (Flosi et al., 2006). Exclusionary fencing for salmonids and other aquatic species will be installed as deemed necessary by the Grantor's Project Manager, RTA Biologist, and the Project Manager. This component of the project may require fish and amphibian exclusion and relocation and construction oversight. This task will be conducted by RTA and the PWA Biologist. Additionally, all equipment, vehicles and materials used to implement this project will be cleaned and treated in accordance with the Grantee's *Aquatic Invasive Species Decontamination Plan*. Personal field gear and heavy equipment working in or near a stream will be decontaminated as

well. Several methods will be employed to avoid the spread of invasive species during the implementation of the project.

Task B-2-1: Low bed trucks will be used to move heavy equipment in and out of the project area at the beginning and end of the work season, these will require two pilot cars to move through the road system.

Task B-2-2: An excavator and bulldozer will be used to reopen the road for decommissioning by removing the vegetation and developing temporary stream crossings if necessary. A gasoline powered water pump will be used to protect water quality during installation of temporary crossings; these will be managed by a MBI Laborer.

Task B-2-3: The excavator, bulldozer and dump truck will be used to remove the anthropogenic road fill material from the stream crossing decommissioning features and other site specific features specified for treatment. Similarly, they will be used to treat and restore all road surface drainage as they work their way out from the end of the road. A gas powered water pump will be used to divert flow and protect water quality during decommissioning of live stream crossings; these will be managed by the MBI Laborer. Concurrently working with the excavator and bulldozer, the dump truck will end haul spoil from decommission areas to designated spoil disposal sites. The water truck will be used for dust abatement to protect water quality and riparian vegetation, and MBI Laborers will be used to spread seed and straw, and plant trees at completed construction sites. All heavy equipment will be cleaned before and after entering/leaving the work area.

Task B-2-4: Post-construction monitoring, including photographic monitoring, and stream crossing profiles, will be performed by PWA consistent with the Grantor and as required by the FLAR. This task could begin as early as June 2019, assuming that the appropriate level of biotic, floristic and cultural resource surveys have been completed prior to implementation.

Task C - Reporting:

PWA will conduct post-decommissioning surveys on a subset of the stream crossings and reoccupy photo points to document pre- and post-conditions at the feature locations. The Grantee and PWA will develop a report based on Grantor requirements that documents the work completed and the total costs to

implement the project. The final reports will include all required performance measures (by feature), photographic monitoring information, maps, and road logs.

Deliverables:

Task A - Grant Oversight and Project Administration: Project deliverables will include the information listed in tasks as well as everything that will be delivered to the Grantor's Project Manager during the life of the project: Final Landowner Access Agreements; *Notification of Lake or Streamed Alteration* and payment; Progress Reports submitted with invoices; and Annual Reports. The project deliverables will also include any invoices, additional progress reports or any other documentation pursuant to the Agreement requirements, including a Final Report with a final budget.

Task B - Implementation of the road decommissioning: As-built Road Logs for permanent road decommissioning of 2.48 miles of inner gorge and streamside riparian road in the Soldier Creek Watershed; direct treatment of 12 site specific erosional features along the decommission road alignment; prevention of 2,750 cubic yards of sediment from entering the Moody stream system. Normalization of lower hillside hydrology in Soldier Creek. California Environmental Quality Act related survey reports. Road Logs to be included in the Final Report.

Task C – Reporting: Upon completion of the project the Grantee and PWA will submit a written completion report which contains: (1) general grant information, (2) location of work, (3) project access, (4) participating landowners name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built road logs, (7) dates of work and the number of person hours expended, (8) labeled before-and-after photos of selected restoration activities and techniques, (9) grant dollars spent and contributed and/or in-kind services used to complete the project, (10) GIS generated maps and shapefiles of the project area, and (11) monitoring checklists, databases, spreadsheets and any other data products produced under this grant.

Timelines:

Task A - Grant Oversight and Project Administration: June 1, 2019 to February 28, 2021.

Task B - Implementation of the road decommissioning: June 15, 2019 to October 30, 2020.

Task C – Reporting: October 30, 2020 to February 28, 2021.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife's *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual.*
c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as

approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

All road decommissioning will be done in accordance with techniques described in the Handbook for Forest and Ranch Roads, (PWA, 1994c.) and the *California Salmonid Stream Habitat Restoration Manual*, Volume II, Part X. All road upgrade and decommissioning sites and techniques shall be approved by the Grantor Project Manager before any equipment work takes place.

All crossings treated in fish bearing reaches of streams will follow the National Marine Fisheries Service (NMFS 2001) Guidelines for Salmonid Passage at Stream Crossings and the criteria for adult and juvenile salmonid fish passage as described in Volume II, Part IX of the *California Salmonid Stream Habitat Restoration Manual.*

Seeding and mulching of all exposed soils shall be done for all slopes which may deliver sediment to a stream. Woody debris will be concentrated on finished slopes adjacent to stream crossings. The standard for success is 80% ground cover for broadcast planting of seed, after a period of three years. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Sites that are expected to erode and deliver sediment to the stream are the only locations where work will be authorized for reimbursement under the terms of this agreement. Reimbursement will not be authorized for work done to improve aesthetics only.

The landowner or responsible party must sign an access agreement stating they agree to maintain the erosion control project for a period of not less than 10 years. Maintenance will consist of repair to the road or stream crossing to a level that will effectively reduce sediment from entering the stream. In the event of an act of nature which results in partial or complete failure of the project, the landowner or applicant will not be held responsible for costs incurred after the act of nature. Acts of nature include, but are not limited to floods, earthquakes, volcanic eruptions, and wind storms.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*. Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hales Grove (3912377) OR Mistake Point (3912378) OR Bear Harbor (3912388) OR Piercy (3912387) OR Noble Butte (3912386) OR Leggett (3912376) OR Lincoln Ridge (3912366) OR Westport (3912367))

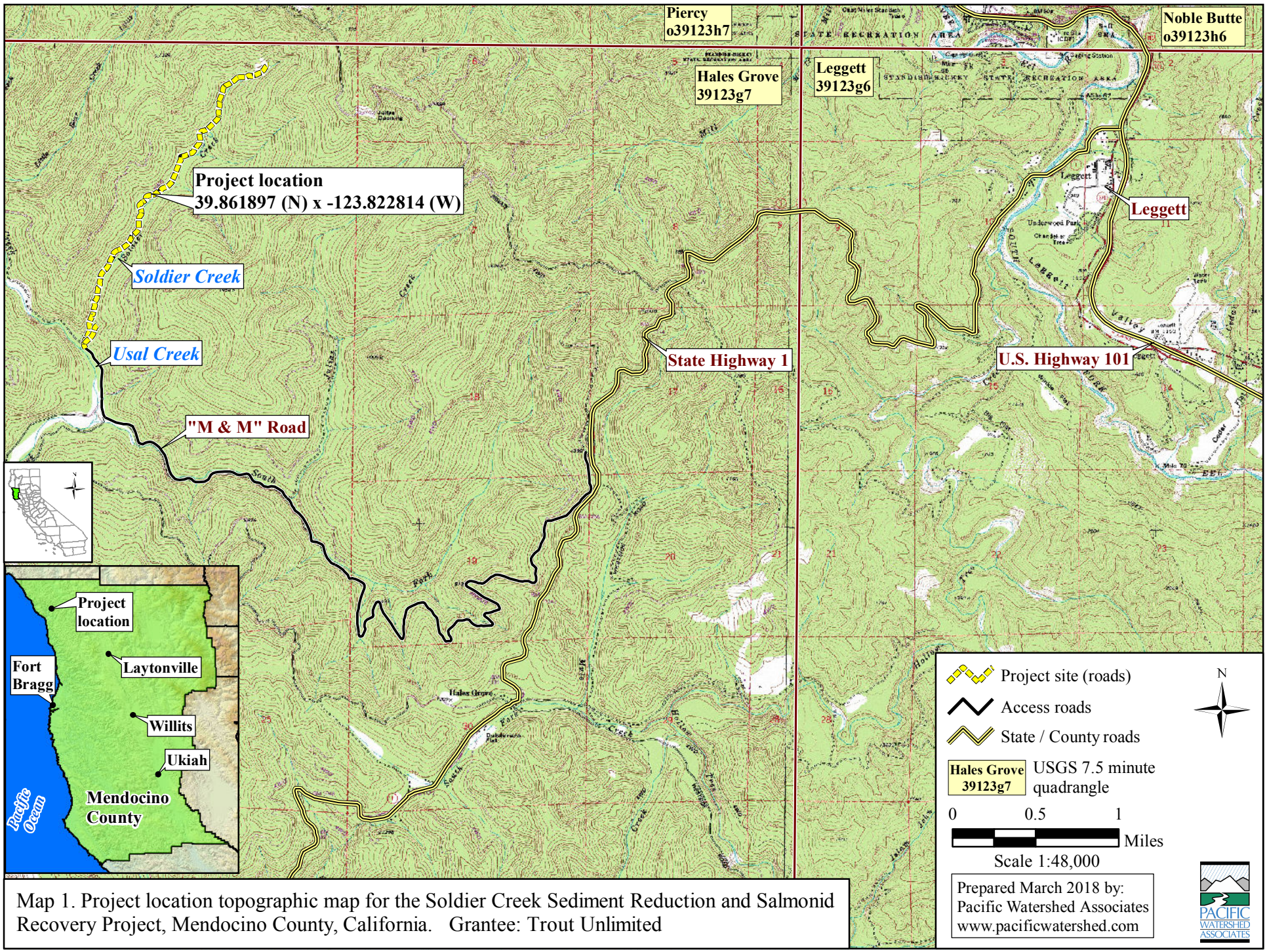
Possible species within the Hales Grove quad and surrounding quads for 725710 Soldier Creek Sediment Reduction and Salmonid Recovery Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arabis mcdonaldiana McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos stanfordiana ssp. raichei Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum kelloggii Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Gentiana setigera Mendocino gentian	PDGEN060S0	None	None	G2	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
North Central Coast Fall-Run Steelhead Stream North Central Coast Fall-Run Steelhead Stream	CARA2631CA	None	None	GNR	SNR	
Northern Interior Cypress Forest Northern Interior Cypress Forest	CTT83220CA	None	None	G2	S2.2	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC

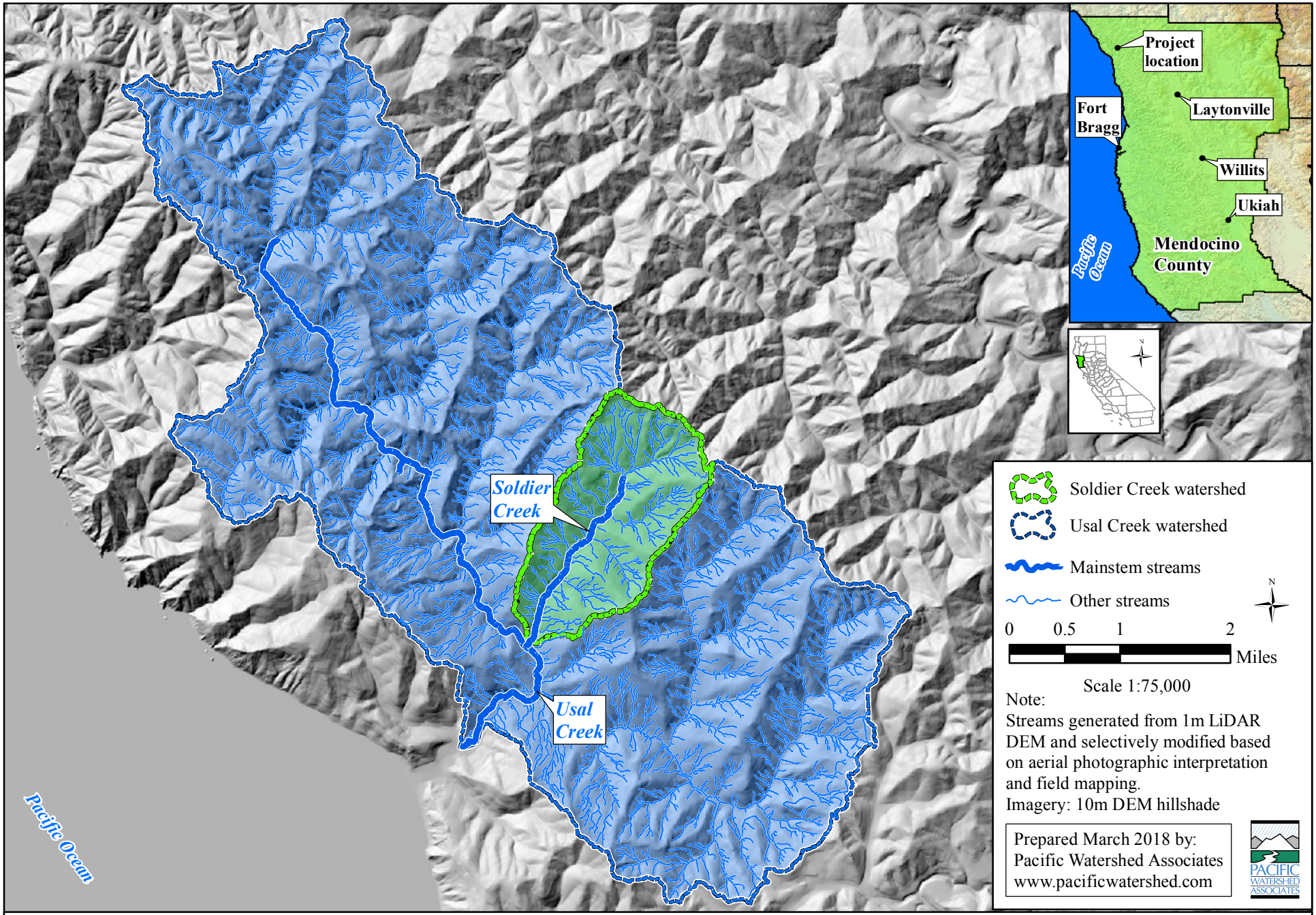
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sedum laxum ssp. eastwoodiae Red Mountain stonecrop	PDCRA0A0L1	None	None	G5T2	S2	1B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Silene campanulata ssp. campanulata Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 54



Map 1. Project location topographic map for the Soldier Creek Sediment Reduction and Salmonid Recovery Project, Mendocino County, California. Grantee: Trout Unlimited

Grantee: Trout Unlimited



Map 2. Watershed map for the Soldier Creek Sediment Reduction and Salmonid Recovery Project, Mendocino County, California.
Grantee: Trout Unlimited

Introduction:

Trout Unlimited, Inc. (Grantee) will install 200 key pieces of wood (LWM) at 55 features within 9,651 feet of Soldier Creek. Soldier Creek supports populations of steelhead and has high intrinsic potential for salmonids as indicated in the *Recovery Plan for the Evolutionarily Significant Unit of Central Coast Coho Salmon* and the *Coastal Multispecies Final Recovery Plan: California Coastal Chinook Salmon ESU, Northern California Steelhead DPS and Central California Coast Steelhead DPS*. This project is necessary because a count of "key pieces" of large woody material conducted by Pacific Watershed Associates (PWA) in 2018 indicates the channel currently exhibits "poor" conditions which equates to less than 1 key piece per 100 meters.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, Part VII (CDFG 1998) https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

This project will install 200 key pieces of wood within 9,651 feet of Soldier Creek, a class I stream channel, resulting in an overall wood density of approximately 6.25 key pieces per 100 meters.

Project Description:

Location:

The Soldier Creek Watershed is located west of Leggett, California and is in the Usal Creek Watershed. The project includes treatments along approximately 1.82 stream miles of Soldier Creek. Soldier Creek is a tributary to Usal Creek, and its confluence is 2.4 miles upstream of the Pacific Ocean. The project is located on the Hales Grove United States Geologic Survey 24k Quad. Project coordinates are: 39.860614 latitude, -123.823998 longitude at the center of the work area on the mainstem of Soldier Creek.

Project Set Up:

The Project Manager will provide all Agreement and subcontracting oversight and project administration including but not limited to obtaining permits; securing Agreements, subcontracts, Final Landowner Access Agreement, etc.; scheduling; implementation oversight; invoicing and reporting; and agency and landowner communications. North Coast Coho Project (NCCP) Project Director, Anna Halligan will be available on a full-time basis. NCCP Project Manager, Elizabeth Mackey may assist with some aspects of grant administration and

project coordination. In addition to the Project Manager, the Grants Administrator will assist with processing invoices and vendor payments, Agreement tracking, and reporting.

Project implementation will be led by PWA. PWA professionals under the responsible charge of Engineering Geologist, Thomas H. Leroy (Certified Engineering Geologist #2593) and a PWA Principal, will provide project and construction oversight and Quality Assurance/Quality Control of project products. The PWA Project Manager will manage project layout, construction oversight, monitoring, and reporting. The PWA Biologist will assist in frog identification and measure implementation. PWA Technical Staff will conduct surveys, construction oversight, pre-, during-, and post-construction monitoring and data entry. PWA Geographic Information Systems (GIS) Staff will provide field layout maps, digitize layout and as-built project data, and develop report maps. PWA Clerical Staff will track and monitor hours and create invoices during the project. PWA staff will be on-site to layout the heavy equipment construction treatments in the project area. All PWA work elements will be supervised by a PWA Principal. The final reporting of the project will be done by the PWA Engineering Geologist and PWA Project Manager closely involved in the project, with assistance and oversight from the Project Manager. PWA Senior Scientist will also conduct a paleontological literature review for the site prior to implementation. Additionally, amphibian identification, relocation and monitoring (if required) will be implemented by an approved PWA Biologist.

Mendo-Boldt Industries (MBI) will be the heavy equipment subcontractor. MBI will be providing all heavy equipment for the project including Excavator, Dozer, Water Truck, Low Boy, Pilot Car, Truck and trailer, and Laborers.

California Conservation Corps (CCC) will provide labor for anchoring and log adjustments. The CCC Corpsmembers will be supervised by the CCC Fish Habitat Assistant and the CCC Conservationist 1.

Revegetation will be conducted by Martin Maskill.

A qualifed botanist with North Coast Resource Management (NCRM) will conduct a botanical survey which will include a records search within the California Natural Diversity Database and a spring field survey.

Certified Foresters with RFFI will conduct a cultural resource survey which will be provided in conjunction with a botanical resource survey and the PWA paleontological report. This information will be provided to the Grantor prior to implementation. RFFI will also provide planting materials (e.g. trees) and the large wood material required to complete this project. These services will be contributed as in-kind cost share.

Materials: The following materials are necessary for the project:

Field/office supplies including flagging, measuring tapes, wooden stakes, weatherproof paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, fastening supplies, paper, ink, and toner. This item also includes costs associated with external printing or copying services that may be required to produce reporting and meeting materials. Postage includings supplies and costs for sending or shipping Agreement administration items such as reports, permit applications, invoices, and subcontracts.

RFFI will provide approximately 300 trees for planting and 200 log pieces (average length 30' x 2' diameter) of Douglas Fir or Coast Redwood. MBI will provide approximately 55 bales of straw mulch and a pressure-washer. PWA will provide approximately 35 pounds of native seed; miscellaneous field and office supplies including photographic supplies, flagging, wood stakes, field maps, acetate overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, and postage. NCRM will supply botanical survey supplies including printing.

Tasks: The following list of tasks will be accomplished to complete the goals:

Task A - Grant Oversight and Project Administration:

The Grantee will provide all Agreement and subcontractor oversight and Agreement administration as pursuant to Agreement and regulatory guidelines. This includes obtaining permits, securing Agreements, subcontracts, Final Landowner Access Agreements, scheduling, invoicing, reporting, and agency and landowner communications. Upon receiving the Preliminary Notice to Proceed, deliver the Final Landowner Access Agreements, subcontracts, and ensure all permits are finalized. Required: Field/office supplies, postage, and travel expenses.

Task B - Construction of the large wood material features:

PWA will be responsible for executing project implementation. The team will stay at local hotels. The PWA Clerical Staff will compile invoices and track budgets throughout the lifetime of the project.

> Task B-1 - Pre-project layout and surveys: PWA will coordinate with TU, NCRM, the Grantor, and RFFI to conduct the appropriate surveys for special status species and cultural resources. The PWA Biologist will conduct an initial survey of the access roads for frogs and frog habitat and develop minimization measures in coordination with the Grantor's Project

Manager. PWA will flag heavy equipment access routes and construction boundaries as well as spoils disposal sites, equipment exclusion areas for biologic or cultural resource protection, and large wood staging areas. They will also document the existing conditions at the feature locations and setup photo point monitoring stations at the construction locations for final reporting. Pre-construction monitoring will be performed by PWA in a manner consistent with Grantor guidelines and as required by the Forest Land Anadromous Restoration (FLAR) focus. During this phase of the project PWA will, in coordination with the Grantor's Project Manager, identify the location of, and develop 100% designs for, up to 15 more LWM features. The location and nature of these additional features will be based on existing and previously designed features as well as existing geomorphic conditions.

Task B-2 - Road access development and tree procurement: Low bed trucks will be used to move heavy equipment in and out of the project area at the beginning and end of the work season; these will require a pilot car to move through the road system. Decontamination protocols will be employed prior to move in. An excavator and bulldozer will be used to reopen the road along the north side of Soldier Creek by removing the vegetation and developing temporary stream crossings, where necessary. A gasoline powered water pump will be used to protect water quality during installation of temporary crossings if necessary; these will be managed by the MBI Laborer. During the road opening phase of the project the excavator and dozer will be used to procure whole trees including root wads for installation in the adjacent channel reach. The trees will be skidded to flagged staging areas for the installation phase of the project.

Task B-3 - Final biologic monitoring: The PWA Biologist will conduct final frog monitoring and minimization development activities at each feature location.

Task B-4 - Construction of features: Most of the features will be constructed with heavy equipment but in some locations (S-27 and S-31 as well as some other locations to be determined) the features will be constructed by direct falling of trees by a professional tree faller. In general, the excavator and bulldozer will be used to create access routes to the features and construct said features. The features will be constructed with an excavator with a log tong attachment. To conduct the install, the excavator and bull dozer will create access to the streamside area and the excavator will install the logs while the dozer will deliver logs to the construction site from the adjacent road. The excavator will grapple each log with the log tongs and weave it through the existing riparian

forest with the intention of wedging the log through the riparian trees. In some locations, where equipment access is limited, trees will be inserted into the creek by direct falling by a MBI tree faller. Where prudent, small and medium sized tree fragments that do not meet the criteria for key logs will be incorporated into the features as pre-racked and loose material.

Once the primary architecture of the features has been completed, PWA in coordination with the Grantor's Project Manager will determine which logs are shorter than 1.5 times the bankfull width of the channel indicating anchor points will be required. Anchoring will be installed by the CCC. The excavator and dozer will winterize each feature access point by decompacting the disturbed ground surface and mulching all bare areas with wood slash and or straw. Native seed will be distributed in the bare areas to provide short to medium term erosion control.

Task B-5 - Post-construction monitoring and documentation: Post-construction monitoring, including photographic monitoring, and documentation of as-built conditions, will be performed by PWA consistent with the Grantor guidelines and as required by the FLAR program. As-built drawings will include structure placement and alignment, cross-sections and longitudinal profiles, and the sizes and quantity of materials added.

Task C - Reporting:

The Grantee will work closely with PWA to develop the final report consistent with the Grantor FLAR requirements. The final report will include as-built construction details for each feature, actual performance measures, a map clearly showing the locations of all constructed features, before and after photos of each feature location, technical specifications for all constructed features, and a summary of expended funds.

Deliverables:

Task A - Grant Oversight and Project Administration: Final Landowner Access Agreements; Copies of Subcontracts; Copies of Permits; Progress and Final Reports.

Task B - Construction of the features: Installation of 55 features over a 1.8 mile stream reach, containing approximately 200 pieces of wood. Wood will be woven into the existing riparian corridor. Hardware anchors will be used where required.

Task B-1 - Pre-project layout and surveys: Initial layout and pre-construction existing conditions of all features and flagged staging areas

and equipment exclusion zones. Final 100% designs for up to 55 features. Botanical and Cultural Resource Reports.

Task B-2 - Road access development and tree procurement: Development of access roads for project construction and 200 pieces of LWM, with at least 100 pieces with root wads.

Task B-3 - Final biologic monitoring: Final frog presence/absence determination. Initiation of final frog measures.

Task B-4 - Construction of features: Construction of 55 features throughout a 1.8 mile stream section in Soldier Creek including 200 key logs. Installation of hard anchor points where required. Erosion control best management practices on all streamside access areas and disturbed ground.

Task B-5-Post-construction monitoring and documentation: As-built documentation of the project site, before and after photographs of each feature, and other documentation as required by the FLAR program.

Task C - Reporting: A written completion report which contains: (1) general Agreement information, (2) location of work, (3) project access, (4) participating landowner including name and address, (5) a description and analysis of the restoration and planning person hours expended, (6) a quantified description of the results of the project, including as-built in-stream enhancement feature designs and cross sections and profiles at representative individual features, (7) dates of work and the number of person hours expended, (8) labeled before and after photos of selected restoration activities and techniques, (9) grant dollars spent and contributed and/or in kind services used to complete the project, and (10) GIS generated maps and shapefiles of the project area. (11) Pre- and post-monitoring results of each of the constructed features.

Timelines:

Task A - Grant Oversight and Project Administration: June 1, 2019 to February 28, 2021.

Task B - Construction of the LWM features: June 15, 2019 to October 30, 2020.

Task B-1 - Pre-project layout & surveys: June 15, 2019 to October 30, 2020.

Task B-2 - Road access development and tree procurement: June 15, 2019 to October 30, 2020.

Task B-3 - Final biologic monitoring: June 15, 2019 to October 30, 2020.

Task B-4 - Construction of LWM features: June 15, 2019 to October 30, 2020.

Task B-5 - Post-construction monitoring and documentation: October 30, 2020 to January 28, 2021. .

Task C – Reporting: November 2, 2020 to February 28, 2021.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hales Grove (3912377) OR Mistake Point (3912378) OR Bear Harbor (3912388) OR Piercy (3912387) OR Noble Butte (3912386) OR Leggett (3912376) OR Lincoln Ridge (3912366) OR Westport (3912367))

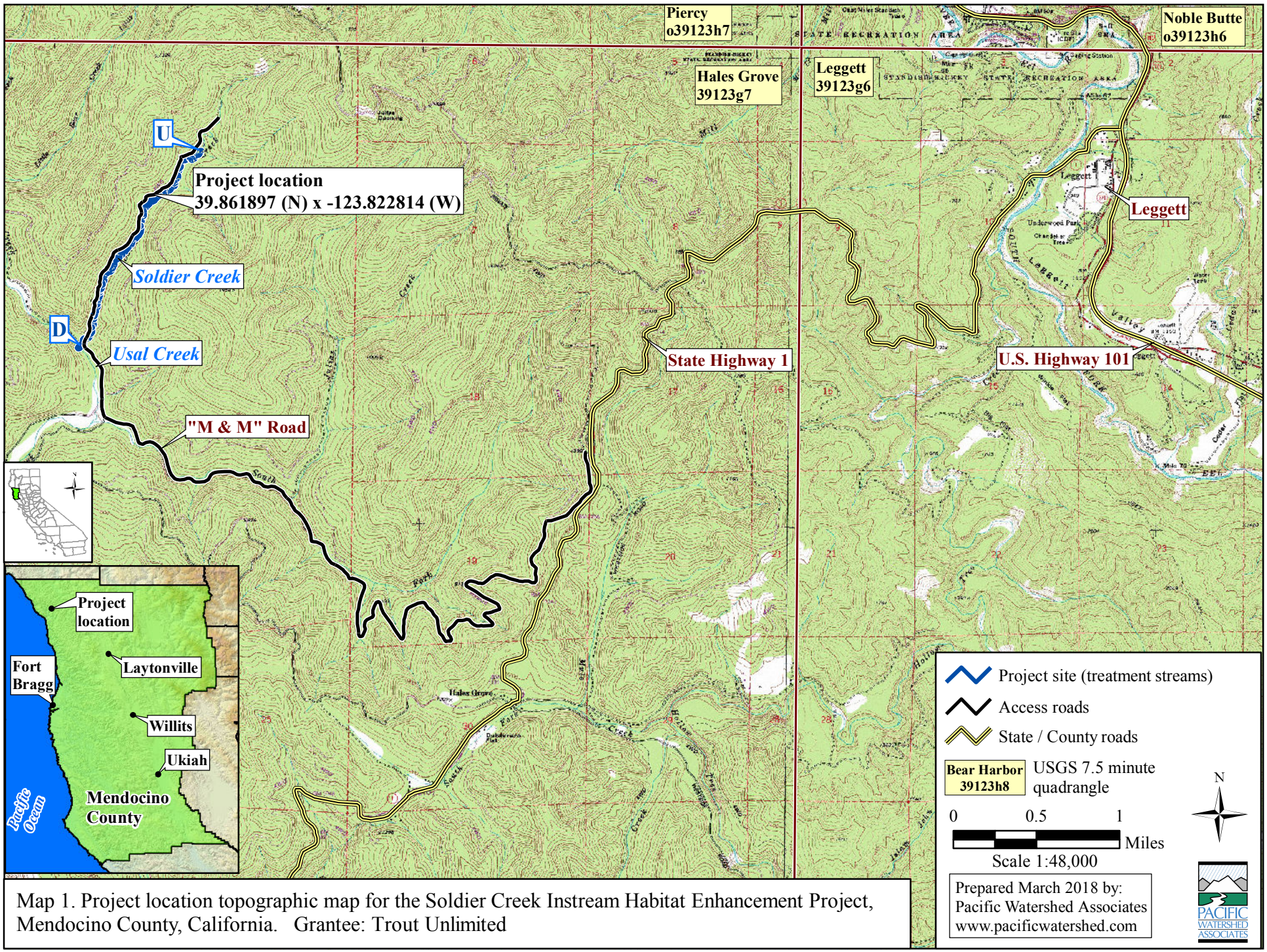
Possible species within the Hales Grove quad and surrounding quads for 725711 Soldier Creek Instream Habitat Enhancement Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter gentilis northern goshawk	ABNKC12060	None	None	G5	S3	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arabis mcdonaldiana McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos stanfordiana ssp. raichei Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum kelloggii Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Gentiana setigera Mendocino gentian	PDGEN060S0	None	None	G2	S1	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
North Central Coast Fall-Run Steelhead Stream North Central Coast Fall-Run Steelhead Stream	CARA2631CA	None	None	GNR	SNR	
Northern Interior Cypress Forest Northern Interior Cypress Forest	CTT83220CA	None	None	G2	S2.2	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	None	G5T4Q	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sedum laxum ssp. eastwoodiae Red Mountain stonecrop	PDCRA0A0L1	None	None	G5T2	S2	1B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Silene campanulata ssp. campanulata Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SCC

Record Count: 54



Map 1. Project location topographic map for the Soldier Creek Instream Habitat Enhancement Project, Mendocino County, California. Grantee: Trout Unlimited

Grantee: Trout Unlimited

Introduction:

The Cachuma Operation and Maintenance Board (Grantee) will replace an existing dilapidated wooden bridge sitting over a damaged concrete low flow crossing with a 54-foot prefabricated concrete bottomless arched culvert (bridge) with two rock weirs and 1 rootwad for grade control. The total length of stream that will be treated is 0.04 miles, which includes the removal of one dilapidated bridge and replacing it with a 54-foot prefabricated bottomless-arched culvert. Installing the proposed bottomless arched culvert will allow fish passage for juvenile and adult steelhead trout (*Oncorhynchus mykiss*) during all flows, which is especially critical during drought years when *O. mykiss* need to seek refuge in perennial cool waters habitat. For example, Crossing 8 and upstream of Crossing 9, Quiota Creek has remained wetted each summer and fall over the course of 6 extremely dry years (2012-2017).

This effort will continue the long-term effort and sequence of projects focused on barrier removal within Quiota Creek and throughout the Santa Ynez River basin in Santa Barbara County.

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

Objective(s):

The primary objective is to provide access to 3.03 miles of spawning and rearing habitat for southern steelhead trout by removing the passage migration barrier at Crossing 8 and replacing it with a 54 foot-span concrete bottomless arch culvert (bridge).

The secondary objective is to address task “SYR-SCS-3.1 - Develop and implement plan to remove or modify fish passage barriers within the watershed” from the *Southern California Steelhead Recovery Plan* by implementing the replacement of an existing low flow crossing that is a complete barrier to all life stages of steelhead trout in the summer and fall with a free-span bridge that is passable to all life stages.

Project Description:

Location:

The Quiota Creek watershed is located in the lower half of the Santa Ynez River watershed, 8.4 stream miles downstream of Bradbury Dam (Lake Cachuma) (Figures 1 and 2 in Project Location Topographic Map) and 39.6 miles inland from the Pacific Ocean and east of the cities of Lompoc and Buellton. Quiota Creek enters the Santa Ynez River near the town of Santa Ynez within the County of Santa Barbara. Crossing 8 is located 3.0 miles upstream of the Santa Ynez River. The proposed work in the creek will extend approximately 80 feet upstream and 120 feet downstream of the South Refugio Road crossing. The proposed road work extends approximately 220 feet east and 200 feet west of the stream crossing. The project extends from the upstream County Right-of-Way to downstream of the County Right-of-Way and is bounded by privately owned parcels. The Grantee has actively collaborated with the landowners and will continue to work with each landowner with regard to temporary construction easements and impacts during the implementation of this project. Project coordinates are: 34.55865N; -120.08364W

Project Set Up:

The Grantee implements the Quiota Creek Crossing 8 Project. This includes all required permitting, project management (Timothy H. Robinson), and contract administration, which includes the preparation of bid documents, advertising the construction project, and awarding the contract. The Grantee will also conduct the pre-bid meeting as well as the pre-construction meeting. The Grantee's two on-staff biologists (Scott J. Volan and Scott B. Engblom) will conduct surveys for *O. mykiss* and protocol surveys for red-legged frog prior to any construction activities. Biologists will also hold a pre-project safety meeting regarding sensitive species and train construction personnel to make sure that mitigation measures are in place. The Grantee is also responsible for erosion control at the project site, which includes silt fencing, straw bales (or wattles), sandbags, and visqueen. The Grantee will assist in the installation of the dewatering system (if needed), and will carefully remove any sensitive species from the project area. Biologists will be on site daily, prior to construction each morning and during the work day, to sweep the entire construction site for any sensitive species and conduct daily water quality monitoring if the stream is flowing and a bypass system is necessary. Towards the end of the project, the Grantee will be responsible for planting and maintaining all mitigation trees. The HDR Fisheries Design Center is responsible for the design and engineering of the Quiota Creek Crossing 8 Project. Specifically, Michael Garello (Civil Engineer, PE) is the lead designer for this project. He and his staff will be involved with all aspects of this project, including multiple site visits for design engineering oversight and regular

communication with the project manager and subcontractors. The hired subcontractor (awarded by the Grantee through a competitive bidding process, to be named later) will be responsible for the bulk of the on-the-ground construction activities. The hired contractor will be responsible for the mobilization of equipment, demolition of the existing bridge, and the installation of the new 54-foot bottomless-arched culvert. The subcontractor will install and operate the dewatering system (if needed). The subcontractor will be responsible for site excavation and prep, exporting unsuitable material, preparing and constructing the Cast-in-Place (CIP) footings for the bridge, building the instream rock weirs and rootwad, site drainage, and installing the new bridge. Once the bridge is installed, the subcontractor will complete the road embankment fill, compaction, and grading as well as be responsible for preparing, grading, and installing the road base pavement for the road. The subcontractor will install the two (2) rock weirs, the rootwad, Engineered Streambed Material (ESM), backfill, and the rock slope protection (RSP) within and around the stream corridor. The subcontractor will be responsible for the finished grade, and installation of the cattle exclusion fencing (pickets), for site clean-up and demobilization, the required County signs and delineators, bridge graffiti coating, and the protection of existing facilities. The awarded construction subcontractor will subcontract the following job duties: Materials testing, Hydromulch/hydroseed application, Guardrail/bridge rail fabrication and installation and ranch fence installation

Materials:

Stream Bypass: A combination of sandbags, straw bales, visqueen, and piping/culverts will be installed to allow water to pass through the project area without any interruption in stream flow downstream of the project area if water is present. Dewatering System: If water is present, a dewatering system will be installed to keep the project site dry. Sump pumps, screens, and piping material will be used to keep water out of the project area. Erosion Control: Silt fencing will be placed around the entire project (as a sediment trap and as a movement barrier for sensitive and non-sensitive species). Straw wattles will be strategically placed in areas to prevent rainfall runoff through the construction site, although unlikely during the proposed construction window. Bridge Footing Preparation: Foundation (float) rock will be imported to the project site to serve as the base for the bridge CIP footings. The foundation rock specification is 3-inch minus, and will be delivered via a 10-ton haul truck. Geotextile fabric will be placed below the foundation rock below and around the footings as required by the engineering design. CIP Footings: Cast-in-place (CIP) concrete forms will be built on top of foundation rock and concrete poured into the footings for the new bridge. Concrete will be delivered via truck and a concrete pump truck with an 80-foot boom to reach both footings. Bottomless-Arched Culvert (Bridge): The 14 pieces of the 54-foot prefabricated bridge will be constructed at an off-site facility and brought via large semi-trucks to the project site. A large crane and boom system

will be used at the project site to pick from the semi-trucks and place each bridge segment. Two Rock Weirs and a Rootwad: 2 rock weirs and 1 rootwad will be installed for grade and profile control. The rock weirs will be constructed with rock with a minimum diameter of 44-inches. The rootwad will be salvaged from a large coast live oak that needs to be removed for the new bridge. Road Embankment Fill, Compaction, and Grading: Compactable soil (fill) will be delivered via haul truck to the project site. Suitable native material from the site excavations will also be used. This material will be used to backfill both road approaches to the new bridge, as well as any areas behind the wing-walls of the bridge that are in need of additional material. An excavator, skid steer loader, and vibratory compacters will be used to place and compact the imported soil. Road Base: Crushed road base will be imported and installed to form the road approaches and across the new bridge. Road base will be delivered via haul truck. A skid steer loader and vibratory compactor will be used to transfer, grade and compact the new road base material. Site Drainage: Geotextile fabric will be placed to line road drainage areas. Quarry spalls (cobble sized rock) will be imported via haul truck and placed on top of the geotextile to armor the drainages. Asphalt Pavement: Once the road base is installed, graded, and compacted, asphalt will be spread on the bridge approach roads and over the new bridge. Guard and Bridge Rails: Approximately 475 linear feet of guard and bridge rail will be fabricated off-site and then imported to the project site. The rails will be installed by hand and using a post driver. Bridge Coating Systems: An anti-graffiti coating will be applied to the new bridge. Approximately 22 gallons of concrete sealer (and masonry stain) and 22 gallons of anti-graffiti coating will be used on the new bridge. A power washer, airless sprayer, and 12 feet of scaffolding will be used to clean the bridge and apply the coating. Engineered Streambed Material (ESM): 120 tons of ESM will be delivered to the project site or obtained from site excavations. ESM will be placed and spread with a large excavator and watered in with gravels, sands and fines. Rock Slope Protection (RSP): 600 tons of RSP will be delivered and placed around the bridge foundations and in front of all wingwalls. Geotextile fabric will be placed under the RSP. Soil will be placed (within the interstitial spaces of the RSP) to facilitate willow stakes and hydraulic roughness. RSP will be imported to the project site and placed with a large excavator. Revegetation: Native trees will be planted at the appropriate mitigation rate, commensurate with the number of trees removed or damaged as a result of the project. In addition, hydro-mulch and hydro-seed with a native seed mix approved by CDFW will be broadcast on disturbed area. Replace Existing Fence and Cattle Exclusion Fencing: A flexible system of picket fence will be installed underneath the bridge. Lumber, wire rope, and hardware will be brought to the project site to build the needed cattle exclusionary fencing. A newly aligned cattle fence line will also be installed. County Bridge and Road Requirements: Required delineators, guardrail reflectors and signage will be placed on both sides of the road.

Tasks:

1. Project management: The Grantee will conduct and coordinate all aspects of pre-project planning, administration, preparing bid documents, advertising, awarding the contract, running the pre-bid meeting, project oversight, billing and grant administration and reimbursements.

2. Pre-construction meeting: All landowners will be invited to discuss the impending project, expectations, access needs, timeline and meet the subcontractor.

3. Permitting: Permits include Army Corps of Engineers Permit (ACOE), CDFW 1600 (LSA), S.B. County Encroachment Permit, and SWRCB 401 Certification. All permits will be submitted in the spring of 2019 and are expected to be complete (approved and signed) several months before the start of construction.

4. Storm-water Pollution Prevention Plan and Traffic Control Plan: These plans will be completed by the subcontractor. All plans will be approved and signed by the necessary parties before the start of construction.

5. Dewatering, Erosion Control, Fish Removal, Road Access, Maintenance and Monitoring, and Re-vegetation Plans: These will be reviewed and approved through the design approval, by CDFW and NMFS.

6. Fish and California red-legged frog (*Rana draytonii*) rescue and relocation: Although it is unlikely that fish will be present prior to and during construction due to the prolonged drought, appropriate regulatory agencies (CDFW, NMFS, and USFWS) will be notified and a rescue/relocation operation will commence as recommended by the agencies if fish are present. The Grantee's biologists will also be conducting pre-project protocol surveys (and subsequent relocation if present within the footprint) for red-legged frogs and other sensitive species and will provide a report to USFWS.

7. Stream bypass/dewatering system: Prior to any on-the-ground construction within the stream channel, the subcontractor and Grantee personnel will install the stream bypass system in the event that water is present within the project site. If a stream bypass is needed, careful consideration will be made to allow all surface water to be reconnected with the stream downstream of the project footprint.

8. Erosion Control: The Grantee will lay out all of the erosion control measures prior to on-the-ground-construction and will maintain it (with assistance from the subcontractor) throughout the construction.

9. Demolition: The subcontractor will be using heavy equipment (excavator, jackhammer, and haul truck) to demo and remove the existing crossing and road approaches.

10. Excavation: The subcontractor will be using heavy equipment to excavate, stockpile, separate and prepare the area for the installation of the bridge and wingwall footings and reuse existing native materials.

11. Export material: The subcontractor will haul out all unwanted material created from excavation of the project site and dispose in an approved manner.

12. Footing preparation: The bridge footings will be prepared by the subcontractor by laying out geotextile fabric and putting foundation rock below the footings. The subcontractor will build the footing forms on top of the foundation rock.

13. CIP footings: The subcontractor will prepare cast-in-place concrete forms and reinforcement. The concrete will be delivered to the site and then pumped to each foundation.

14. Installation of arch bridge and wing walls: The subcontractor, with the help of a crane truck and crew, will pick each individual piece (14 total) of the 54-foot by 20-foot span prefabricated bridge arch system off a semi-truck and construct the bridge.

15. Road embankment fill, compaction, and grading: The subcontractor will use various pieces of heavy equipment to move, place and compact soil fill, mainly to construct the road approaches and tie in all other elements of the project up to the designed grade.

16. Excavation and Installation of 2 Rock Weirs: The contractor will use various pieces of heavy equipment to move, place and compact large rock (minimum diameter of 44-inches) to form 2 separate rock weirs.

17. Excavation and Installation of a Rootwad: The contractor will use heavy equipment to excavate a space and move and place a salvaged rootwad near the downstream end of the project. A local scour pool will be pre-formed around the rootwad

18. Installation of Engineered Streambed Material (ESM): The subcontractor will use an excavator to move and place ESM within the stream channel to create the design stream grade/profile throughout the project site. Native stream bed materials will be used for the ESM.

19. Placement of Rock Slope Protection (RSP): The subcontractor will place geotextile fabric (by hand) along the banks of the project site that are in need of stabilization and use an excavator to move and place RSP on top of the geotextile. Voids between placed rock will be filled with native cobbles and dirt to allow for revegetation.

20. Site drainage: The subcontractor will use geotextile fabric and quarry spalls to create the appropriate drainage around the project site.

21. Asphalt road: The subcontractor will place asphalt along both road approaches and over the bridge.

22. Anti-graffiti treatment: The subcontractor will clean all exposed areas of the bridge and wingwalls with a power washer, and then use an airless sprayer to apply concrete sealer, masonry stain, and anti-graffiti coating.

23. Installation of Bridge and road guardrails: A sub-subcontractor (to be named later) will install the required guardrails for the road and the bridge once the bridge and wingwalls are in place. Sections of guardrail will be delivered by truck, lifted and installed with appropriate machinery.

24. Cattle exclusion and existing fence: A sub-subcontractor will construct and install a picket fence underneath the new bridge to prevent cattle from moving into adjacent properties. All damaged/removed sections of existing fence line along South Refugio Road will be replaced as well.

25. Revegetation: The Grantee will acquire native trees at the required mitigation rate (depending on how many trees are damaged/removed) during the construction of the new bridge and plant them within or in the vicinity of the project area. A sub-subcontractor (to be named later) will spray hydro-mulch and CDFW approved native seed on all disturbed areas of the project site.

26. County road safety requirements: The subcontractor will install all required signage and reflectors on the bridge and road guardrails.

27. Protection of existing facilities: The subcontractor will coordinate with truck drivers and install measures to protect storm water facilities and private property existing within the road right-of-way during all aspects of construction, specifically during Bridge delivery and installation.

28. Site cleanup: The subcontractor will be cleaning up the entire project site and will leave no traces of construction material, trash, and rubbish. Material will be moved offsite and disposed at an approved facility.

29. Invoice: Invoices will be submitted by the Grantee to the CDFW FRGP grant program during construction with the final invoice in January, shortly after the completion of the project.

30. Final Report: A final report will be submitted by the Grantee to the CDFW FRGP grant program. The report will summarize the construction and post-monitoring data to verify that the project was successful in addressing the known limiting factors and identified threats.

Deliverables:

(Tasks 1-5) - Pre-project checklist items (including contract management, design, meetings, and required permits and plans). The bidding and eventual hiring of the subcontractor will be conducted through a competitive bidding process with the ultimate goal of hiring a licensed, experienced, competent, and efficient construction crew.

(Tasks 6-8) - The Grantee's biologists will be on site daily to make sure all protection measures are in place prior to the commencement of work each day. Erosion control measures will be installed and maintained throughout the project area prior to construction activities to prevent sedimentation and impact to local wildlife and sensitive species, adjacent properties, land, and water.

(Tasks 9-19) - This portion of the task list will allow fish passage to designated critical spawning and rearing habitat upstream by removing the Arizona crossing and replacing it with a prefabricated 54-foot bottomless arched culvert (bridge) that will provide adult and juvenile steelhead passage across the full range of identified fish passage flows (1-148 cfs). The new load capacity of the Bridge will be designed to the HL-93 loading factor.

(Tasks 20-23) - Once the new bridge has been installed, the subcontractor will focus on refurbishing and redesigning the project footprint along Refugio Road to meet County standards and requirements. All safety standards, signage, and road/bridge rails will be constructed. The exposed concrete of the 54-foot bottomless-arched culvert will be treated with concrete sealer, masonry stain, and treated with anti-graffiti coating.

(Tasks 24) - Once the bridge is installed, the subcontractor will replace all damaged/removed sections of the fence lines with new fencing. The subcontractor will also construct and install a wooden picket fence underneath the new bridge to prevent movement between adjacent properties.

(Task 25) – Any removed trees will be replaced at or above the required mitigation rate, and are maintained for years after the project is finished to ensure a greater than 80% survival rate. Hydro-mulch and hydro-seed will be spread throughout all disturbed areas of the project site.

(Tasks 26-28) - The final elements include road delineators, signs, site cleanup, and the protection of existing facilities.

(Task 29) - Invoices will be submitted by the Grantee to the CDFW FRGP grant program during construction with the final invoice in January.

(Task 30) - A final report will be submitted by the Grantee to the CDFW FRGP grant program.

Additional Deliverables:

- Post-project monitoring to evaluate the structural and biological effectiveness of the project.
- Conducting public outreach through a) conference presentations highlighting the successes of the Crossing 9 Project and b) local presentations to the general public and to further promote recovery efforts.
- Annual performance evaluation of the structural stability and fish passage conditions as well as the success of the re-vegetation effort that will be submitted to CDFW and NMFS.

Timelines:

The proposed project is anticipated to take one year to prepare and construct within a 2-year time-frame (pending permitting or final review delays). The 100% design approval is expected by the summer of 2019. Permits will be submitted in the spring of 2019 and will be completed by the summer of 2019.

Construction, restoration, and pre-/post-construction monitoring will begin in the late summer of 2019 and end in December of that year. If there are any delays the project will then be constructed in the fall of 2020.

The timeline below is linked to the tasks (task list section above), with estimated completion dates in parenthesis.

1. Project management, contract administration and prebid meeting: (February-August)
2. Pre-construction landowner meeting: (August-September)
3. Permitting (Army Corps of Engineers Permit (ACOE), CDFW 1600 (LSA), S.B. County Encroachment Permit, and SWRCB 401 Certification): (February-May)
4. Storm-water Pollution Prevention Plan and Traffic Control Plan: (June-August)
5. Dewatering, Erosion Control, Fish Removal, Road Access, Maintenance and Monitoring, and Re-vegetation Plans: (September)

6. Fish and California red-legged frog rescue and relocation: (September-December)
7. Stream bypass/dewatering system: (September-December)
8. Erosion control: (September-December)
9. Demolition: (September-December)
10. Excavation: (September-December)
11. Export material: (September-December)
12. Footing preparation: (September-December)
13. CIP footings: (September-December)
14. Installation of arch bridge and wing walls: (September-December)
15. Road embankment fill, compaction, and grading: (September-December)
16. Installation of two rock weirs: (September-December)
17. Installation of a rootwad: (September-December)
18. Installation of Engineered Streambed Material (ESM): (September-December)
19. Placement of Rock Slope Protection (RSP): (September-December)
20. Site drainage: (September-December)
21. Asphalt road: (September-December)
22. Anti-graffiti treatment: (September-December)
23. Installation of bridge and road guardrails: (September-December)
24. Cattle exclusion fencing and replace existing fence: (November-December)
25. Revegetation: (November-December)
26. County road safety requirements: (November-December)
27. Protection of existing facilities: (September-December)
28. Site cleanup: (November-December)
29. Final Invoice: (December-January)
30. Final Report: (January-February)

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of 10 working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Grantee will implement the following measures to minimize harm and mortality to listed salmonids:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
e. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Santa Ynez (3412051) OR Solvang (3412052) OR Zaca Creek (3412062) OR Los Olivos (3412061) OR Figueroa Mtn. (3411968) OR Lake Cachuma (3411958) OR Dos Pueblos Canyon (3411948) OR Tajiguas (3412041) OR Gaviota (3412042))

Possible species within the Santa Ynez quad and surrounding quads for 725625 Fish Passage Improvement at Crossing 8, Quiota Creek, Santa Barbara County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acanthoscyphus parishii var. abramsii Abrams' oxytheca	PDPGN0J041	None	None	G4?T1T2	S1S2	1B.2
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Agrostis hooveri Hoover's bent grass	PMPOA040M0	None	None	G2	S2	1B.2
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Anniella pulchra northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos purissima La Purisima manzanita	PDERI041A0	None	None	G2	S2	1B.1
Arctostaphylos refugioensis Refugio manzanita	PDERI041B0	None	None	G3	S3	1B.2
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Astragalus didymocarpus var. milesianus Miles' milk-vetch	PDFAB0F2X3	None	None	G5T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Calochortus fimbriatus late-flowered mariposa-lily	PMLIL0D1J2	None	None	G3	S3	1B.3
Calochortus palmeri var. palmeri Palmer's mariposa-lily	PMLIL0D122	None	None	G3T2	S2	1B.2
Caulanthus amplexicaulis var. barbarae Santa Barbara jewelflower	PDBRA0M012	None	None	G4T2	S2	1B.1
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Cordylanthus rigidus ssp. littoralis seaside bird's-beak	PDSCR0J0P2	None	Endangered	G5T2	S2	1B.1
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Deinandra increscens ssp. villosa Gaviota tarplant	PDAST4R0U3	Endangered	Endangered	G4G5T2	S2	1B.1
Delphinium umbraculorum umbrella larkspur	PDRAN0B1W0	None	None	G3	S3	1B.3
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Empidonax traillii extimus southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fritillaria ojaiensis Ojai fritillary	PMLIL0V0N0	None	None	G3	S3	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Juncus luciensis Santa Lucia dwarf rush	PMJUN013J0	None	None	G3	S3	1B.2
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Layia heterotricha pale-yellow layia	PDAST5N070	None	None	G2	S2	1B.1
Lonicera subspicata var. subspicata Santa Barbara honeysuckle	PDCPR030R3	None	None	G5T2?	S2?	1B.2
Monardella hypoleuca ssp. hypoleuca white-veined monardella	PDLAM180A3	None	None	G4T3	S3	1B.3
Monardella sinuata ssp. sinuata southern curly-leaved monardella	PDLAM18161	None	None	G3T2	S2	1B.2
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
Passerculus sandwichensis beldingi Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
Pelecanus occidentalis californicus California brown pelican	ABNFC01021	Delisted	Delisted	G4T3T4	S3	FP
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Salvadora hexalepis virgultea coast patch-nosed snake	ARADB30033	None	None	G5T4	S2S3	SSC
Scrophularia atrata black-flowered figwort	PDSCR1S010	None	None	G2?	S2?	1B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Southern California Steelhead Stream Southern California Steelhead Stream	CARE2310CA	None	None	GNR	SNR	
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern Vernal Pool	CTT44300CA	None	None	GNR	SNR	
Southern Vernal Pool						
Southern Willow Scrub	CTT63320CA	None	None	G3	S2.1	
Southern Willow Scrub						
Spea hammondii	AAABF02020	None	None	G3	S3	SSC
western spadefoot						
Sternula antillarum browni	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California least tern						
Taricha torosa	AAAAF02032	None	None	G4	S4	SSC
Coast Range newt						
Taxidea taxus	AMAJF04010	None	None	G5	S3	SSC
American badger						
Thamnophis hammondii	ARADB36160	None	None	G4	S3S4	SSC
two-striped gartersnake						
Thelypteris puberula var. sonorensis	PPTHE05192	None	None	G5T3	S2	2B.2
Sonoran maiden fern						
Thermopsis macrophylla	PDFAB3Z0E0	None	Rare	G1	S1	1B.3
Santa Ynez false lupine						
Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Valley Needlegrass Grassland						
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S2	
least Bell's vireo						

Record Count: 71

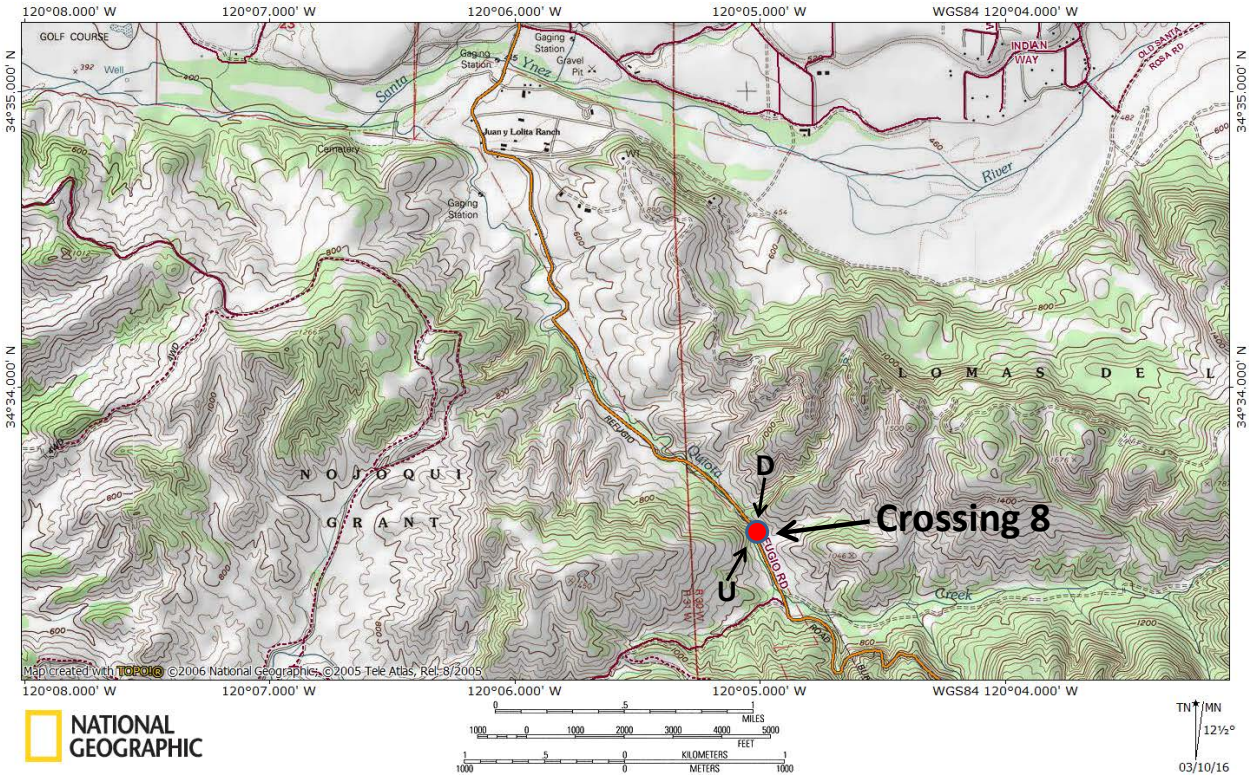


Figure 1b: 7.5 Minute Quad Map (Santa Ynez Quad) showing Crossing 8 Project site on Refugio Road; D = downstream and U = upstream of project.

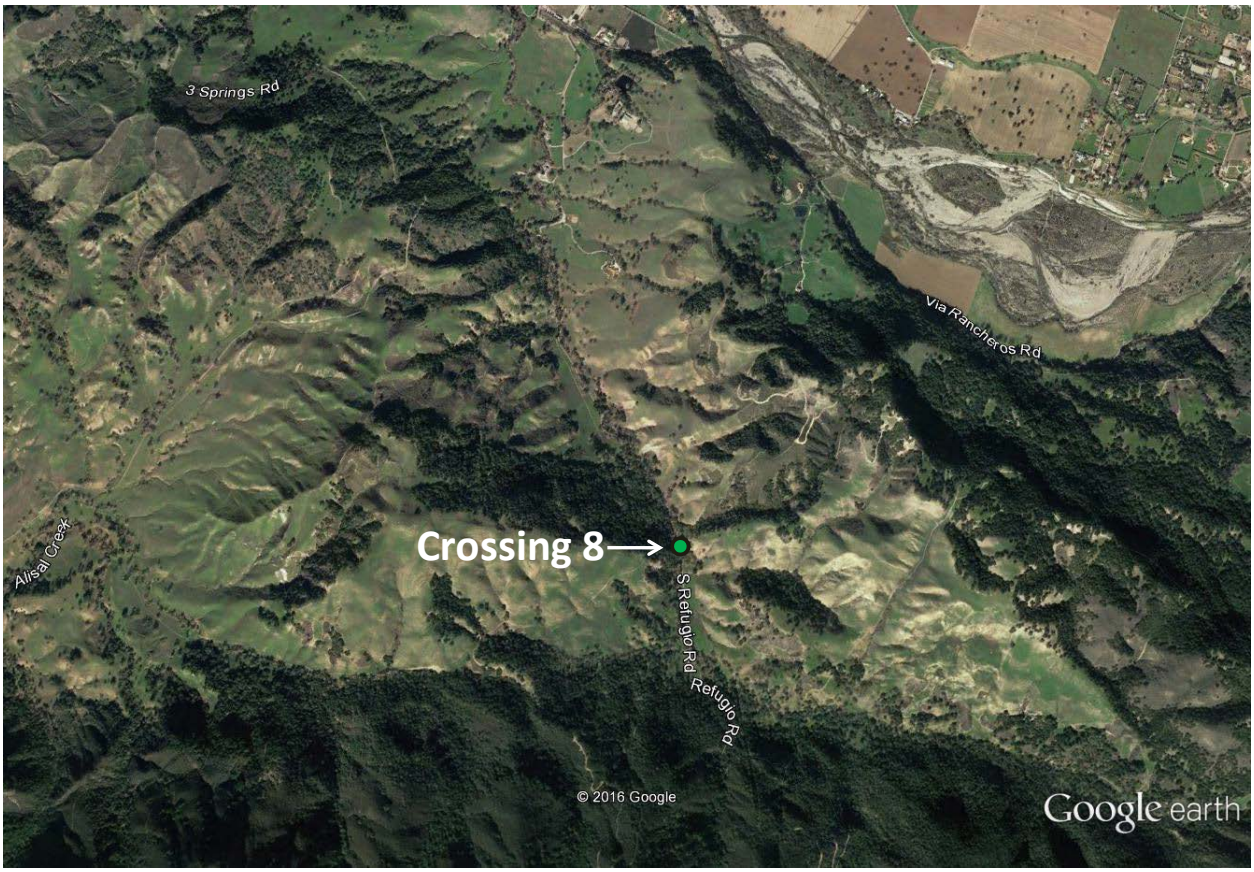


Figure 2: Crossing 8 Project location showing aerial view of project site.

Project Location Watershed Map

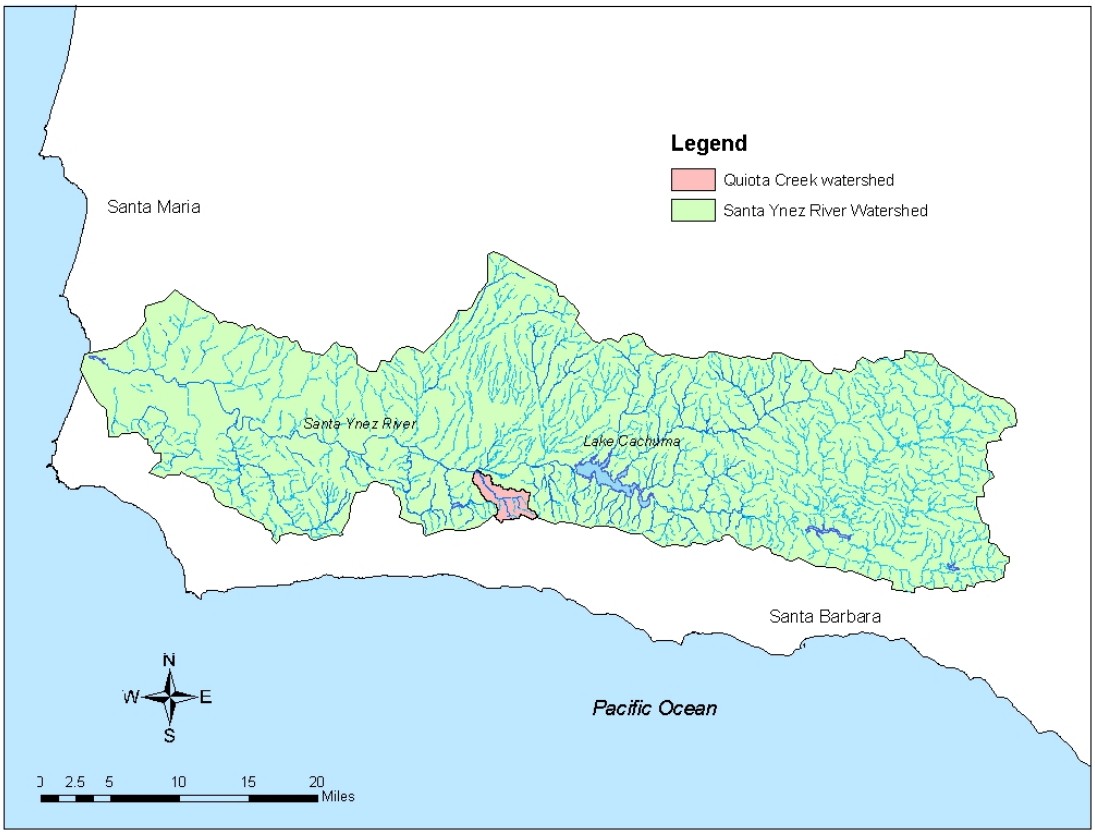


Figure 1a: Santa Ynez River Watershed (green) showing the Quiota Creek Watershed (pink).

Introduction:

The Scott River Watershed Council (Grantee) will follow engineered designs to improve salmonid habitat in the Scott River. The project will reconnect a section of floodplain by installing instream log structures, constructing off-channel alcove habitat and planting riparian vegetation. The project will address limiting factors to salmonids by restoring critical winter and summer refugia habitat for juvenile Coho Salmon (*Oncorhynchus kisutch*).

Legacy mining and water diversion impacts have degraded salmonid habitat, channelizing the Scott River, resulting in excessive flow velocities during storm events and reduced stream flows in summer months. Reduced flows in the summer lead to lethal water temperatures and juvenile stranding.

The Grantee will develop a monitoring plan for effectiveness of the off-channel habitats and wood structures. The monitoring plan will collect data on fish utilization and habitat capacity, including biological and physical habitat metrics, and photo documentation monitoring.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. Work in flowing streams is restricted to June 15 through October 31. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual,* Volume I Parts VII, VIII, and Volume II Part XI.

Objective(s):

Improve channel structure and function by reconnecting 0.4 acres of off-channel habitat to the main channel. The proposed design includes four (4) engineered log structures, inlet and outlet pilot channels, an off-channel pond, large wood cover in the off-channel pond, and willow and cottonwood planting. Project effectiveness monitoring will be conducted for two seasons post-construction.

Project Description:

Location:

The project site is located on the west bank of the Scott River about 45 miles upstream of its confluence with the Klamath River. The nearest bridge crossings are about 2.6 miles upstream of Fay Lane bridge crossing and about 3.7 miles downstream of the East Callahan Road bridge crossing. Project coordinates are: 41.961083 North Latitude and 122.824657 West Longitude.

Project Set Up:

Michael Pollock PhD, NOAA Northwest Fisheries Science Center is the Principal Investigator and will be the overall scientific lead. He will collaborate on study protocol development and lead manuscript development (Tasks: 1, 4, 6).
Joey Howard PE Lic. 53319 (or similarly qualified) will be the science lead for physical habitat change detection, fish passage analysis, groundwater recharge and water quality assessments. He will be responsible for photogrammetry post-processing, writing reports and presenting results at conferences and field tours (Tasks: 1, 2, 3, 4, 6).

Shari Witmore Co- PI, NOAA will assists with data analysis, supervise and perform fish handling activities (SCP holder), mark and recapture, PIT tagging, and surveying. She will be responsible for overall biological monitoring activities, QC/QA adherence, and will assist with report and manuscript development (Tasks: 1, 4, 6).

Erich Yokel, (or similarly qualified) will be the Grantee Monitoring Supervisor and will perform data analysis, be responsible for overall monitoring activities, QC/QA adherence, write reports, collaborate with all participants, perform physical conditions data collection (velocity, geomorphic and similiar), participate in generating the annual grant status report and final report, and will present project results at conferences (Tasks: 4, 5, 6).

Charnna Gilmore, the Grantee's Executive Director will be resopnsible for overall project management. She will coordinate tasks, ensure deliverables are met, ensure grant compliance, provide community and professional outreach, present project results at conferences, and supervise and coordinate community volunteers (Tasks: 1, 6, 7).

Betsy Stapleton, the Grantee's Board Chair: will be resopnsible for overall project management. She will coordinate tasks, ensure deliverables are met, ensure grant compliance, provide community and professional outreach, present project results at conferences (Tasks: 1, 6, 7).

Kristen Sellmer, the Grantee's Fisheries Biologist, (or similarly qualified) will perform fish handling activities, mark and recapture, PIT tagging, and will be responsible for PIT Tag and PIT Array data collection, data entry and QA/QC (Tasks: 4, 5, 6).

Larry Alexander, NCRC will provide crew for riparian plant maintenance including watering and exclusionary fencing, post-implementation weed control, and community/landowner outreach. He will also be the lead on surveys needed for NEPA/CEQA compliance (Tasks: 4, 7).

Billy Perry, North Rivers Construction will be the Lead general contractor for the installation of all instream structures, site preparation, and cleanup (Tasks: 2, 3).

Jess McArthur, the Grantee's Grant Compliance Auditor, (or similarly qualified) will set up grant files and audit quarterly to ensure compliance with all contract terms and legal obligations (Tasks: 1, 7).

The Grantee's Monitoring Technician (laborer) will maintain PIT arrays, perform all monitoring activities under supervision, and contribute to report writing (Task: 4)

The Grantee's Administrative Assistant Staff will be responsible for administrative support and data entry as qualified per their job description (Task: 7).
The Grantee's Bookkeeper will be responsible for bookkeeping and grant-related financial reporting as qualified per their job description (Task: 7).

Landowners and Volunteers will provide volunteer labor for structure maintenance (Task: 4)

Kristen Sellmer, Project Manager (or other similarly qualified staff) will coordinate with staff on all project tasks and develop detailed work schedule. She will ensure staff and contractors have materials and training necessary to execute project tasks safely, efficiently, and accurately (Tasks: 1, 2, 3, 4, 6, 7).

Materials:

Logs and rootwads: 48 logs 40 ft. in length, 32 logs 25 ft. in length, 16 logs 18 ft. in length and 10 rootwads will be used to build the habitat structures. Logs will have an average diameter of 1.5 ft. and rootwads with an average diameter of 15 to 24 in. These structures will act as hydraulic controls to support the restoration of natural channel processes and the creation of high quality anadromous fish habitat. Boulders: Approximately 323 tons of boulders (2.5-2.9 ft. diameter) will be used to stabilize locations required as part of the development of instream features. It will be used as a ballast for adding weight and frictional resistance to the log structures. Willow and Cottonwood poles: A total of 664 Willow poles and cottonwood poles will be installed in the native streambed material at structure locations and planted around the perimeter of the off-channel pond. These plantings will restore the riparian zone at the project site. Terrace fill: 4300 cubic yards of fill material will be used to stabilize and fill voids in the log structures.

Miscellaneous office supplies: Field maps, flagging, photo duplication, copying/binding for final reports, phone, fax, email and postage. Post-construction monitoring supplies:Habitat Monitoring and Surveys: Waders, Boots, Wetsuits, and Snorkeling supplies Habitat Monitoring and Surveys: Water Level Loggers and Stilling Wells Habitat Monitoring and Surveys: Water Temperature Loggers Habitat Monitoring and Surveys: DO Loggers and DO Logger Membranes Fish Monitoring: PIT Tags Fish Monitoring: Antenna Arrays Habitat Monitoring: Post pounder rental for two days Fish Monitoring: Fyke Net, Seine Nets, and Block Nets Habitat Monitoring: YSI Do Meter- monitoring DO for fish

handling and spot check DO. Fish and Habitat Monitoring: Field Computer Data Management and Reporting: Office Computer Habitat Monitoring: Drone Rental Habitat Monitoring: Onset Hoboware Pro/Optic USB Base Fish Monitoring: Misc Fish Handling supplies, minnow nets, clip boards, measuring boards, water proof paper etc. Habitat Monitoring: Hach Company Velocity meter Habitat Monitoring: Misc. Small Survey Items such as Clipboards, Tapes, Stadia Rods, Staff Plates

The heavy equipment contractor will be responsible for acquiring the following materials: 1. Logs and rootwads 2. Terrace fill 3. Boulders. The Grantee will be responsible for acquiring the following materials: 1. Willow and cotton wood poles 2. Miscellaneous field and office supplies 3. Monitoring supplies

Tasks:

Construct four (4) instream LWD structures and one (1) off channel habitat feature. Monitor restoration effectiveness to improve Coho Salmon spawning and rearing habitat in Scott River by completing the flowing tasks.

Task 1. Project Management:

- Project Manager and administration staff will conduct agreement oversight and project management. All reporting and accounting will be pursuant to agreement and regulatory guidelines.

- Subcontracting: The Grantee will prepare, solicit bid proposals and conduct bid tour. Select qualified subcontractors.

- Project tracking and invoicing: Project tracking and invoicing will be conducted over the life of the project. All reporting and billing will be pursuant to agreement and regulatory guidelines.

- Effectiveness Monitoring: Grantee will develop effectiveness-monitoring plan, implement approved plans, and plant vegetation, conduct pre/post construction surveys, effectiveness monitoring report.

- Data Management and Manuscript: Monitoring Supervisor will oversee monitoring data analysis and management in accordance with the Grantee's QC/QA plan.

- Produce a scientific report summarizing the monitoring data of the project features.

Task 2. Site Preparation:

- Technical Subcontractor will identify feature locations, construction staking

and inspection. Placement of grade stakes and locating placement of large wood with the contractor.

- Technical Subcontractor will inspect construction of the project features and oversee construction activities. Inspection includes checking and approving grades and large wood placement.

Task 3. Instream Construction:

- Install four log wood structures: Log with root wad structures and boulders or ballast will be constructed and anchored according to the construction details and specifications.

- Off Channel Habitat Enhancement: Area will be excavated to the depths and side slopes indicated in the plans. Spoil material will be delivered and spread to designated areas as shown on the plans.

- Large Wood Pond Cover Structures: Log structures and boulders or ballast will be placed and anchored according to the construction details and specifications

- Riparian Planting: Revegetation of riparian species will follow the planting plan as described in Final Design.

Task 4. Pre and Post Effectiveness Monitoring:

- Implementation monitoring will be conducted in accordance as described in the project's Effectiveness Monitoring Plan

- Water Quality Monitoring: Assess water quality in the off channel feature by monitoring water temperature, water level, and dissolved oxygen. Data will be collected by Onset HOBO data loggers as identified in the monitoring plan.

- Geomorphic Monitoring: Establish 5 photo point sites to document annual site changes to the instream and off channel habitat features. Photo monitoring will be conducted to document physical and vegetative response to the project and identify any issues of concern that may require maintenance. Photo monitoring will be conducted using photo points and aerial. Photo-points will be established as part of pre-construction activities from established locations that are located with GPS coordinates to ensure consistent and comparable views. Photo locations will include the inlet and outlet of the off channel feature, log structures, and areas that receive vegetation treatments.

- Fish Presences and Usage: Fish presence will be assessed by direct observation a minimum of twice a season (eight times a year) to evaluate usage of the pond and constructed habitat features (i.e. rootwad and woody material cover)

- Passive Integrated Transponder (PIT) Monitoring: Under the direction of California Department of Fish and Wildlife (CDFW) staff, the Grantee will install and maintain PIT Tag station and PIT antenna stations located at the inlet to the off channel habitat as well as upstream and downstream to collect data on Coho Salmon movement and utilization with the restored habitat. All monitoring protocols will be in accordance with the Effectiveness Monitoring Plan.

- The Grantee's Quality Assurance and Quality Control (QA/QC) Plan: The Grantee will work under the guidance of CDFW Fishery staff to implement the QA/QC plan. All monitoring protocols will be in accordance with Quality Assurance and Quality Control (QA/QC) Plan and approved by CDFW.

Deliverables:

- Final design plan set, as-built construction plan set in PDF.

- Restored beneficial fish habitat

- Monitoring data and manuscript

- Riparian management plan

- Final Report.

Timelines:

Task 1: Project Management- June 2019 through March 2023. Permitting and subcontractor bid/selection, invoicing/accounting, reporting, implementation monitoring.

Task 2: Site Preparation- June 2020 through July 2020. Design layout, feature locations. Construction staking.

Task 3: Instream Construction- June 2020 through November 2020. Install instream channel wood structures. Excavate off channel alcove, and install wood cover structures. Riparian planting.

Task 4: Pre/Post Effectiveness Monitoring- November 2020 through December 2022- Implement monitoring plans. Install PIT array station, water quality sensors. Complete biological, geomorphic and physical habitat surveys. Photo monitoring documentation. Compose scientific manuscript.

Annual Reports- November 2019, 2020, 2021, 2022

Draft Final Report- January 2023

Final Report- March 2023

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a "notice to proceed" letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of Grantor.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the potential transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- Fish relocation and dewatering activities shall only occur between June 15 and October 31 of each year.

- The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the Grantor Project Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

- Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

- Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

- All electrofishing shall be performed by a qualified fisheries biologist under the supervision of CDFW and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

- USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Project Manager on a form provided by Grantor.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Callahan (4112237) OR Eaton Peak (4112238) OR Etna (4112248) OR McConaughy Gulch (4112247) OR Gazelle (4112255) OR Scott Mountain (4112236) OR Tangle Blue Lake (4112226) OR Billys Peak (4112227) OR Deadman Peak (4112228))

Possible species within the Callahan quad and surrounding quads for 725688 Scott River Habitat Enhancement & Restoration, Siskiyou County

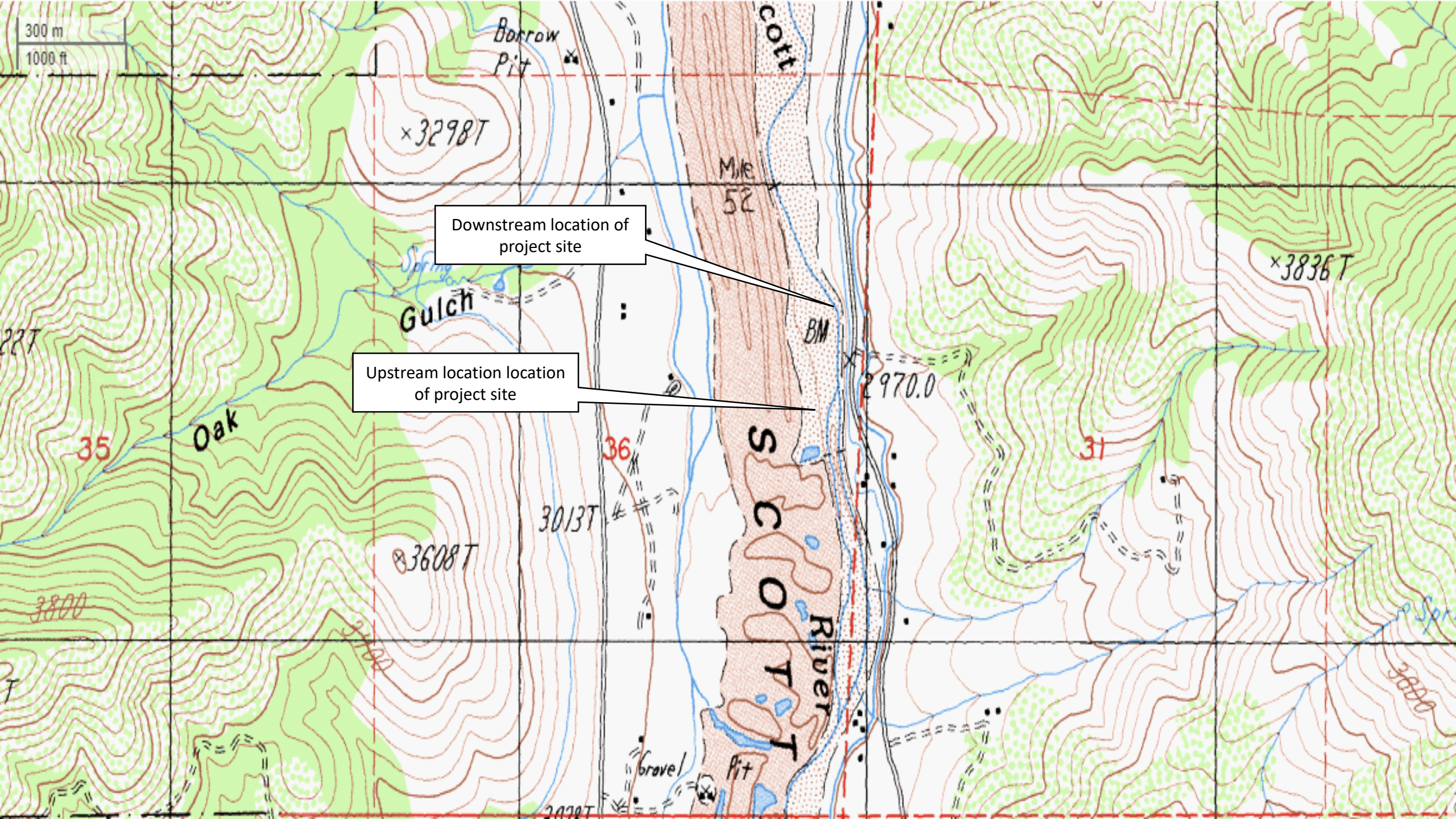
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abies lasiocarpa var. lasiocarpa subalpine fir	PGPIN01072	None	None	G5T5	S3	2B.3
Ambystoma macrodactylum sigillatum southern long-toed salamander	AAAAA01085	None	None	G5T4	S3	SSC
Anisocarpus scabridus scabrid alpine tarplant	PDASTDU020	None	None	G3	S3	1B.3
Arabis rigidissima var. rigidissima Trinity Mountains rockcress	PDBRA061R2	None	None	G3T3	S3	1B.3
Arctostaphylos klamathensis Klamath manzanita	PDERI041R0	None	None	G2S3	S2S3	1B.2
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Balsamorhiza lanata woolly balsamroot	PDAST11047	None	None	G3	S3	1B.2
Balsamorhiza sericea silky balsamroot	PDAST110C0	None	None	G4Q	S3	1B.3
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Bombus suckleyi Suckley's cuckoo bumble bee	IIHYM24350	None	None	GU	S1	
Botrychium pinnatum northwestern moonwort	PPOPH010V0	None	None	G4?	S2	2B.3
Botrypus virginianus rattlesnake fern	PPOPH010H0	None	None	G5	S2	2B.2
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Carex halliana Oregon sedge	PMCYP035M0	None	None	G4	S2	2B.3
Chaenactis suffrutescens Shasta chaenactis	PDAST200H0	None	None	G3	S3	1B.3
Cornus canadensis bunchberry	PDCOR01040	None	None	G5	S2	2B.2
Darlingtonia Seep Darlingtonia Seep	CTT51120CA	None	None	G4	S3.2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Epilobium oreganum Oregon fireweed	PDONA060P0	None	None	G2	S2	1B.2
Epilobium siskiyouense Siskiyou fireweed	PDONA06100	None	None	G3	S3	1B.3
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Eriogonum alpinum Trinity buckwheat	PDPGN08060	None	Endangered	G2	S2	1B.2
Eriogonum diclinum Jaynes Canyon buckwheat	PDPGN081S0	None	None	G3	S3	2B.3
Eriogonum umbellatum var. lautum Scott Valley buckwheat	PDPGN086UX	None	None	G5T1	S1	1B.1
Erythranthe trinitiensis pink-margined monkeyflower	PDPHR01070	None	None	G2	S2	1B.3
Erythronium citrinum var. roderickii Scott Mountains fawn lily	PMLIL0U042	None	None	G4T3	S3	1B.3
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Fissidens aphelotaxifolius brook pocket moss	NBMUS2W290	None	None	G3G4	S1	2B.2
Galium serpenticum ssp. scotticum Scott Mountain bedstraw	PDRUB0N1Y6	None	None	G4G5T2	S2	1B.2
Gulo gulo California wolverine	AMAJF03010	Proposed Threatened	Threatened	G4	S1	FP
Horkelia daucifolia var. indicta Jepson's horkelia	PDROS0W053	None	None	G4T1	S1	1B.1
Howellanthus dalesianus Scott Mountain howellanthus	PDHYD0C140	None	None	G3	S3	4.3
Hulsea nana little hulsea	PDAST4Z060	None	None	G4	S3	2B.3
Hymenoxys lemmonii alkali hymenoxys	PDAST530C0	None	None	G4?	S2S3	2B.2
Ivesia pickeringii Pickering's ivesia	PDROS0X0D0	None	None	G2	S2	1B.2
Juncus dudleyi Dudley's rush	PMJUN01390	None	None	G5	S1	2B.3
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Martes caurina Pacific marten	AMAJF01030	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Monadenia infumata ochromphalus yellow-based sideband	IMGASC7051	None	None	G2T1	S1	
Nebria gebleri siskiyouensis Siskiyou ground beetle	IICOL6L091	None	None	G4G5T4	S1S2	
Orthocarpus pachystachyus Shasta orthocarpus	PDSCR1H0L0	None	None	G1	S1	1B.1
Orthotrichum holzingeri Holzinger's orthotrichum moss	NBMUS560E0	None	None	G3	S2	1B.3
Parnassia cirrata var. intermedia Cascade grass-of-Parnassus	PDSAX0P044	None	None	G5T4	S3	2B.2
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Penstemon filiformis thread-leaved beardtongue	PDSCR1L2A0	None	None	G3	S3	1B.3
Phacelia greenei Scott Valley phacelia	PDHYD0C1V0	None	None	G2	S2	1B.2
Phacelia leonis Siskiyou phacelia	PDHYD0C2N0	None	None	G3	S2?	1B.3
Picea engelmannii Engelmann spruce	PGPIN03030	None	None	G5	S2	2B.2
Pohlia tundrae tundra thread moss	NBMUS5S1B0	None	None	G3	S3	2B.3
Polemonium pulcherrimum var. shastense Mt. Shasta sky pilot	PDPLM0E0J4	None	None	G5T2	S2	1B.2
Ptilidium californicum Pacific fuzzwort	NBHEP2U010	None	None	G4G5	S3S4	4.3
Raillardella pringlei showy raillardella	PDAST7X030	None	None	G2G3	S2S3	1B.2
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana cascadae Cascades frog	AAABH01060	None	Candidate Endangered	G3G4	S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sabulina stolonifera Scott Mountain sandwort	PDCAR0G110	None	None	G2	S2	1B.3
Schoenoplectus subterminalis water bulrush	PMCYP0Q1G0	None	None	G4G5	S3	2B.3
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Silene salmonacea Klamath Mountain catchfly	PDCAR0U2D0	None	None	G3	S3	1B.2
Silene suksdorfii Cascade alpine campion	PDCAR0U1W0	None	None	G4	S3	2B.3
Smilax jamesii English Peak greenbrier	PMSMI010D0	None	None	G3G4	S3S4	4.2
Vaccinium scoparium little-leaved huckleberry	PDERI180Y0	None	None	G5	S3	2B.2
Strix occidentalis caurina northern spotted owl	ABNSB12011	Threatened	Threatened	G3T3	S2S3	SSC

Record Count: 65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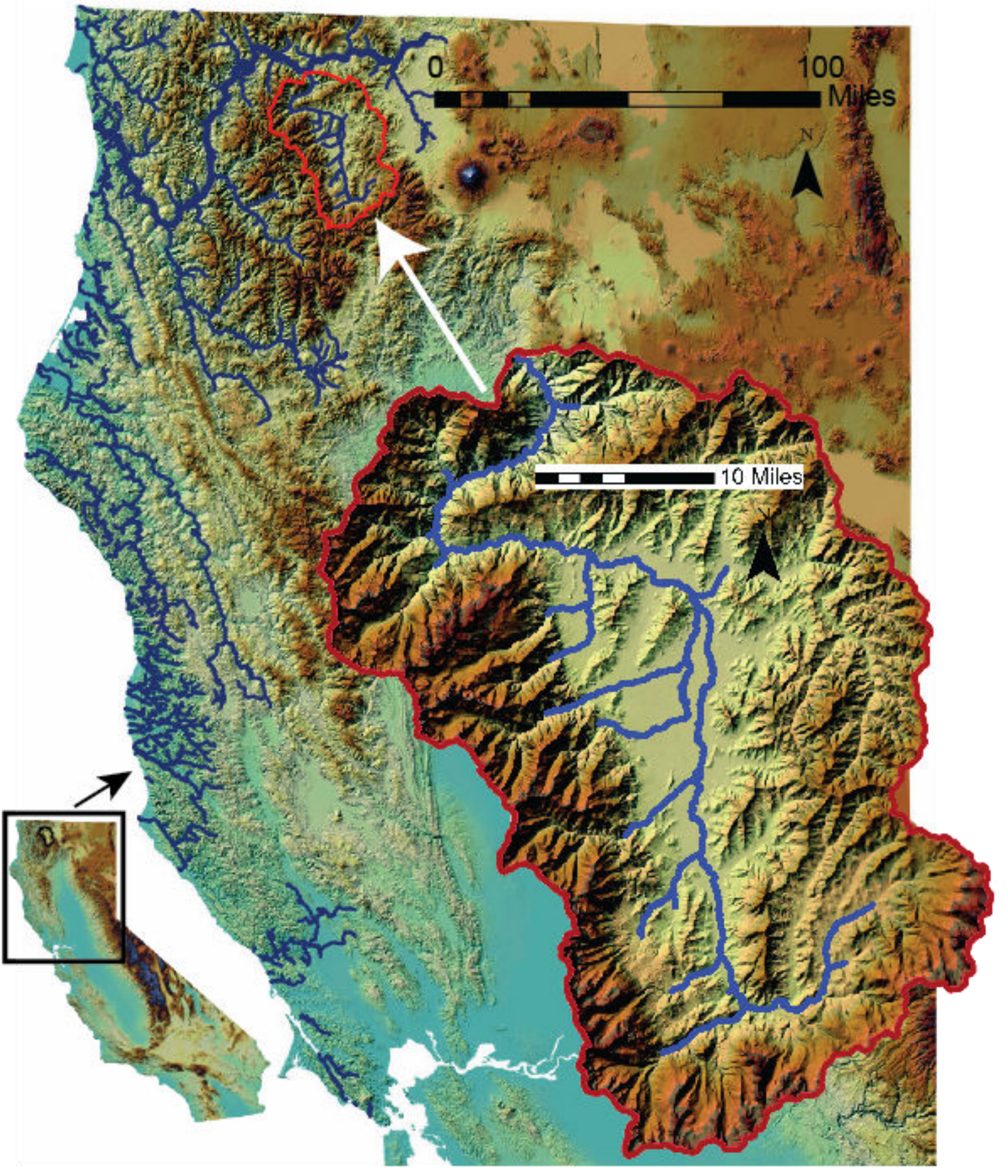
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Introduction:

The Gold Ridge Resource Conservation District (Grantee) will implement the Tannery Creek Large Wood Recruitment Project (Project). The Project seeks to address limiting factors to rearing and spawning habitat in a high habitat-potential reach of Tannery Creek, tributary to Salmon Creek. The 2,045-ft reach has good riparian cover and cool summer water temperatures, but lacks channel complexity and has compromised rearing habitat; the entire reach currently contains just two key pieces of large wood material. The average bankfull width of the channel is 25 feet, and the average stream gradient is 1.4%. The Project will place 43 trees (mostly unanchored 50+-foot redwood) at 42 sites throughout the reach of high potential habitat.

These placed logs and rootwads are designed to scour pools, provide cover, sort spawning gravels, and enhance overall channel complexity, while in some areas redirecting flows away from rapidly eroding banks. These strategies for creating both cooler, deeper pools to improve over-summer survival and high-flow refugia during storm events are meant to enhance climate change resiliency for CCC Coho Salmon (*Oncorhynchus kisutch*), who are facing more variable, extreme weather patterns of prolonged dry seasons punctuated by rainfall that is more erratic. The project will attain the target amount of large wood placement of >6 key pieces/100 meters as prescribed in NOAA's Final CCC Coho Salmon ESU Recovery Plan (Sept 2012). The total number of key pieces within the 2,045-foot project reach after implementation will amount to 43. The project enhances channel complexity by creating and enhancing 42 pools.

The Project is necessary in order to create optimal conditions for Coho salmon in a tributary that has been documented to lack canopy cover and channel complexity, reducing its effectiveness as salmon rearing and spawning habitat (2002 DFG Tannery Creek Stream Inventory Report).

Project Engineer, which designed the project and has designed similar projects in Tannery Creek, will oversee the placement of the structures. Of the 42 logs, 38 logs will be anchored using standing trees to wedge the logs so that they cannot float downstream, although up to 10 may require bolts to address buoyancy. Four of the logs will be anchored by burying them at inset floodplain locations, because anchor trees were not available. Four of the logs anchored by placing between a tree and the bank in a manner that will not allow the log to rotate or float away. The project will utilize a cost-effective method to recruit large wood to Tannery Creek. The method of anchoring large wood pieces by wedging between trees – using minimal hardware – means the structures are interacting more naturally with the dynamic creek system than artificially anchored logs with boulders and hardware. The three rootwads at Site 41 will be secured with twenty (20) 1-ton boulders on top for anchoring without hardware. Anchoring calculations have been performed. Installation of the project will be performed by a licensed professional with the skills and experience to place logs, rootwads,

and boulders from the top of bank. The Project is designed to avoid the use of equipment in the stream. All machinery will be operated from top of bank, and sites will not be dewatered prior to construction. Access routes and disturbed areas will be seeded and covered with erosion control fabric or straw as appropriate. Invasive species will be prevented from entering the project site per the Invasive Species Prevention Plan. The Project Engineer based on shade, aspect, soil type and elevation will designate revegetation of riparian areas disturbed for access. Replanting irrigation is not necessary. Native species planted include Coast Redwood (*Sequoia sempervirens)*, Arroyo Willow (*Salix lasiolepis*) and Common Rush (*Juncus effusus*). Plantings will not require maintenance.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.

All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Volume II, Section VII – Project Implementation).

Objective(s):

The project will enhance rearing and spawning habitat for coho salmon by placing 50+ ft. long locally recruited logs and rootwads at 42 sites along a 2,045-ft reach of Tannery Creek, placed to scour and enhance pools, retain spawning gravel, provide cover and high-flow refugia, and enhance habitat complexity.

Project Description:

Location:

Tannery Creek is a major tributary to Salmon Creek, a coastal watershed draining into a tidal estuary just north of Bodega Harbor along the Sonoma Coast. Tannery Creek confluences with Salmon Creek 6.4 miles upstream of the outlet of Salmon Creek into the Pacific Ocean. The work site lies on one property 0.7 miles upstream of Tannery's confluence with Salmon Creek, and 0.9 miles downstream of a wood loading project conducted on the creek in 2014. Project coordinates at the downstream end of the Project are: 38.3557 N Lat., 122.9826 W Long.

Project Set Up:

Task 1: Project management

The Grantee will perform Task 1. All contracting, invoicing and reporting will be pursuant to grant agreement and regulatory provisions and guidelines. The Grantee’s Executive Director will review contracting, invoicing, and reporting. The

Grantee's Project Coordinator will be responsible for preparing contracts, implementation coordination, and reporting. The Grantee's Bookkeeper will prepare invoices. The Project Coordinator will consult with the Grantee's Conservation Planner will as needed throughout project implementation. The Grantee's Project Coordinator will prepare annual and final reports.

Task 2: Pre-implementation surveys.

Prior to project implementation (likely to be conducted summer 2020 depending on consultant availability to conduct CEQA-related surveys), the Grantee's Ecologist and/or qualified Biologist, with field assistance from the Project Coordinator or Conservation Planner of the Grantee, will conduct surveys for special status species that may be present within the project area. The qualified Biologist will also be responsible for relocation of any special status species present in the project reach at the time of implementation. The Grantee Ecologist will conduct red-legged frog surveys both in equipment operations areas and along access routes. Initial red-legged frog surveys will identify potential frog habitat, and site-specific follow-up surveys will be conducted within 48 hours prior to the start of work on each site and/or access route to locate and clear any red-legged frogs that might be present. Protocols detailed in the Streambed Alteration Agreement for the project will be followed, both when surveying for and moving frogs. Freshwater shrimp inventories will be conducted using a single pass through suitable habitats (determined by water depth, stream gradient, presence of emergent and/or overhanging riparian vegetation, presence of undercut banks and suitable water quality/low salinity). A fine mesh net will be used to sweep riparian vegetation overhanging into the creek as well as undercut banks. Both banks will be sampled during a single pass. Surveys needed for CEQA compliance (botanical, archeological, and paleontological) will also be conducted by qualified consultants, depending on availability. As the Grantee needs a grant agreement in place to subcontract to these consultants, implementation of the project will likely be delayed until 2020.

Task 3: Project implementation.
Forty-two 50-60 foot long trees (most redwood, with some Douglas fir) will be harvested onsite and transported with a self-load log truck by Registered Professional Forester (RPF) and a Licensed Timber Operator (included as a subcontractor in RPF's budget). Fencing currently exists along parts of the riparian corridor, and some will be removed temporarily for equipment access, but will be repaired after construction. Fencing work will be performed as needed by the RPF or Grantee staff. Access routes for each site are shown on the attached map. Fine adjustment and bucking (where appropriate) of placed logs may be performed with hand tools including chain saws, winches, rockbars and shovels. Up to 10 trees may need to be bolted to nearby trees to address buoyancy. Project Engineer, the Grantee Lead Scientist, and Grantee Project Coordinator will provide implementation oversight and consulting. One structure (Site 41) will be constructed from three rootwads and 20 boulders. Once all

components are placed, erosion control measures will be implemented as appropriate under RPF oversight, and will include straw placement, native grass seeding, or placement of pinned erosion control blanket as needed in disturbed areas. Grantee Staff will perform revegetation with native trees and rushes in the fall. A third-party firm will perform labor compliance monitoring.

Task 4: Pre- and post-implementation monitoring.
Prior to project implementation, one or more photo points will be established and monumented for each wood placement site, and pre-work site photos will be taken. Post-implementation photos will be taken at each photo point to enable comparison of pre- and post-work conditions. All structures will be monitored for one year post-implementation to assess whether project large wood pieces have been transported or otherwise moved, beyond minor adjustments at the site where they were originally placed. Pre- and post-implementation pool counts will be conducted by the GRRCD staff, after the passage of a minimum of one wet season to document pool formation. Selected pools may be snorkeled to better qualify salmonid use. Data on pool counts and salmonid use will included in the final report. Post-implementation monitoring will be conducted by the Project Engineer, who will submit as-builts, and GRRCD staff.

Materials:

Forty-two 50-60 foot long redwood or Douglas-fir logs will be harvested onsite. Three rootwads and 20 boulders will be purchased by GRRCD from local sources as structure materials. Areas with disturbed soil will be covered with straw and native grass seed, or covered with pinned erosion control fabric and grass seed, as needed. Redwood or other native trees and native rush plugs will be planted throughout the project area once rains have started.

Tasks:

Task 1: Project Management

The Grantee will perform Task 1. All contracting, invoicing and reporting will be performed pursuant to grant agreement and regulatory provisions and guidelines. The Executive Director will review contracting, invoicing, and reporting. The Project Coordinator will be responsible for preparing contracts, implementation coordination, and reporting. The Bookkeeper will prepare invoices. The Project Coordinator will consult with the Grantee's Conservation Planner as needed throughout project implementation. The Project Coordinator will prepare annual and final reports.

Task 2: Permitting and Pre-Implementation Surveys

Prior to project implementation (likely to be conducted summer 2020 depending on consultant availability to conduct CEQA-related surveys), the Ecologist and/or qualified Biologist, with field assistance from the Project Coordinator or Conservation Planner, will conduct surveys for special status

species that may be present within the project area. The Project Coordinator will complete and file the Lake and Streambed Alteration Agreement (1600 permit) application. The qualified Biologist will also be responsible for relocation of any special status species present in the project reach at the time of implementation. Ecologist will conducted California red-legged frog surveys in both equipment operations areas and along access routes. Initial red-legged frog surveys will identify potential frog habitat, and site-specific follow-up surveys will be conducted within 48 hours prior to the start of work on each site and/or access route to locate and clear any red-legged frogs that may be present. Protocols detailed in the Streambed Alteration Agreement for the project will be followed, when both surveying for and moving frogs. Freshwater shrimp inventories will be conducted using a single pass through suitable habitats (determined by water depth, stream gradient, presence of emergent and/or overhanging riparian vegetation, presence of undercut banks and suitable water quality/low salinity). A fine mesh net will be used to sweep riparian vegetation overhanging into the creek as well as undercut banks. Both banks will be sampled during a single pass. Surveys needed for CEQA compliance (botanical, archeological, and paleontological) will also be conducted by qualified consultants, depending on availability. As the Grantee will need a grant agreement in place to subcontract to these consultants, implementation of the project will likely be delayed until 2020.

Task 3: Project Implementation

(Implementation timeframe will depend on availability of consultants to perform CEQA-related surveys). Forty-two 50-60 ft. long trees (most redwood, with some Douglas fir) will be harvested onsite and transported with a self-load log truck by Registered Professional Forester (RPF) and a Licensed Timber Operator (included as a subcontractor in RPF's budget. Fencing currently exists along parts of the riparian corridor - some will be removed temporarily for equipment access, but will be repaired after construction. Fencing work will be performed as needed by the RPF or Grantee staff. Access routes are shown for each site on the attached map. Fine adjustment and bucking (where appropriate) of placed logs may be performed with hand tools including chain saws, winches, rockbars and shovels. Up to 10 trees may need to be bolted to nearby trees to address buoyancy. The Project Engineer, Lead Scientist, and Project Coordinator will provide implementation oversight and consulting. One structure (Site 41) will be constructed from 3 rootwads and 20 boulders. Once all components are placed, erosion control measures will be implemented as appropriate under RPF oversight, and will include straw placement, native grass seeding, or placement of pinned erosion control blanket as needed in disturbed areas. Grantee Staff will perform revegetation with native trees and rushes in the fall. A third-party firm will perform labor compliance monitoring.

Task 4: Post-Project Monitoring

Prior to project implementation, one or more photo points will be established and monumented for each wood placement site, and pre-work site photos will be taken. Post-implementation photos will be taken at each photo point to enable comparison of pre- and post-work conditions. All structures will be monitored for one year post-implementation to assess whether project large wood pieces have been transported or otherwise moved, beyond minor adjustments at the site where they were originally placed. Grantee staff will conduct pre- and post-implementation pool counts, after the passage of a minimum of one wet season to document pool formation. Selected pools may be snorkeled to better qualify salmonid use. Data on pool counts and salmonid use will included in the final report. Post-implementation monitoring will be conducted by Grantee staff and the Project Engineer, who will also submit Project As-Built designs.

Deliverables: Project specific reporting metrics.

Task 1: Project Management
Regular invoices and progress reports, Landowner Access Agreement, Annual and Final Reports

Task 2: Permitting and Pre-Implementation Surveys
Copies of permits, including LSAA (1602), copies of biological surveys and reports, including protected species habitat assessment and relocation plan

Task 3: Project Implementation
As-built construction plans, and labor compliance documentation as needed

Task 4: Post-Project Monitoring
Pre- and Post-Implementation photo documentation pre- and post-implementation pool count and salmonid use survey results

Timelines:

Task 1: Project Management
06/01/2019 to 03/31/2022

Task 2: Permitting and Pre-Implementation Surveys
06/01/2019 to 10/15/2020

Task 3: Project Implementation
08/01/2019 to 10/15/2020

Task 4: Post-Project Monitoring
06/01/2019 to 03/31/2022

List time frame (the season's work window). June 15 – October 31

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Valley Ford (3812238) OR Bodega Head (3812331) OR Duncans Mills (3812341) OR Camp Meeker (3812248) OR Sebastopol (3812247) OR Two Rock (3812237) OR Point Reyes NE (3812227) OR Tomales (3812228))

Possible species within the Valley Ford quad and surrounding quads for 725646 Tannery Creek Large Wood Recruitment Project 2018, Sonoma County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Allium peninsulare var. franciscanum Franciscan onion	PMLIL021R1	None	None	G5T1	S1	1B.2
Alopecurus aequalis var. sonomensis Sonoma alopecurus	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Amorpha californica var. napensis Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Anodonta oregonensis Oregon floater	IMBIV04110	None	None	G5Q	S2?	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos bakeri ssp. bakeri Baker's manzanita	PDERI04221	None	Rare	G2T1	S1	1B.1
Arctostaphylos densiflora Vine Hill manzanita	PDERI040C0	None	Endangered	G1	S1	1B.1
Arctostaphylos stanfordiana ssp. decumbens Rincon Ridge manzanita	PDERI041G4	None	None	G3T1	S1	1B.1
Arctostaphylos virgata Marin manzanita	PDERI041K0	None	None	G2	S2	1B.2
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Blennosperma bakeri Sonoma sunshine	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Blennosperma nanum var. robustum Point Reyes blennosperma	PDAST1A022	None	Rare	G4T2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Callophrys mossii bayensis San Bruno elfin butterfly	IILEPE2202	Endangered	None	G4T1	S1	
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Campanula californica swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja leschkeana Point Reyes paintbrush	PDSCR0D1R0	None	None	GHQ	SH	1A
Castilleja uliginosa Pitkin Marsh paintbrush	PDSCR0D380	None	Endangered	GXQ	SX	1A
Ceanothus confusus Rincon Ridge ceanothus	PDRHA04220	None	None	G1	S1	1B.1
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
Ceanothus gloriosus var. porrectus Mt. Vision ceanothus	PDRHA040F7	None	None	G4T2	S2	1B.3
Ceanothus masonii Mason's ceanothus	PDRHA04200	None	Rare	G1	S1	1B.2
Ceanothus purpureus holly-leaved ceanothus	PDRHA04160	None	None	G2	S2	1B.2
Central Dune Scrub Central Dune Scrub	CTT21320CA	None	None	G2	S2.2	
Cerorhinca monocerata rhinoceros auklet	ABNNN11010	None	None	G5	S3	WL
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081	None	None	G2T1	S1	1B.2
Chorizanthe cuspidata var. villosa woolly-headed spineflower	PDPGN04082	None	None	G2T2	S2	1B.2
Chorizanthe valida Sonoma spineflower	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4	S2	2B.1
Cirsium andrewsii Franciscan thistle	PDAST2E050	None	None	G3	S3	1B.2
Clarkia concinna ssp. raichei Raiche's red ribbons	PDONA050A2	None	None	G5?T1	S1	1B.1
Clarkia imbricata Vine Hill clarkia	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Cordylanthus tenuis ssp. capillaris Pennell's bird's-beak	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cuscuta obtusiflora var. glandulosa Peruvian dodder	PDCUS01111	None	None	G5T4T5	SH	2B.2
Cuscuta pacifica var. papillata Mendocino dodder	PDCUS011A2	None	None	G5T1	S1	1B.2
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Delphinium bakeri Baker's larkspur	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Delphinium luteum golden larkspur	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron greenei Greene's narrow-leaved daisy	PDAST3M5G0	None	None	G3	S3	1B.2
Erigeron serpentinus serpentine daisy	PDAST3M5M0	None	None	G2	S2	1B.3
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fratercula cirrhata tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
Fritillaria lanceolata var. tristulis Marin checker lily	PMLIL0V0P1	None	None	G5T2	S2	1B.1
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Gilia capitata ssp. chamissonis blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia capitata ssp. tomentosa woolly-headed gilia	PDPLM040B9	None	None	G5T1	S1	1B.1
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Helminthoglypta stiversiana williamsi Williams' bronze shoulderband	IMGASC2034	None	None	G2G3T1	S1	
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R065	None	None	G5T1T2	S1S2	1B.2

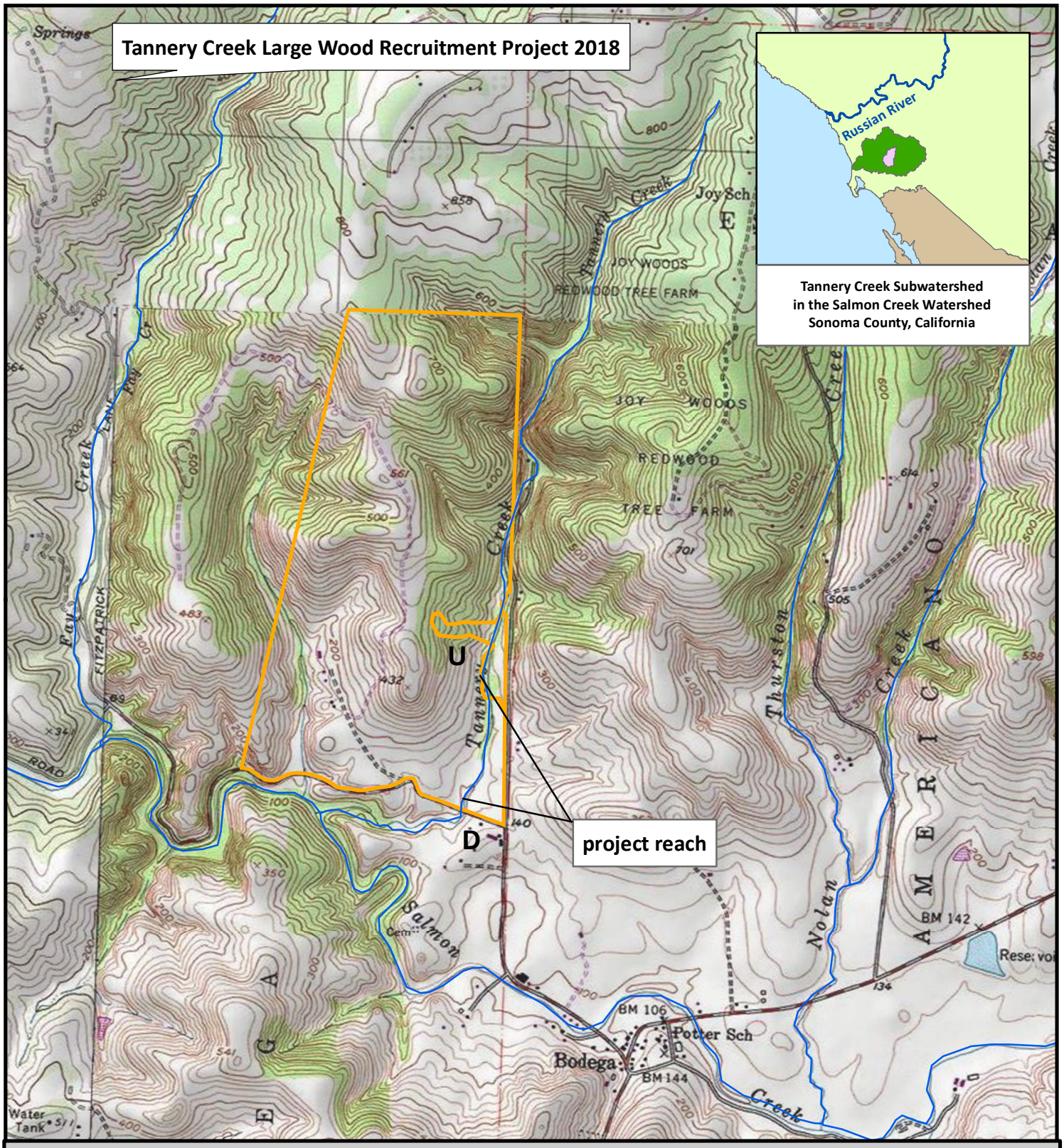
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Horkelia cuneata var. sericea Kellogg's horkelia	PDROS0W043	None	None	G4T1?	S1?	1B.1
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Horkelia tenuiloba thin-lobed horkelia	PDROS0W0E0	None	None	G2	S2	1B.2
Ischnura gemina San Francisco forktail damselfly	IIODO72010	None	None	G2	S2	
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia burkei Burke's goldfields	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
Lasthenia californica ssp. bakeri Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lavinia symmetricus ssp. 2 Tomales roach	AFCJB19022	None	None	G4T2T3	S2	SSC
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Leptosiphon rosaceus rose leptosiphon	PDPLM09180	None	None	G1	S1	1B.1
Lessingia arachnoidea Crystal Springs lessingia	PDAST5S0C0	None	None	G2	S2	1B.2
Lichnanthe ursina bumblebee scarab beetle	IICOL67020	None	None	G2	S2	
Lilium pardalinum ssp. pitkinense Pitkin Marsh lily	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Limnanthes vinculans Sebastopol meadowfoam	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lupinus tidestromii Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Monardella sinuata ssp. nigrescens northern curly-leaved monardella	PDLAM18162	None	None	G3T2	S2	1B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Vernal Pool Northern Vernal Pool	CTT44100CA	None	None	G2	S2.1	
Oceanodroma homochroa ashy storm-petrel	ABNDC04030	None	None	G2	S2	SSC
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pelecanus occidentalis californicus California brown pelican	ABNFC01021	Delisted	Delisted	G4T3T4	S3	FP
Phacelia insularis var. continentis North Coast phacelia	PDHYD0C2B1	None	None	G2T2	S2	1B.2
Plebejus icarioides parapheres Point Reyes blue butterfly	IILEPG801D	None	None	G5T1T2	S1S2	
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Potentilla uliginosa Cunningham Marsh cinquefoil	PDROS1B4A0	None	None	GH	SH	1A
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05016	Endangered	Endangered	G5T1	S1	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Rhynchospora alba white beaked-rush	PMCYP0N010	None	None	G5	S2	2B.2
Rhynchospora californica California beaked-rush	PMCYP0N060	None	None	G1	S1	1B.1
Rhynchospora capitellata brownish beaked-rush	PMCYP0N080	None	None	G5	S1	2B.2
Rhynchospora globularis round-headed beaked-rush	PMCYP0N0W0	None	None	G4	S1	2B.1
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea calycosa ssp. rhizomata Point Reyes checkerbloom	PDMAL11012	None	None	G5T2	S2	1B.2
Sidalcea malviflora ssp. purpurea purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
Speyeria zerene myrtleae Myrtle's silverspot butterfly	IILEPJ608C	Endangered	None	G5T1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Stebbinsoseris decipiens Santa Cruz microseris	PDAST6E050	None	None	G2	S2	1B.2
Syncaris pacifica California freshwater shrimp	ICMAL27010	Endangered	Endangered	G2	S2	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Thamnolia vermicularis whiteworm lichen	NLTES43860	None	None	G3G5	S1	2B.1
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triphysaria floribunda San Francisco owl's-clover	PDSCR2T010	None	None	G2?	S2?	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Vespericola marinensis Marin hesperian	IMGASA4140	None	None	G2	S2	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Zapus trinotatus orarius Point Reyes jumping mouse	AMAFH01031	None	None	G5T1T3Q	S1S3	SSC
Strix occidentalis caruina northern spotted owl	ABNSB12011	Threatened	Threatened	G2T3	S2S3	SSC

Record Count: 151



GOLD RIDGE RESOURCE CONSERVATION DISTRICT

March 2018

Streams

participating landowner

Map 1: Topographic Map
Grantee: Gold Ridge Resource Conservation District
Sonoma County, CA
(Camp Meeker 7.5' Quadrangle, USGS 1969)

0 1,250 2,500 5,000 Feet

1:24,000

N W E S

Introduction:

The Gold Ridge Resource Conservation District (Grantee) will implement the Dutch Bill Creek Winter Habitat Enhancement Project. By installing large, complex wood structures in the main channel and along the channel margins of Dutch Bill Creek. The project will improve the shelter rating in Dutch Bill Creek. The project improves habitat by increasing cover, roughness and deflecting flow. The installation of new large wood structures and augmentation of existing structures will provide shelter, increase channel complexity and address a lack of high-flow refugia for overwintering fish. The project will construct a total of seven complex large wood structures through a 625-foot stream reach. At four of these sites, new structures will be created, and existing structures at three sites will be augmented.

The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, Part VII.

Objective(s):

The project objective is to increase the shelter rating from the current value of less than 25 to at least 80 at each individual structure location on Dutch Bill Creek. The overall goal of the project is to improve conditions for overwintering fish by providing refuge from high velocity winter flows.

Project Description:

Location:

The project site is located along Dutch Bill Creek between the communitites of Occidental and Monte Rio in Sonoma County. Project activities will occur in an approximate 625-foot reach of the creek at the downstream end of the Westminster Woods property, adjacent to the entrance to the Bohemia Ecological Preserve. The downstream end of the project reach is approximately three miles upstream of the confluence of Dutch Bill Creek with the Russian River. Project coordinates of the downstream end of the project reach are: 38.444693° north, 122.979850° west. The project is located within Sections 16 and 21 of Township 7 North, Range 10 West in the Camp Meeker, United States Geologic Survey, 15 minute quadrangle.

Project Set Up:

The Grantee's Lead Scientist will act as the project manager and will oversee all Grantee and subcontractor activities. The Lead Scientist will also be the lead for

contract administration, subcontractor management, invoicing, and reporting, as well as manage landowner and regulatory agency interactions, including the development of a landowner access agreement for project construction and post-project effectiveness evaluation.

The Grantee's Ecologist will be the lead for biological assessment of the project reach, and will work with the construction subcontractor and a contracted Qualified Biologist on dewatering and fish relocation, should these be necessary for project construction.

The Grantee's Watershed Coordinator will assist with project administrative tasks, coordinate any public outreach and interaction required for the project, and assist with dewatering and fish relocation.

The Grantee's Executive Director will review contracts, invoices and reports, as well as assist with landowner coordination and interactions with elected officials and the public.

The Grantee's Bookkeeper will perform invoicing and accounting tasks.

The Grantee will contract with the Construction Contractor to procure the necessary materials and perform all construction tasks, including equipment and labor operations and dewatering. The Construction Contractor will also assist with fish relocation.

The Grantee will contract with the Engineering Oversight Contractor to conduct engineering oversight of project construction as the engineering lead on the project. The Engineering Oversight Contractor will also perform paleontological surveys necessary for CEQA compliance.

The Archaeological and Botanical Surevy Contractor will be contracted to perform botanical and archeological surveys for CEQA compliance.

A qualified Labor Compliance Monitoring Contractor will be contracted to monitor compliance with applicable California Labor Code sections pertaining to payment of prevailing wages and related requirements.

Materials:

All construction materials will be purchased by the Construction Contractor. A total of 75 logs of various lengths with minimum lengths of 18 feet and minimum diameters of 24 inches will be used in the project, along with 16 rootwads. Logs and rootwads will be anchored to trees, placed boulders and other logs to create habitat structures designed to improve shelter ratings and provide high-flow

refugia habitat. One-ton or two-ton boulders will be used as ballast for the structures (a total of 228 tons), and will be attached to placed logs using one-inch all-thread with nuts and plate washers, and 5/8-inch cable using cable clamps and epoxy. Logs will also be pinned to the streambanks using one-inch rebar driven to depth of refusal. Cable and all-thread will be glued into placed boulders with epoxy. Drilling holes in rock for all-thread will be done with rock drill bits (3/4 inch and 1-1/8 inch) and inserting epoxy into holes drilled in boulders using nozzles that fit those holes. To allow for equipment access to some of the sites, material will be needed to build ramps and fill topographic depressions. The grantee will use clean river run gravel (1.5-inch) for this purpose to avoid degradation of the stream habitat if some if some gravel is left behind. In addition, either steel plate or wood will be used in constructing equipment ramps to avoid equipment impacts to the streambed when transferring an excavator from one side of the creek to the other. Should dewatering and fish relocation prove to be necessary, the grantee will use sandbags (filled with sand), and water will be pumped around the work sites through two-inch PVC pipe. Block netting will be used to exclude fish from work sites. Rice straw, erosion control fabric, and straw wattles, will be placed at disturbed upland sites upon project completion. Erosion control fabric will be held down by fabric pins. Field supplies necessary for conducting pre-project biological surveys will be purchased by the Grantee, and include flagging for marking sites and/or various types and batteries for GPS units.

Tasks:

Task 1: Grant administration. The Grantee will administer the project and perform invoicing, contracting and reporting according to grant requirements and accepted accounting and contracting practices. Grantee will also be responsible for arranging site access with the landowner, Westminster Woods Camp and Conference Center, and coordinating any interaction with regulatory agencies, as well as the public, media and elected officials.

Task 2: Permitting. Grantee will serve as the lead in performing necessary site surveys, including botanical and listed species survey work, and will prepare and submit permit applications and act as the permit holder. Permits include a Section 1602 Streambed Alteration Agreement and may include a Sonoma County Roiling Permit. Surveys for species of concern, including California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*) and California freshwater shrimp (*Syncaris pacifica*), will be performed by the Grantee Ecologist. Archeological and botanical surveys will be subcontracted to Archaeological and Botanical Survey Contractor, and paleontological surveys will be included in our subcontract with the Engineering Oversight Contractor.

Task 3: Construction. Under the supervision of Grantee, the Construction Contractor will procure all materials and supply the necessary equipment and labor to construct the project. The Construction Contractor will be responsible for all construction activities and will perform dewatering tasks and assist with fish relocation. A Qualified Biologist will be retained as the lead for fish relocation and will be assisted by the Construction Contractor and Grantee staff.

Site descriptions:

Site #1: 110 feet upstream of benchmark, bankfull width of 36 feet. Site #1 is located on a glide, and comprises complex opposing structures. It will require 10 logs of various lengths and four rootwads, which will be anchored to an existing concrete abutment on the left bank, as well as 40 tons of boulders for ballast. The structure will provide shelter at high and moderate flow stages, and create low-velocity zones along the both banks of the creek. It will also provide cover at low flows.

Site #2: 280 feet upstream of benchmark, bankfull width of 60 feet. Work at this site will augment an existing three-log structure located on a riffle at an existing right-bank alcove. Twelve new logs of various lengths will be anchored to trees on both banks and ballasted with 31 tons of rock to form complex, opposing structures. The new logs will be tied into the existing structure, and will provide shelter at high and moderate flow stages, as well as enhancing the high-flow refuge value of the existing alcove. A secondary goal at this site is to focus flow energy to expand and deepen the pool downstream of the site.

Site #3: 340 feet upstream of benchmark, bankfull width = 45 feet. Site 3 is located at an existing right-bank alcove on a run channel unit. This site also comprises opposing complex structures, and will require 12 logs or various lengths and two rootwads anchored to four trees on both banks and ballasted with 43 tons of boulders. The structure will provide shelter at high and moderate flow stages, and enhance the high-flow refugia value of the existing alcove. It will also provide additional cover at low flows.

Site #4: 420 feet upstream of benchmark, bankfull width of 60 feet. Site 4 is located at the lower end of a riffle, with an existing gravel bar along the right bank. It comprises complex opposing structures and incorporates 14 logs of various lengths and three rootwads. Wood will be anchored to multiple trees on the left bank, and ballasted with 35 tons of boulders. The structure will provide shelter at high and moderate flow stages, and create low-velocity zones along both banks of the stream. It will also add cover to the stream during low flows, and focus flow and enhance scour in the center of the channel.

Site #5: 520 feet upstream of benchmark, bankfull width of 45 feet. Site 5 is located at the lower end of a glide, with a low existing gravel bar along the right bank. It incorporates 12 logs and four rootwads into complex opposing structures, anchored to trees on both banks and ballasted with 35 tons of boulders. The structure will provide shelter at high and moderate flow stages, and enhance the value of a right bank tributary stream outlet as a high-flow refuge. It will also add cover to the stream during low flows, and focus flow and enhance scour in the center of the channel.

Site #6: 620 feet upstream of benchmark, bankfull width of 45 feet. This site is located at the lower end of a riffle, with a left bank gravel bar that has formed in response to earlier large wood installation. It incorporates nine logs of various lengths which will be added to three existing logs and one existing rootwad, anchored to two trees on the right bank and ballasted with 26 tons of boulders. The structure will provide shelter at high and moderate flow stages, and takes advantage of two small existing alcoves to create low-velocity zones along the right bank of the stream. A secondary goal at this site is to focus flow and further deepen the existing downstream plunge pool.

Site #7: 720 feet upstream of benchmark, bankfull width of 45 feet. This site is located on a glide, with a downstream pool that has formed in response to earlier work. It incorporates six logs of various lengths added to three existing logs and three existing rootwads, anchored to four trees on both banks and ballasted with 18 tons of rock. The structure will provide shelter at high and moderate flow stages, and create low-velocity zones along the right bank of the stream. It will also add cover to the stream during low flows, and focus flow to deepen the existing downstream pool.

Task 4: Labor compliance monitoring. Grantee will contract with a qualified third-party labor compliance monitoring firm to ensure compliance with the prevailing wage requirements of Division 2, Chapter 1, §1770 et seq. of the California Labor Code.

Task 5: Grantee will draft a yearly progress reports as required by the Grantor, as well as a final project report. Reports will include summaries of activities, detailed budget and expenditure information and all performance measures required by the Grantor. The final report will also include a final project budget and as-built drawings as necessary.

Deliverables:

Task 1: Preparing annual reports and final report.

Task 2: Securing all necessary permits, including 1602 permit and applicable County permits. Performing necessary surveys, writing and submitting survey reports (archaeological, protected species, and rare plant surveys).

Task 3: Final construction plans and pre- and post-construction photo documentation showing the successful installation of complex large wood structures at seven sites of the identified project reach.

Task 4: Documentation of applicable California Labor Code compliance.

Task 5: Preparing annual reports and final report.

Timelines:

Task 1: Grant administration will occur from August 1, 2019 to March 31, 2021.

Task 2: Permitting and pre-construction surveys will occur between April 1, 2019 and July 1, 2019 and between June 1, 2020 and July 1, 2019.

Task 3: Construction will occur between July 1, 2019 and October 15, 2020. The construction work window will be July 1 to October 15 of 2019 and 2020, respectively.

Task 4: Documentation of compliance will be provided by March 31, 2021.

Task 5: Annual reports will be provided by November 1, 2019 and November 1, 2020. The final report will be provided by January 31, 2021.

Deliverables and Timelines:

Task #	Task Name	Deliverables	Estimated Completion Dates
1	Grant Administration	Invoices with descriptions of the work completed during the invoice period.	At least quarterly, but not more than monthly.
2	Permitting	Submit 1600 Notification	May 1, 2019

		Complete preconstruction purveys	July 1, 2019 and July 1, 2020
3	Construction	Completed project features	October 15, 2019 and October 15, 2020
4	Labor Compliance Monitoring	Labor Compliance Report	January 31, 2021
5	Reporting	Annual report Draft final report Final Report	November 1, 2019 and 2020 January 2, 2021 January 31, 2021

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife.

No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil absorbent pads, tarpaulins) will be used when refueling equipment. Any and all equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *Aquatic Invasive Species Decontamination Protocol.*

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream*

Habitat Restoration Manual.

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.

b. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the Grantor Project Manager and pursuant to conditions in the USACE Regional General Permit, NMFS Biological Opinion, and project's Lake and Streambed Alteration Agreement (1600 permit).

c. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

d. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.

e. Only qualified fisheries biologist that are approved by USFWS and permitted by CDFW under a California Endangered Species Act (CESA) Memorandum of Understanding (MOU) shall handle and relocate CESA listed species.

f. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

g. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Grant Manager on a form provided by Grantor.

Final structure design and placement will be determined by field consultation between the Grantee and the Grantor Project Manager. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Camp Meeker (3812248) OR Duncans Mills (3812341) OR Cazadero (3812351) OR Guerneville (3812258) OR Healdsburg (3812257) OR Sebastopol (3812247) OR Two Rock (3812237) OR Valley Ford (3812238) OR Bodega Head (3812331))

Possible species within the Camp Meeker quad and surrounding quads for 725647 Dutch Bill Creek Winter Habitat Enhancement Project, Sonoma County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S1	1B.1
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Agrostis blasdalei Blasdale's bent grass	PMPOA04060	None	None	G2	S2	1B.2
Allium peninsulare var. franciscanum Franciscan onion	PMLIL021R1	None	None	G5T1	S1	1B.2
Alopecurus aequalis var. sonomensis Sonoma alopecurus	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Amorpha californica var. napensis Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Anodonta oregonensis Oregon floater	IMBIV04110	None	None	G5Q	S2?	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos bakeri ssp. bakeri Baker's manzanita	PDERI04221	None	Rare	G2T1	S1	1B.1
Arctostaphylos bakeri ssp. sublaevis The Cedars manzanita	PDERI04222	None	Rare	G2T2	S2	1B.2
Arctostaphylos densiflora Vine Hill manzanita	PDERI040C0	None	Endangered	G1	S1	1B.1
Arctostaphylos stanfordiana ssp. decumbens Rincon Ridge manzanita	PDERI041G4	None	None	G3T1	S1	1B.1
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Blennosperma bakeri Sonoma sunshine	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brodiaea leptandra narrow-anthered brodiaea	PMLIL0C022	None	None	G3?	S3?	1B.2
Calamagrostis crassiglumis Thurber's reed grass	PMPOA17070	None	None	G3Q	S2	2B.1
Callophrys mossii bayensis San Bruno elfin butterfly	IILEPE2202	Endangered	None	G4T1	S1	
Calochortus raichei The Cedars fairy-lantern	PMLIL0D1L0	None	None	G2	S2	1B.2
Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2	None	None	G4T2T3	S2S3	1B.2
Campanula californica swamp harebell	PDCAM02060	None	None	G3	S3	1B.2
Carex comosa bristly sedge	PMCYP032Y0	None	None	G5	S2	2B.1
Castilleja uliginosa Pitkin Marsh paintbrush	PDSCR0D380	None	Endangered	GXQ	SX	1A
Ceanothus confusus Rincon Ridge ceanothus	PDRHA04220	None	None	G1	S1	1B.1
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
Ceanothus purpureus holly-leaved ceanothus	PDRHA04160	None	None	G2	S2	1B.2
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Cerorhinca monocerata rhinoceros auklet	ABNNN11010	None	None	G5	S3	WL
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chlorogalum pomeridianum var. minus dwarf soaproot	PMLIL0G042	None	None	G5T3	S3	1B.2
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081	None	None	G2T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Chorizanthe cuspidata var. villosa woolly-headed spineflower	PDPGN04082	None	None	G2T2	S2	1B.2
Chorizanthe valida Sonoma spineflower	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
Cirsium andrewsii Franciscan thistle	PDAST2E050	None	None	G3	S3	1B.2
Clarkia imbricata Vine Hill clarkia	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coastal Terrace Prairie Coastal Terrace Prairie	CTT41100CA	None	None	G2	S2.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Cordylanthus tenuis ssp. capillaris Pennell's bird's-beak	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Cuscuta obtusiflora var. glandulosa Peruvian dodder	PDCUS01111	None	None	G5T4T5	SH	2B.2
Cuscuta pacifica var. papillata Mendocino dodder	PDCUS011A2	None	None	G5T1	S1	1B.2
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Delphinium bakeri Baker's larkspur	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
Delphinium luteum golden larkspur	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
Dirca occidentalis western leatherwood	PDTHY03010	None	None	G2	S2	1B.2
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dubiraphia giulianii Giuliani's dubiraphian riffle beetle	IICOL5A020	None	None	G1G3	S1S3	

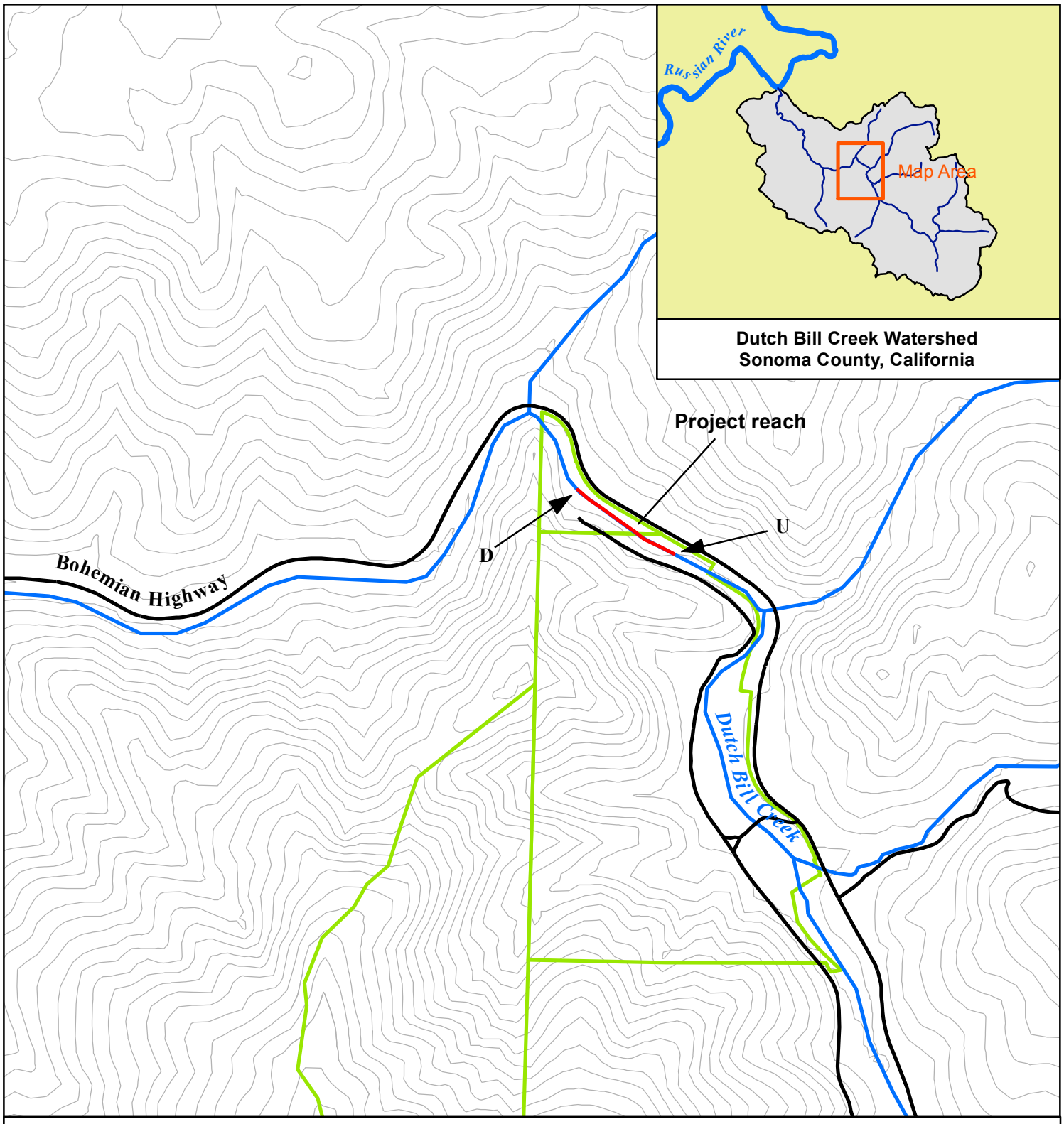
Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron greenei Greene's narrow-leaved daisy	PDAST3M5G0	None	None	G3	S3	1B.2
Erigeron serpentinus serpentine daisy	PDAST3M5M0	None	None	G2	S2	1B.3
Eriogonum cedrorum The Cedars buckwheat	PDPGN087A0	None	None	G1	S1	1B.3
Erysimum concinnum bluff wallflower	PDBRA160E3	None	None	G3	S2	1B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Fratercula cirrhata tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Gilia capitata ssp. chamissonis blue coast gilia	PDPLM040B3	None	None	G5T2	S2	1B.1
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia capitata ssp. tomentosa woolly-headed gilia	PDPLM040B9	None	None	G5T1	S1	1B.1
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R065	None	None	G5T1T2	S1S2	1B.2
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S2	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Horkelia tenuiloba thin-lobed horkelia	PDROS0W0E0	None	None	G2	S2	1B.2
Hysterocarpus traski pomo Russian River tule perch	AFCQK02011	None	None	G5T4	S4	SSC
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia burkei Burke's goldfields	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
Lasthenia californica ssp. bakeri Baker's goldfields	PDAST5L0C4	None	None	G3T1	S1	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Lavinia symmetricus navarroensis Navarro roach	AFCJB19023	None	None	G4T1T2	S2S3	SSC
Lavinia symmetricus parvipinnis Gualala roach	AFCJB19025	None	None	G4T1T2	S2S3	SSC
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Leptosiphon jepsonii Jepson's leptosiphon	PDPLM09140	None	None	G3	S3	1B.2
Leptosiphon rosaceus rose leptosiphon	PDPLM09180	None	None	G1	S1	1B.1
Lessingia arachnoidea Crystal Springs lessingia	PDAST5S0C0	None	None	G2	S2	1B.2
Lichnanthe ursina bumblebee scarab beetle	IICOL67020	None	None	G2	S2	
Lilium pardalinum ssp. pitkinense Pitkin Marsh lily	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
Limnanthes vinculans Sebastopol meadowfoam	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lupinus tidestromii Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Navarretia leucocephala ssp. plieantha many-flowered navarretia	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Northern Vernal Pool Northern Vernal Pool	CTT44100CA	None	None	G2	S2.1	
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pelecanus occidentalis californicus California brown pelican	ABNFC01021	Delisted	Delisted	G4T3T4	S3	FP
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Pleuropogon hooverianus North Coast semaphore grass	PMPOA4Y070	None	Threatened	G2	S2	1B.1
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Polygonum marinense Marin knotweed	PDPGN0L1C0	None	None	G2Q	S2	3.1
Potentilla uliginosa Cunningham Marsh cinquefoil	PDROS1B4A0	None	None	GH	SH	1A
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Rhynchospora alba white beaked-rush	PMCYP0N010	None	None	G5	S2	2B.2
Rhynchospora californica California beaked-rush	PMCYP0N060	None	None	G1	S1	1B.1
Rhynchospora capitellata brownish beaked-rush	PMCYP0N080	None	None	G5	S1	2B.2
Rhynchospora globularis round-headed beaked-rush	PMCYP0N0W0	None	None	G4	S1	2B.1
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sidalcea calycosa ssp. rhizomata Point Reyes checkerbloom	PDMAL11012	None	None	G5T2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sidalcea malviflora ssp. purpurea purple-stemmed checkerbloom	PDMAL110FL	None	None	G5T1	S1	1B.2
Speyeria zerene myrtleae Myrtle's silverspot butterfly	IILEPJ608C	Endangered	None	G5T1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Streptanthus glandulosus ssp. hoffmanii Hoffman's bristly jewelflower	PDBRA2G0J4	None	None	G4T2	S2	1B.3
Streptanthus morrisonii ssp. hirtiflorus Dorr's Cabin jewelflower	PDBRA2G0S2	None	None	G2T1	S1	1B.2
Streptanthus morrisonii ssp. morrisonii Morrison's jewelflower	PDBRA2G0S3	None	None	G2T1?	S1?	1B.2
Syncaris pacifica California freshwater shrimp	ICMAL27010	Endangered	Endangered	G2	S2	
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Thamnolia vermicularis whiteworm lichen	NLTES43860	None	None	G3G5	S1	2B.1
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1
Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triphysaria floribunda San Francisco owl's-clover	PDSCR2T010	None	None	G2?	S2?	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Vespericola marinensis Marin hesperian	IMGASA4140	None	None	G2	S2	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 144



Dutch Bill Creek Winter Habitat Enhancement Project

Project Location Topographic Map
Camp Meeker Quadrangle

Gold Ridge Resource Conservation District
Sonoma County, CA

Streams

Roads

Westminster Woods

N

0 0.125 0.25 0.5 Miles

Contour interval = 40 feet

Gold Ridge RCD
March 2018

APPENDIX B

MITIGATION MEASURES, MONITORING AND REPORTING PROGRAM FOR THE 2018 FISHERIES HABITAT RESTORATION PROJECT

SECTION 1: MITIGATION

General mitigation measures are implemented for all action items. Specific mitigation measures are identified for the various species found at or near the project site. A CDFW grant manager is assigned to each action item and is responsible for ensuring the general and specific mitigation measures are implemented.

I. AESTHETICS

No specific mitigation measures are required to protect aesthetics.

II. AGRICULTURE RESOURCES

No specific mitigation measures are required to protect agricultural resources.

III. AIR QUALITY

No specific mitigation measures are required to protect air quality.

IV. BIOLOGICAL RESOURCES

A. General Measures for Protection of Biological Resources

1) Timing. To avoid impacts to aquatic habitat the activities carried out in the restoration program typically occur during the summer dry season where flows are low or streams are dry.

    a) Work around streams is restricted to the period of June 15 through November 1 or the first significant rainfall, whichever comes first. Actual project start and end dates, within this timeframe, are at the discretion of the Department of Fish and Wildlife (i.e. on the Shasta River projects must be completed between July 1 and September 15 to avoid impacts to immigrating and emigrating salmonids). This is to take advantage of low stream flow and avoid the spawning and egg/alevin incubation period of salmon and steelhead.

    b) Upslope work generally occurs during the same period as stream work. Road decommissioning and other sediment reduction activities are dependent on soil moisture content. Non jurisdictional upslope projects do not have seasonal restrictions in the Incidental Take Statement but work may be further restricted at some sites to allow soils to dry out adequately.

In some areas equipment access and effectiveness is constrained by wet conditions.

c) The approved work window for individual work sites will be further constrained as necessary to avoid the nesting or breeding seasons of birds and terrestrial animals. At most sites with potential for raptor (including Northern Spotted Owls) and migratory bird nesting, if work is conditioned to start after July 9, potential impacts will be avoided and no surveys will be required. For work sites that might contain nesting Marbled Murrelets, the starting date will be September 16 in the absence of surveys. The work window at individual work sites could be advanced if surveys determine that nesting birds will not be impacted.

d) For restoration work that may affect swallow nesting habitat (such as removal or modification of bridges, culverts or other structures that show evidence of past swallow nesting activities), construction shall occur after August 31 to avoid the swallow nesting period. Suitable nesting habitat shall be netted prior to the breeding season to prevent nesting. Netting shall be installed before any nesting activity begins, generally prior to March 1. Swallows shall be excluded from areas where construction activities cause nest damage or abandonment.

e) All project activities shall be confined to daylight hours.

2) Projects shall not disturb or dewater more than 500 feet of contiguous stream reach.

3) During all activities at project work sites, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

4) Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, CDFW shall ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

5) The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action while minimizing riparian disturbance without

affecting less stable areas, which may increase the risk of channel instability. Existing roads shall be used to access work sites as much as practicable.

6) The access and work area limits shall be identified with brightly colored flagging or fencing. Flagging and fencing shall be maintained in good repair for the duration of project activities. All areas beyond the identified work area limits shall not be disturbed.

7) Any construction debris shall be prevented from falling into the stream channel. Any material that does fall into a stream during construction shall be immediately removed in a manner that has minimal impact to the streambed and water quality.

8) Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.

9) Any work within the stream channel shall be performed in isolation from the flowing stream and erosion protection measures shall be in place before work begins.

   a) Prior to dewatering, the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic invertebrates shall be determined.

   b) If there is any flow when work will be done, the grantee shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam.

   c) No heavy equipment shall operate in the live stream, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

   d) Coffer dams may be constructed with clean river run gravel or sand bags, and may be sealed with sheet plastic. Upon project completion, sand bags and any sheet plastic shall be removed from the stream. Clean river run gravel may be left in the stream channel, provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.

   e) Dewatering shall be coordinated with a qualified fisheries biologist to perform fish and wildlife relocation activities.

   f) The length of the dewatered stream channel and the duration of the dewatering shall be kept to a minimum and shall be expected to be less than 300 contiguous feet or 500 total feet per site.

   g) When bypassing stream flow around work area, stream flow below the construction site shall be maintained similar to the unimpeded flow at all times.

h) The work area shall be periodically pumped dry of seepage. Pumps shall be placed in flat areas, away from the stream channel. Pumps shall be secured by tying off to a tree or staked in place to prevent movement by vibration. Pump intakes shall be covered with 0.125 inch mesh to prevent entrainment of fish or amphibians that failed to be removed. Pump intakes shall be periodically checked for impingement of fish or amphibians, and shall be relocated according to the approved measured outlined for each species bellow.

i) If necessary, flow shall be diverted around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting CDFW and NOAA criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel.

j) Fish shall be excluded from the work area by blocking the stream channel above and below the work area with fine-meshed net or screen. Mesh shall be no greater than 1/8-inch diameter. The bottom edge of the net or screen shall be completely secured to the channel bed to prevent fish from reentering the work area. Exclusion screening shall be placed in areas of low water velocity to minimize fish impingement. Screens shall be regularly checked and cleaned of debris to permit free flow of water.

10) Where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), the action shall be carried out without dewatering and fish relocation. Furthermore, measures shall be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Gravel berms may be left in the stream channel provided it does not impede stream flow or fish passage, and conforms to natural channel morphology without significant disturbance to natural substrate.

11) Best management practices associated with fish screens and measures to minimize effects to salmonids associated with fish screen construction, maintenance, and repair are presented below:

a) Screening projects shall only take place on diversions with a capacity of 60 cfs or less. Screening larger diversions shall require separate consultation. Fish screens shall be operated and maintained in compliance with current law, including Fish and Game Code, and CDFW fish screening criteria.

b) Notwithstanding Fish and Game Code section 6027, fish screens and bypass pipes or channels shall be in-place and maintained in working order at all times water is being diverted.

c) If a screen site is dewatered for repairs or maintenance when targeted fish species are likely to be present, measures shall be taken to minimize harm and mortality to targeted species resulting from fish relocation and dewatering activities. The responsible party shall notify CDFW before the project site is de-watered and streamflow diverted. The notification shall provide a reasonable time for personnel to supervise the implementation of a water diversion plan and oversee the safe removal and relocation of salmonids and other fish life from the project area. If the project requires site dewatering and fish relocation, the responsible party shall implement the dewatering and relocation measures as described in this document to minimize harm and mortality to listed species.

d) If a fish screen is removed for cleaning or repair, measures shall be undertaken to ensure juvenile fish are not passively entrained into the diversion canal. The area shall be isolated, cleared of fish, and dewatered prior to screen maintenance or replacement. If dewatering the work area is infeasible, then the area in front of the screen shall be cleared of fish utilizing a seine net that remains in place until the project is complete. In the case of a damaged screen, a replacement screen shall be installed immediately or the diversion shut down until a screen is in place.

e) Fish screens shall be inspected and maintained regularly (not less than two times per week) to ensure that they are functioning as designed and meeting CDFW fish screening criteria. During the diversion season, screens shall be visually inspected while in operation to ensure they are performing properly. Outside the diversion season when the screening structure is dewatered, the screen and associated diversion structure shall be more thoroughly evaluated.

f) Existing roads shall be used to access screen sites with vehicles and/or equipment whenever possible. If it is necessary to create access to a screen site for repairs or maintenance, access points shall be identified at stable stream bank locations that minimize riparian disturbance.

g) Sediment and debris removal at a screen site shall take place as often as needed to ensure that screening criteria are met. Sediment and debris shall be removed and disposed at a location where it will not re-enter the water course.

h) Stationary equipment used in performing screen maintenance and repairs, such as motors, pumps, generators, and welders, located within or adjacent to a stream shall be positioned over drip pans.

i) Equipment which is used to maintain and/or repair fish screens shall be in good condition and checked and maintained on a daily basis to prevent

leaks of materials that could be deleterious to aquatic life, wildlife, or riparian habitat.

j) To the extent possible repairs to a fish screen or screen site shall be made during a period of time when the target species of fish are not likely to be present (for example, in a seasonal creek, repair work should be performed when the stream is dry).

k) Equipment used to maintain and/or repair fish screens shall not operate in a flowing stream except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

l) Turbid water which is generated by screen maintenance or repair activities shall be discharged to an area where it will not re-enter the stream. If the CDFW determines that turbidity/siltation levels resulting from screen maintenance or repair activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective CDFW-approved sediment control devices are installed and/or abatement procedures are implemented.

12) Any equipment entering the active stream (for example, in the process of installing a coffer dam) shall be preceded by an individual on foot to displace wildlife and prevent them from being crushed.

13) If any non-special status wildlife are encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed, and shall be flushed, hazed, or herded in a safe direction away from the project site. “Special status wildlife” is defined as any species that meets the definition of “endangered, rare, or threatened species” in section 15380, article 20 in Title 14 of the California Code of Regulations, also known as the “CEQA Guidelines”.

14) Any red tree vole nests encountered at a work site shall be flagged and avoided during construction.

15) For any work sites containing western pond turtles, salamanders, foothill yellow-legged frogs, California red-legged frogs, or tailed frogs, the grantee shall provide to the CDFW grant manager for review and approval, a list of the exclusion measures that will be used at their work site to prevent take or injury to any individual pond turtles, salamanders, or frogs that could occur on the site. The grantee shall ensure that the approved exclusion measures are in place prior to construction. Any turtles or frogs found within the exclusion zone shall be moved to a safe location upstream or downstream of the work site, prior to construction.

16) All habitat improvements shall be done in accordance with techniques in the *California Salmonid Stream Habitat Restoration Manual*. The most current

version of the manual is available at:http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

17) The grantee shall have dependable radio or phone communication on-site to be able to report any accidents or fire that might occur.

18) Installation of bridges, culverts, or other structures shall be done so that water flow is not impaired and upstream and downstream passage of fish is assured at all times. Bottoms of temporary culverts shall be placed at or below stream channel grade.

19) Temporary fill shall be removed in its entirety prior to close of work-window.

B. Specific Measures for Endangered, Rare, or Threatened Species That Could Occur at Specific Work Sites

1) Rare Plants

The work sites for the 2018 FHR project are within the range of a variety of rare plant species. The plant species found on a State or Federal special status list that might be associated with the 2018 FHR project, was determined from a search of CDFW's Natural Diversity Database. Because of the large number of widely scattered work sites proposed, it is not feasible to survey individual work sites in advance and still be able to implement the restoration projects, due to time limits on the availability of restoration funds. Lists of special status plant species that might occur at individual work sites are presented in Appendix A. Past experience with grant projects from previous years has shown that the potential for adverse impacts on rare plants at salmonid restoration work sites is very low. Few sites surveyed for rare plants between 1999 and 2012 were found to have rare plant colonies; disturbance of rare plants was avoided in all cases. In order to avoid impacts to rare plants during the 2018 FHR project, the following mitigation measures will be implemented:

a) A qualified biological consultant shall survey all work sites for rare plants prior to any ground disturbing activities. Rare plant surveys will be conducted following the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities" (CDFW, 2018). These guidelines are available in Appendix C or on the web at: https://www.wildlife.ca.gov/Conservation/Plants.

b) If any special status plant species are identified at a work site, CDFW shall require one or more of the following protective measures to be implemented before work can proceed:

i. Fencing to prevent accidental disturbance of rare plants during construction,

ii. On-site monitoring by a qualified biologist during construction to assure that rare plants are not disturbed, or

iii. Redesign of proposed work to avoid disturbance of rare plants.

c) Plant surveys will also include any host plants for butterflies identified as occurring in the area either in the CNDDB or the official species list. These host plants are as follows for each butterfly:

Butterfly	Host Plant
Mission Blue Butterfly (*Icaricia icarioides missionensis*) - Endangered	Silver Bush Lupine (*Lupinus albifrons*)
San Bruno Elfin Butterfly (*Callophrys mossii bayensis*) - Endangered	Stonecrop (*Sedum spathulifolium*)
Callippe Silverspot Butterfly (*Speyeria callippe callippe*) - Endangered	Johnny Jump Up (*Viola pedunculata*)
Myrtle's Silverspot (*Speyeria zerene myrtleae*) - Endangered	Hookedspur Violet (*Viola adunca*)
Bay Checkerspot Butterfly (*Euphydryas editha bayensis*) - Threatened	Native Plantain (*Plantago erecta*)

i. If any host plant species are identified at a work site, CDFW shall require one or more of the following protective measures to be implemented before work can proceed:

(a) Fencing to prevent accidental disturbance of larval host plants during construction,

(b) On-site monitoring by a qualified biologist during construction to assure that larval host plants are not disturbed, and

(c) Redesign of proposed work to avoid disturbance of larval host plants.

ii. If it becomes impossible to implement the project at a work site without impacts to larval host plants, then activity at that work site shall not proceed. If it becomes impossible to implement the project at a work site without potentially significant impacts to rare plants, then activity at that work site shall be discontinued.

iii. CDFW shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.

2) Arroyo Toad (*Anaxyrus californicus*)

Of the 22 work sites proposed as part of the 2018 FHR project, none of the sites shows the Arroyo toad listed on the corresponding species list in Appendix A.

3) California Freshwater Shrimp (*Syncaris pacifica*)

One of the 22 work sites proposed as part of the 2018 FHR project occurs within the range of California freshwater shrimp (CFS) (725646 Tannery Creek Large Wood Recruitment Project 2018) (Appendix A). The range of the CFS includes Marin, Napa, and Sonoma counties, excluding the Gualala River watershed. Therefore, the potential for impacts to CFS shall be mitigated by complying with all of the mandatory terms and conditions associated with incidental take authorized by the U. S. Fish and Wildlife Service (USFWS), Biological Opinions (file no. 1-1-03-F-273 and 81420-2009-I-0748-1). CDFW proposes to implement the following measures to minimize adverse effects to the CFS and its habitat:

a) Project activities in potential shrimp habitat shall be restricted to the period between July 1 and November 1.

b) At least 15 days prior to the onset of activities, CDFW shall submit the name(s) and credentials of biologists who will conduct activities specified in the following measures to the USFWS. The grantee shall implement any additional conservation measures requested by CDFW and/or the USFWS.

c) CDFW shall be notified at least one week in advance of the date on which work will start in the stream, so that a qualified CDFW biologist can monitor activities at the work site. All work in the stream shall be stopped immediately if it is determined by CDFW that the work has the potential to adversely impact shrimp or its habitat. Work shall not recommence until CDFW is satisfied that there will be no impact on the shrimp.

d) Where appropriate, a USFWS-approved CDFW biologist will survey each site for shrimp before allowing work to proceed and prior to issuance of a Streambed Alteration Agreement. All overhanging vegetation, undercut banks, and tree roots will be surveyed with a butterfly net or fish net.

e) Prior to the onset of work at a work site that may contain shrimp, the USFWS-approved CDFW biologist shall conduct a training session for all construction personnel. At a minimum the training shall include a description of the shrimp and its habitat, the importance of the shrimp and its habitat, the general measures that are being implemented to conserve the shrimp as they relate to the work site, and the work site boundaries where construction may occur.

f) Only USFWS-approved biologists shall participate in the capture, handling, and monitoring of shrimp. CDFW shall report annually on the number of capture, release and injuries/mortality and agrees to modify capture/release strategy with USFWS staff as needed to prevent adverse effects.

g) In site locations where shrimp are present, CDFW will require the grantee to implement the mitigation measures listed:

   i. Equipment work shall be performed only in riffle, shallow run, or dry habitats, avoiding low velocity pool and run habitats occupied by shrimp, unless shrimp are relocated according to the protocol described below. “Shallow” run habitat is defined as a run with a maximum water depth, at any point, less than 12 inches, and without undercut banks or vegetation overhanging into the water.

   ii. Hand placement of logs or rocks shall be permitted in pool or run habitat in stream reaches where shrimp are known to be present, only if the placement will not adversely affect shrimp or their habitat.

   iii. Care shall be taken during placement or movement of materials in the stream to prevent any damage to undercut stream banks and to minimize damage to any streamside vegetation. Streamside vegetation overhanging into pools or runs shall not be removed, trimmed, or otherwise modified.

   iv. No log or rock weirs (including vortex rock weirs), or check dams shall be constructed that would span the full width of the low flow stream channel. Vegetation shall be incorporated with any structures involving rocks or logs to enhance migration potential for shrimp.

   v. No dumping of dead trees, yard waste or brush shall occur in shrimp streams, which may result in oxygen depletion of aquatic systems.

h) If in the opinion of the USFWS-approved biologist, adverse effects to shrimp would be further minimized by moving shrimp away from the project site, the following procedure shall be used:

   i. A second survey shall be conducted within 24 hours of any construction activity and shrimp shall be relocated to the nearest suitable habitat. Shrimp shall be moved while in the net, or placed in buckets containing stream water. Stress and temperature monitoring of shrimp shall be performed by the USFWS-approved biologist. Numbers of shrimp and any mortalities or injuries shall be identified and recorded. Shrimp habitat is defined as reaches in low elevation (less than 116 m) and low gradient (less than one percent) streams where banks are structurally diverse with undercut banks, exposed fine root systems, overhanging woody debris or overhanging vegetation.

   ii. When no other habitat exists on a landowner’s property, the shrimp shall be held in suitable containers with site water and released at the end of the day. Containers shall be placed in the shade.

i) If moving the shrimp out of the work area cannot be accomplished, and other avoidance measures have been deemed inappropriate, CDFW shall drop activities at the work site from the project.

j) A USFWS-approved CDFW biologist shall be present at the work site until such time as all removal of shrimp, instruction of workers, and habitat disturbance associated with the restoration project have been completed. The USFWS-approved biologist shall have the authority to halt any action that might result in the loss of any shrimp or its habitat. If work is stopped, the USFWS-approved biologist shall immediately notify CDFW and the USFWS.

k) If a work site is temporarily dewatered by pumping, intakes shall be completely screened with wire mesh no larger than 0.2 inch to prevent shrimp from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow with the least disturbance to the substrate.

l) A USFWS-approved biologist shall permanently remove from within the project work site, any individuals of exotic species, such as bullfrogs, centrarchid fishes, and non-native crayfish, to the maximum extent possible. The grantee shall have the responsibility that such removals are done in compliance with the California Department of Fish and Wildlife.

m) Invasive non-native vegetation that provides shrimp habitat and is removed as a result of Program activities shall be replaced with native vegetation that provides comparable habitat for the shrimp. Re-vegetated sites shall be irrigated as necessary until vegetation is established. Re-vegetated sites shall be monitored until shading and cover achieves 80% of pre-project shading and cover and for a minimum of 5 years.

4) California Red-Legged Frog (*Rana draytonii*)

Of the 22 work sites proposed as part of the 2018 FHR project, five occur within the range of the California red-legged frog (CRLF). Activities proposed (725625 Fish Passage Improvement at Crossing 8, Quiota Creek, 725697 Inman Creek Sediment Reduction Project, 725646Tannery Creek Large Wood Recruitment Project 2018, 725680 Large Woody Debris and Stream Enhancement on San Geronimo Creek, and 725647 Dutch Bill Creek Winter Habitat Enhancement Project) (Appendix A) will not remove or degrade CRLF habitat; however, precautions shall be required at these sites to avoid the potential for take of CRLF while using heavy equipment. The potential for impacts to CRLF will be mitigated by complying with all of the mandatory terms and conditions associated with incidental take authorized by the USFWS, Biological Opinion (file no. 1-1-03-F-273, 81420-2009-I-0748-1, and 81440-2009-F-0387 for projects within the San Francisco District of the USACE, and file no. 2008-F-0441 for projects within the Los Angeles District of the USACE). CDFW shall implement the following measures to minimize adverse effects to the CRLF and its habitat:

a) Project activities in potential red-legged frog habitat shall be restricted to the period between July 1 and October 15.

b) At least 15 days prior to the onset of project activities, CDFW shall submit the names(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until CDFW has received written approval from the USFWS that the biologist(s) is qualified to conduct the work.

c) USFWS-approved biologist(s) who handle red-legged frogs shall ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites by the USFWS-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (http://www.fws.gov/ventura/docs/species/protocols/DAFTA.pdf) shall be followed at all times.

d) A CDFW monitoring plan shall be developed to determine the level of incidental take of the red-legged frog associated with the Restoration Program funded activities in the area. The monitoring plan must include a standardized mechanism to report any observations of dead or injured red-legged frog to the appropriate USACE and USFWS offices.

e) A USFWS-approved biologist shall survey the project site at least two weeks before the onset of activities. If red-legged frogs are found in the project area and these individuals are likely to be killed or injured by work activities, the USFWS-approved biologist will allow sufficient time to move them from the site before work activities resume. Only USFWS-approved biologists will participate in activities with the capture, handling, and monitoring of red-legged frogs.

f) Before any project-related activities, the approved biologist must identify appropriate areas to receive red-legged frog adults and tadpoles from the project areas. These areas must be in proximity to the capture site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species (i.e. bullfrogs, crayfish) to the best of the approved biologist's knowledge.

g) Prior to the onset of project activities, a USFWS-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the red-legged frog and its habitat, the importance of the red-legged frog and its habitat, the general measures that are being implemented to conserve the red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

h) A USFWS-approved biologist shall be present at the work site until such time as removal of red-legged frogs, instruction of workers, and habitat disturbance has been completed. The USFWS-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the USACE and USFWS during review of the proposed action. If work is stopped, the USACE and the USFWS shall be notified immediately by the USFWS-approved biologist or on-site biological monitor.

i) If red-legged frogs are found and these individuals are likely to be killed or injured by work activities, the USFWS-approved biologists must be allowed sufficient time to move them from the site before work activities resume. The USFWS-approved biologist must relocate the red-legged frogs the shortest distance possible to one of the predetermined areas. The USFWS-approved biologist must maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs (digital preferred) to assist in determining whether translocated animals are returning to the point of capture. Only red-legged frogs that are at risk of injury or death by project activities may be moved.

j) If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than 0.125 inch to prevent red-legged frogs from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain down stream flows during construction activities and eliminate the possibility of ponded water. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the lease disturbance to the substrate.

k) Ponded areas shall be monitored for red-legged frogs that may become entrapped. Any entrapped red-legged frog shall be relocated to a pre-determined receiving area by a USFWS-approved biologist.

l) A USFWS-approved biologist will permanently remove from the project area, any individuals of exotic species, such as bullfrogs (*Rana catesbiana),* centrarchid fishes, and non-native crayfish to the maximum extent possible. The biologist will have the responsibility to ensure that their activities are in compliance with the Fish and Game Code.

m) The CDFW or USACE shall report any observation of the incidental take of red-legged frogs associated with the implementation of the Restoration Program projects in accordance with RGP78. The USFWS and the USACE must review the circumstances surrounding the incident to determine whether any patterns of repeated authorized or unauthorized activities are occurring that may indicate that additional protective measures are required. If, after completion of the review, the USACE and the USFWS agree that additional protective measures are required and can be implemented within the existing scope of the action, the USACE must require the CDFW to implement the agreed-upon measures within a reasonable time frame; if the corrective actions cannot be implemented with the scope of the existing action, the USACE and USFWS will determine whether re-initiation of consultation is appropriate.

n) Despite term and condition “i)” of this section (above), the USACE must immediately re-initiate formal consultation with the USFWS, pursuant to 7(a) (2) of the Endangered Species Act, if red-legged frogs are taken within the action area at or in excess of the incidental take anticipated in the Incidental Take Statement section of the U.S, Fish and Wildlife biological opinion (file no. 2008-F-0441), whether by project or by year.

o) If these mitigation measures cannot be implemented or the project activities proposed at a specific work site cannot be modified to prevent or avoid potential impacts to CRLF or its habitat, then project activity at that work site shall be discontinued.

5) California Tiger Salamander (*Ambystoma californiense)*

One of the 22 proposed projects in the 2018 FHR project is within the range of the California tiger salamander (725646 Tannery Creek Large Wood Recruitment Project 2018) (Appendix A) Impacts to the species however is unlikely, due to implementation projects occurring in or near stream and riparian corridors. California tiger salamanders primarily use ponds and vernal pools for breeding and grassland habitat for estivation, both of which are not usually in proximity to anadromous fish-bearing streams.

6) Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*Oncorhynchus kisutch*), Steelhead Trout (*Oncorhynchus mykiss*), and Coast Cutthroat Trout (*Oncorhynchus clarkii clarkii*)

While all of the work proposed under this program will enhance habitat for one or more of these species, all of the work sites proposed as part of the 2018 FHR project could involve instream work in their habitat (Appendix A). In order to avoid any potential for negative impacts to these species, the following measures will be implemented:

a) Project work within the wetted stream shall be limited to the period between June 15 and November 1, or the first significant rainfall, or whichever comes first. This is to take advantage of low stream flows and to avoid the spawning and egg/alevin incubation period of salmon and steelhead. Actual project start and end dates, within this timeframe, are at the discretion of the Department of Fish and Wildlife (i.e. on the Shasta River projects must be completed between July 1 and September 15 to avoid impacts to immigrating and emigrating salmonids). Whenever possible, the work period at individual sites shall be further limited to entirely avoid periods when salmonids are present (for example, in a seasonal creek, work will be confined to the period when the stream is dry).

b) Suitable large woody debris removed from fish passage barriers that is not used for habitat enhancement, shall be left within the riparian zone so as to provide a source for future recruitment of wood into the stream, reduce surface erosion, contribute to amounts of organic debris in the soil, encourage fungi, provide immediate cover for small terrestrial species and to speed recovery of native vegetation.

c) Prior to dewatering a construction site, fish and amphibian species shall be captured and relocated by CDFW personnel (or designated agents). The

following measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:

i. Fish relocation and dewatering activities shall only occur between June 15 and November 1 of each year.

ii. Fish relocation shall be performed by a qualified fisheries biologist, with all necessary State and Federal permits. Captured fish shall be moved to the nearest appropriate site outside of the work area. A record shall be maintained of all fish rescued and moved. The record shall include the date of capture and relocation, the method of capture, the location of the relocation site in relation to the project site, and the number and species of fish captured and relocated. The record shall be provided to CDFW within two weeks of the completion of the work season or project, whichever comes first.

iii. Electrofishing shall be conducted by properly trained personnel following NOAA *Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act*, June 2000.

iv. Prior to capturing fish, the most appropriate release location(s) shall be determined. The following shall be determined:

    i. Temperature: Water temperature shall be similar as the capture location.

    ii. Habitat: There shall be ample habitat for the captured fish.

    iii. Exclusions from work site: There shall be a low likelihood for the fish to reenter the work site or become impinged on exclusion net or screen.

v. The most efficient method for capturing fish shall be determined by the biologist. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down the pool and then seining or dip netting fish.

vi. Handling of salmonids shall be minimized. However, when handling is necessary, always wet hands or nets prior to touching fish.

vii. Temporarily hold fish in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release.

viii. Air and water temperatures shall be measured periodically. A thermometer shall be placed in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18°C, fish shall be released and rescue operations ceased.

ix. Overcrowding in containers shall be avoided by having at least two containers and segregating young-of-year (YOY) fish from larger age-classes to avoid predation. Larger amphibians, such as Pacific giant salamanders, shall be placed in the container with larger fish. If fish are abundant, the capturing of fish and amphibians shall cease periodically and shall be released at the predetermined locations.

x. Species and year-class of fish shall be visually estimated at time of release. The number of fish captured shall be counted and recorded. Anesthetization or measuring fish shall be avoided.

xi. If feasible, initial fish relocation efforts shall be performed several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional electrofishing passes immediately prior to construction. In many instances, additional fish will be captured that eluded the previous day's efforts.

xii. If mortality during relocation exceeds three percent, capturing efforts shall be stopped and the appropriate agencies shall be contacted immediately.

xiii. In regions of California with high summer temperatures, relocation activities shall be performed in the morning when the temperatures are cooler.

xiv. CDFW shall minimize the amount of wetted stream channel that is dewatered at each individual project site to the fullest extent possible.

xv. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Volume II, Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

d) If these mitigation measures cannot be implemented, or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to anadromous salmonids or their habitat, then activity at that work site shall be discontinued.

7) Foothill Yellow-Legged Frog (*Rana boylii*)

All of the 22 proposed projects in the 2018 FHR project, are within range of the foothill yellow-legged frog (FYLF). Activities proposed (725708 Dutch Charlie Creek Sediment Reduction and Fisheries Recovery Project, 725709 Moody Creek Sediment Reduction and Coho Habitat Enhancement Project, 725710 Soldier Creek Sediment Reduction and Salmonid Recovery Project, 725711 Soldier Creek Instream Habitat Enhancement Project, 725688 Scott River Habitat Enhancement & Restoration, 725625 Fish Passage Improvement at Crossing 8, Quiota Creek, 725655 Hare Creek and Bunker Gulch Coho Stream

Habitat Enhancement Project, 725697 Inman Creek Sediment Reduction Project, 725665 Panther Creek Barrier Removal Project, 725637 Bioengineering and Large Wood Installation – Redwood Creek, 725677 Redwood Creek Habitat Protection Project, 725638 Moody Creek Instream Habitat Enhancement, 725639 Redwood Creek Watershed Key Piece LWD Project, 725646 Tannery Creek Large Wood Recruitment Project 2018, 725641 Salmon Creek – Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR), 725649 Restoring Fish Passage from Salt River to Williams Creek, 725680 Large Woody Debris and Stream Enhancement on San Geronimo Creek, 725647 Dutch Bill Creek Winter Habitat Enhancement Project, 725656 McGinnis Creek Instream Habitat Enhancement Project, 725633 Fish Passage Improvement Project at 12th Street, 725700 Gulch C Coho Salmon Fish Passage Improvement Project, and 725681 Mid-Klamath Tributary Fish Passage Improvement Project) (Appendix A) will not remove or degrade FYLF habitat; however, precautions shall be required at these sites to avoid potential significant impacts to the FYLF while using heavy equipment. The potential for impacts to FYLFs will be mitigated by complying with all of the terms and conditions set forth in this section. Measures for minimization and avoidance of incidental take of FYLF must be developed on a site- and project-specific basis. CDFW's *Considerations for Conserving the Foothill Yellow-Legged Frog* (May 2018) (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=157562&inline) provides guidance and examples of avoidance and minimization measures, invasive non-native control and eradication, and a riparian enhancement plan for the species. CDFW shall implement the additional following measures to minimize adverse effects to the FYLF and its habitat:

a) Prior to start of work, all permits necessary to survey, handle, and relocate FYLFs shall be obtained. All best management practices, special conditions, mitigation and avoidance measures of any take permit obtained shall be complied with.

b) Within 3-5 days prior to entering or working near stream/riparian habitat within the foothill yellow-legged frog range, a qualified biologist shall examine the project site to determine the presence and/or the potential for presence of FYLF adults, juveniles, tadpoles or egg masses within the project area and 300 feet upstream and downstream.

c) The biologist must be able to recognize all potential age classes of FYLFs relative to other amphibians in the project area.

d) The CDFW approved biologist(s) shall ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites by the approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force

(http://www.fws.gov/ventura/docs/species/protocols/DAFTA.pdf) shall be followed at all times.

e) If any life stage of FYLFs are found, the biologist must consult with CDFW immediately by either telephone, facsimile, or e-mail, and provide a short description of existing conditions and observations, and a list of all species observed during the examination.

f) Site-specific mitigation measures to avoid or minimize take and to avoid or minimize disturbance to FYLF habitat shall be developed and approved by the CDFW. Work shall not commence until the CDFW has provided written approval of the proposed mitigation measures and any permit to relocate FYLFs have been obtained

g) The approved biologist will dispatch and remove from the project area, any individuals of exotic species, such as bullfrogs (*Lithobates catesbeianus*), centrarchid fishes, and non-native crayfish to the maximum extent possible. The biologist will have the responsibility to ensure that their activities are in compliance with the Fish and Game Code.

h) If these mitigation measures cannot be implemented or the project activities proposed at a specific work site cannot be modified to prevent or avoid potential impacts to FYLF or its habitat, then project activity at that work site shall be discontinued.

8) Least Bell's Vireo (*Vireo bellii pusillus*)

Of the 22 projects proposed as part of the 2018 FHR project, none are within the range of the Least Bell's Vireo.

9) Marbled Murrelet (*Brachyrampus marmoratus*)

Eleven of the 22 work sites proposed as part of the 2018 FHR project are in potentially suitable habitat for the Marbled Murrelet. Activities proposed for the sites (725709 Moody Creek Sediment Reduction and Coho Habitat Enhancement Project, 725710 Soldier Creek Sediment Reduction and Salmonid Recovery Project, 725711 Soldier Creek Instream Habitat Enhancement Project, 725655 Hare Creek and Bunker Gulch Coho Stream Habitat Enhancement Project, 725677 Redwood Creek Habitat Protection Project, 725638 Moody Creek Instream Habitat Enhancement, 725641 Salmon Creek – Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR), 725680 Large Woody Debris and Stream Enhancement on San Geronimo Creek, 725656 McGinnis Creek Instream Habitat Enhancement Project, 725700 Gulch C Coho Salmon

Fish Passage Improvement Project, 725681 Mid-Klamath Tributary Fish Passage Improvement Project) (Appendix A) will not remove, degrade, or downgrade suitable Marbled Murrelet habitat. As a result, direct injury or mortality of Marbled Murrelets is not an issue. The potential exists for noise from heavy equipment work at these sites to disrupt Marbled Murrelet nesting. To avoid this potential impact, the following mitigation measures shall be implemented:

a) Restoration work in areas considered by the Arcata and Ventura USFWS offices shall not be conducted within 0.25 mile of occupied or un-surveyed suitable Marbled Murrelet habitat between March 24 and September 15. Restoration work in areas considered by the Sacramento USFWS Office shall not be conducted within 0.25 mile of any occupied or un-surveyed suitable Marbled Murrelet habitat between November 1 and September 15.

b) The work window at individual work sites near suitable habitat may be modified, if protocol surveys determine that habitat quality is low and occupancy is very unlikely.

c) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse effects to Marbled Murrelet or their habitat, then activity at that work site shall be discontinued.

d) For projects contained in streams and watersheds included in a USFWS Habitat Conservation Plan the mitigation measures contained within those Habitat Conservation Plans shall be followed.

10) Northern Spotted Owl (*Strix occidentalis caurina*)

Of the 22 work sites proposed as part of the 2018 FHR project, 17 are in potentially suitable habitat for the Northern Spotted Owl (725708 Dutch Charlie Sediment Reduction and Fisheries Recovery Project, 725709 Moody Creek Sediment Reduction and Coho Habitat Enhancement Project, 725710 Soldier Creek Sediment Reduction and Salmonid Recovery Project, 725711 Soldier Creek Instream Habitat Enhancement Project, 725688 Scott River Habitat Enhancement & Restoration, 725655 Hare Creek and Bunker Gulch Coho Stream Habitat Enhancement Project, 725697 Inman Creek Sediment Reduction Project, 725665 Panther Creek Barrier Removal Project, 725677 Redwood Creek Habitat Protection Project, 725638 Moody Creek Instream Habitat Enhancement, 725639 Redwood Creek Watershed Key Piece LWD Project, 725646 Tannery Creek Large Wood Recruitment Project 2018, 725641 Salmon Creek – Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR), 725680 Large Woody Debris and Stream Enhancement on San Geronimo Creek, 725656 McGinnis Creek Instream Habitat Enhancement Project, 725700 Gulch C Coho Salmon Fish Passage Improvement Project, and 725681 Mid-Klamath Tributary Fish Passage Improvement Project) (Appendix A). None of the activities will remove, degrade, or downgrade Northern Spotted Qwl habitat. As a result, direct injury or mortality of Northern Spotted Owls is not likely. The potential exists for

heavy equipment work at these sites to disturb Northern Spotted Owl nesting. To avoid this potential effect, the following mitigation measures will be implemented:

a) Work with heavy equipment at any site within 0.25 miles of suitable habitat for the Northern Spotted Owl shall not occur from November 1 to July 31 for projects in areas under the jurisdiction of the Sacramento USFWS Office and from November 1 to July 9 for projects in areas under the jurisdiction of the Arcata USFWS Office.

b) The work window at individual work sites may be advanced prior to July 9 or July 31 (corresponding to the different time constraints of the Sacramento and Arcata USFWS office), if protocol surveys determine that suitable habitat is unoccupied.

c) If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to northern spotted owls or their habitat, then activity at that work site shall be discontinued and CDFW must reinitiate consultation with USFWS.

d) For projects contained within streams and watersheds included in a USFWS Habitat Conservation Plan the mitigation measures contained within those Habitat Conservation Plans shall be followed.

11) Point Arena Mountain Beaver (*Aplodontia rufa nigra*)

Of the 22 projects proposed in the 2018 FHR project, none are within the range of the Point Arena mountain beaver.

12) San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*)

Of the 22 projects proposed in the 2018 FHR project, none are within the range of the San Francisco garter snake.

13) Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Of the 22 work sites proposed as part of the 2018 FHR project, none are in potentially suitable habitat for the Southwestern Willow Flycatcher.

14) Tidewater Goby (*Eucyclogobius newberryi*)

Of the 22 work sites proposed as part of the 2018 FHR project, none are in potentially suitable habitat for the tidewater goby.

15) Willow Flycatcher (*Empidonax traillii)*

Of the 22 work sites proposed as part of the 2018 FHR project, four are located in potential suitable habitat for the Willow Flycatcher (725641 Salmon Creek – Salmonid Habitat Enhancement with Accelerated Recruitment (SHEAR), 725649 Restoring Fish Passage from Salt River to Williams Creek, 725656 McGinnis Creek Instream Habitat Enhancement Project, and 725681 Mid-Klamath Tributary Fish Passage Improvement Project) (Appendix A) None of the activities proposed for these sites will significantly degrade existing Willow Flycatcher habitat, but the potential exists for the noise from heavy equipment work or harvesting of revegetation material at these sites to disrupt Willow Flycatcher nesting. To avoid this potential impact, the following mitigation measures will be implemented:

a) Heavy equipment work shall not begin within one quarter mile of any site with known or potential habitat for the Willow Flycatcher until after August 31.

b) Harvest of willow branches at any site with potential habitat for the Willow Flycatcher will not occur between May 1 and August 31.

c) The work window at individual work sites may be modified, if protocol surveys determine that nesting birds do not occur within 0.25 miles of the site during the breeding season.

d) No more than 1/3 of any willow plant shall be harvested annually. Care shall be taken during harvest not to trample or over harvest the willow sources.

e) CDFW shall ensure that the grantee or responsible party is aware of this site specific condition, and will inspect the work site before, during, and after completion of the action item.

f) If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to Willow Flycatcher or their habitat, then activity at that work site will be discontinued.

C. Riparian and re-vegetation

1) Planting of seedlings shall begin after December 1, or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings, but in no case after April 1.

2) Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in Volume II, Part XI of the *California Salmonid Stream Habitat Restoration Manual*.

3) Disturbed and compacted areas shall be re-vegetated with native plant species. The species shall be comprised of a diverse community structure that mimics the native riparian corridor. Planting ratio shall be 2:1 (two plants to every one removed).

4) Unless otherwise specified, the standard for success is 80 percent survival of plantings or 80 percent ground cover for broadcast planting of seed after a period of 3 years.

5) To ensure that the spread or introduction of invasive exotic plants shall be avoided to the maximum extent possible, equipment shall be cleaned of all dirt, mud, and plant material prior to entering a work site. When possible, invasive exotic plants at the work site shall be removed. Areas disturbed by project activities will be restored and planted with native plants.

6) Mulching and seeding shall be done on all exposed soil which may deliver sediment to a stream. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.

7) If erosion control mats are used in re-vegetation, they shall be made of material that decomposes. Erosion control mats made of nylon plastic, or other non-decomposing material shall not be used.

8) CDFW shall retain as many trees and brush as feasible, emphasizing shade producing and bank stabilizing trees and brush to minimize impacts to the riparian corridor.

9) If riparian vegetation is to be removed with chainsaws, the grantee shall use saws that operate with vegetable-based bar oil when possible.

10) Disturbed and decompacted areas shall be re-vegetated with native species specific to the project location that comprise a diverse community of woody and herbaceous species.

V. CULTURAL RESOURCES

Ground-disturbance will be required to implement the project at certain locations that, despite efforts to identify cultural resources, have the potential to affect these

resources. The procedure for a programmatic evaluation of archeological resources is provided in Appendix E. Potential for inadvertent impacts will be avoided through implementation of the following mitigation measures:

1) The Grantee shall contract with an archaeologist(s) or other historic preservation professional that meets The Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61, and 48 FR 44716) to complete cultural resource surveys at any sites with the potential to be impacted prior to any ground disturbing activities. This work may be augmented with the aid of a Native American cultural resources specialist that is culturally affiliated with the project area. Cultural and paleontological resource surveys shall be conducted using standard protocols to meet CEQA Guideline requirements. Paleontological survey protocols are listed in Appendix D.

2) If cultural and/or paleontological resource sites are identified at a project location, CDFW will require one or more of the following protective measures to be implemented before work can proceed: a) fencing to prevent accidental disturbance of cultural resources during construction, b) on-site monitoring by cultural and/or paleontological resource professionals during construction to assure that cultural resources are not disturbed, c) redesign of proposed work to avoid disturbance of cultural resources.

3) The Grantee shall report any previously unknown historic, archeological, and paleontological remains discovered at a project location to CDFW for reporting to the USACE as required in the RGP.

4) CDFW shall ensure that the grantee or responsible party is aware of these site-specific conditions, and shall inspect the work site before, during, and after completion of the action item.

5) Inadvertent Discovery of Cultural Resources - If cultural resources, such as lithic debitage, ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbance activities, work shall be stopped within 20 meters (66 feet) of the discovery, per the requirements of CEQA (January 1999 Revised Guidelines, Title 14 CCR 15064.5 (f)). Work near the archaeological finds shall not resume until an archaeologist that meets the Secretary of the Interior's Standards and Guidelines suited to the discovery, has evaluated the materials and offered recommendations for further action. Cultural materials not associated with human interments shall be documented and curated in place.

6) Inadvertent Discovery of Human Remains - If human remains are discovered during project construction, work shall stop at the discovery location, within 20 meters (66 feet), and any nearby area reasonably suspected to overlie adjacent to human remains (Public Resources Code, Section 7050.5). The county coroner shall be contacted to determine if the cause of death must be investigated. If the coroner determines that the remains are of Native American origin, it is necessary

to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American heritage Commission (NAHC) (Public Resources Code, Section 5097). The coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work shall not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in Public Resources Code, Section 5097.98.

7) Procedures for treatment of an inadvertent discovery of human remains:

a) Immediately following discovery of known or potential human remains all ground-disturbing activities at the point of discovery shall be halted.

b) No material remains shall be removed from the discovery site, a reasonable exclusion zone shall be cordoned off.

c) The CDFW Grant Manager and property owner shall be notified and the CDFW Grant Manager shall contact the county coroner.

d) The Grantee shall retain the services of a professional archaeologist to immediately examine the finds and assist the process.

e) All ground-disturbing construction activities in the discovery site exclusion area shall be suspended.

f) The discovery site shall be secured to protect the remains from desecration or disturbance, with 24-hour surveillance, if prudent.

g) Discovery of Native American remains is a very sensitive issue, and all project personnel shall hold any information about such a discovery in confidence and divulge it only on a need-to-know basis, as determined by the CDFW.

h) The coroner has two working days to examine the remains after being notified. If the remains are Native American, the coroner has 24 hours to notify the NAHC in Sacramento (telephone 916/653-4082).

i) The NAHC is responsible for identifying and immediately notifying the Most Likely Descendant (MLD) of the deceased Native American.

j) The MLD may, with the permission of the landowner, or their representative, inspect the site of the discovered Native American remains and may recommend to the landowner and CDFW Grant Manager means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment with 48 hours of being granted access to the site (Public Resource Code, Section 5097.98(a)). The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials.

k) Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the landowner or his/her authorized representative rejects the recommendation of the MLD and mediation between the parties by the NAHC fails to provide measures acceptable to the landowner, the landowner or his/her authorized representatives shall re-inter the human remains and associated grave offerings with appropriate dignity on the property in a location not subject to further subsurface disturbance in accordance with Public Resource Code, Section 5097.98(e).

l) Following final treatment measures, the CDFW shall ensure that a report is prepared that describes the circumstances, nature and location of the discovery, its treatment, including results of analysis (if permitted), and final disposition, including a confidential map showing the reburial location. Appended to the report shall be a formal record about the discovery site prepared to current California standards on DPR 523 form(s). CDFW shall ensure that report copies are distributed to the appropriate California Historic Information Center, NAHC, and MLD.

8) Pursuant to RGP78 and in accordance to 36 C.F.R. Section 800.13, in the event of any discovery during construction of human remains, archeological deposits, or any other type of historic property, the CDFW shall notify the USACE archeological staff (Steve Dibble at 213-452-3849 or John Killeen at 213-452-3861) within 24 hours. Construction work shall be suspended immediately and shall not resume until USACE re-authorizes project construction.

9) If it becomes impossible to implement the project at a work site without disturbing cultural or paleontological resources, then activity at that work site shall be discontinued.

VI. GEOLOGY AND SOILS

There is no potential for a significant adverse impact to geology and soils; implementation of the restoration project will contribute to an overall reduction in erosion and sedimentation. Existing roads will be used to access work sites. Ground disturbance at most work sites will be minimal, except for road improvements or decommissioning. Road improvements and decommissioning will involve moving large quantities of soil from road fills and stream crossings to restore historic land surface profiles and prevent chronic erosion and sediment delivery to streams. In order to avoid temporary increases in surface erosion, the following mitigation measures will be implemented:

1) CDFW will implement the following measures to minimize harm to listed salmonids resulting from culvert replacement activities and other instream construction work:

a) All stream crossing replacement or modification designs, involving fish passage, shall be reviewed and approved by NOAA (or CDFW) engineers prior to onset of work.

b) If the stream in the project location was not passable to, or was not utilized by all life stages of, all covered salmonids prior to the existence of the road crossing, the project shall pass the life stages and covered salmonid species that historically did pass there. Retrofit culverts shall meet the fish passage criteria for the passage needs of the listed species and life stages historically passing through the site prior to the existence of the road crossing.

2) CDFW shall implement the following measures to minimize harm to listed salmonids resulting from road decommissioning activities:

a) Woody debris will be concentrated on finished slopes of decommissioned roads adjacent to stream crossings to reduce surface erosion; contribute to amounts of organic debris in the soil; encourage fungi; provide immediate cover for small terrestrial species; and to speed recovery of native forest vegetation.

b) Work sites shall be winterized at the end of each day to minimize the eroding of unfinished excavations when significant rains are forecasted. Winterization procedures shall be supervised by a professional trained in erosion control techniques and involve taking necessary measures to minimize erosion on unfinished work surfaces. Winterization includes the following: smoothing unfinished surfaces to allow water to freely drain across them without concentration or ponding; compacting unfinished surfaces where concentrated runoff may flow with an excavator bucket or similar tool, to minimize surface erosion and the formation of rills; and installation of culverts, silt fences, and other erosion control devices where necessary to convey concentrated water across unfinished surfaces, and trap exposed sediment before it leaves the work site.

3) Effective erosion control measures shall be in-place at all times during construction. Construction within the 5-year flood plain shall not begin until all temporary erosion controls (i.e., straw bales or silt fences that are effectively keyed-in) are in place down slope or down stream of project activities within the riparian area. Erosion control measures shall be maintained throughout the construction period. If continued erosion is likely to occur after construction is completed, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided.

4) An adequate supply of erosion control materials (gravel, straw bales, shovels, etc.) shall be maintained onsite to facilitate a quick response to unanticipated storm events or emergencies.

5) Use erosion controls that protect and stabilize stockpiles and exposed soils to prevent movement of materials. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.

6) When needed, instream grade control structures shall be utilized to control channel scour, sediment routing, and headwall cutting.

7) Temporary stockpiling of excavated material shall be minimized. However, excavated material shall be stockpiled in areas where it cannot enter the stream channel. Available sites at or near the project location shall be determined prior to the start of construction. If feasible, topsoil shall be conserved for reuse at project location or use in other areas.

8) For projects located within the USACE San Francisco District, an annual limit on the number of sediment-producing projects per HUC 10 watershed shall be implemented to ensure that potential sediment impacts will remain spatially isolated, thus minimizing cumulative turbidity effects. Sediment producing projects include instream habitat improvement, instream barrier removal, stream bank stabilization, fish passage improvement, upslope road work, and fish screen construction (unless the screen is located in a diversion ditch and is disconnected from the waterway). The limit of projects shall be as follows:

Square mile of HUC 10 watershed	Maximum number of instream and upslope projects per year
<50	2
51-100	3
101-150	4
151-250	5
251-350	6
351-500	9
>500	12

9) Each year, all instream projects shall be separated both upstream and downstream from other proposed instream projects by at least 1500 linear feet in fish bearing stream reaches. In non-fish bearing reaches, the distance separating sediment- producing projects will be 500 feet.

10) Upon project completion, all exposed soil present in and around the project site shall be stabilized within 7 days. Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches, except hydro-mulch, shall be applied in a layer not less than two (2) inches deep. Where feasible, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road

prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.

11) Soil compaction shall be minimized by using equipment with a greater reach or that exerts less pressure per square inch on the ground, resulting in less overall area disturbed and less compaction of disturbed areas.

12) Disturbed soils shall be decompacted at project completion as heavy equipment exits the construction area.

13) At the completion of the project, soil compaction that is not an integral element of the design of a crossing should be de-compacted.

VII. GREENHOUSE GAS EMISSIONS

No specific mitigation measures are required. Re-vegetation practices will help offset the short term, less than significant, greenhouse gas emissions.

VIII. HAZARDS AND HAZARDOUS MATERIALS

The project will not create a significant hazard to the public or the environment. At work sites requiring the use of heavy equipment, there is a small risk of an accident upsetting the machine and releasing fuel, oil, and coolant, or of an accidental spark from equipment igniting a fire. The potential for these impacts will be reduced to a less than significant level through implementation of the following mitigation measures:

1) Heavy equipment that will be used in these activities will be in good condition and will be inspected for leakage of coolant and petroleum products and repaired, if necessary, before work is started.

2) When operating vehicles in wetted portions of the stream channel, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, the responsible party shall, at a minimum, do the following:

   a) Check and maintain on a daily basis any vehicles to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat;

   b) Take precautions to minimize the number of passes through the stream and to avoid increasing the turbidity of the water to a level that is deleterious to aquatic life; and

   c) Allow the work area to “rest” to allow the water to clear after each individual pass of the vehicle that causes a plume of turbidity above background levels,

resuming work only after the stream has reached the original background turbidity levels.

3) All equipment operators shall be trained in the procedures to be taken should an accident occur. Prior to the onset of work, CDFW shall ensure that the grantee has prepared a Spill Prevention/Response plan to help avoid spills and allow a prompt and effective response should an accidental spill occur. All workers shall be informed of the importance of preventing spills. Operators shall have spill clean-up supplies on site and be knowledgeable in their proper deployment.

4) All activities performed in or near a stream will have absorbent materials designed for spill containment and cleanup at the activity site for use in case of an accidental spill. In an event of a spill, work shall cease immediately. Clean-up of all spills shall begin immediately. The responsible party shall notify the State Office of Emergency Services at 1-800-852-7550 and the CDFW immediately after any spill occurs, and shall consult with the CDFW regarding clean-up procedures.

5) All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 65 feet from any riparian habitat or water body and place fuel absorbent mats under pump while fueling. The USACE and the CDFW will ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the CDFW will ensure that the grantee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

6) Location of staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action. To avoid contamination of habitat during restoration activities, trash will be contained, removed, and disposed of throughout the project.

7) Petroleum products, fresh cement, and other deleterious materials shall not enter the stream channel.

8) Stationary equipment such as motors, pumps, generators, compressors, and welders, located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans.

9) No debris, soil, silt, sand, bark, slash, spoils, sawdust, rubbish, cement, concrete or washings thereof, asphalt, paint, or other coating material; oil or petroleum products; or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may

be washed by rainfall or runoff into, waters of the state. When operations are completed, any excess materials or debris shall be removed from the work area and disposed of in a lawful manner.

10) All internal combustion engines shall be fitted with spark arrestors.

11) The grantee shall have an appropriate fire extinguisher(s) and firefighting tools (shovel and axe at a minimum) present at all times when there is a risk of fire.

12) Vehicles shall not be parked in tall grass or any other location where heat from the exhaust system could ignite a fire.

13) The grantee shall follow any additional rules the landowner has for fire prevention.

14) The potential for mercury contamination is largely predicted by the presence of historic hydraulic gold mines and mercury (cinnabar) mines (California's Abandoned Mines: A Report on the Magnitude and Scope of the Issue in the State, DOC 2000). Therefore, only a few limited areas within the geographic scope of this grant program have any potential for gravels contaminated with elemental mercury, they are: Middle Klamath River, Salmon River, Scott River, and the Lower Middle and Upper Trinity River. (Though studies by the USGS failed to find significant levels of methyl mercury near these mines.)

    a) Given the limited geographical potential for encountering mercury contamination (from historic mining) within the geographic scope, and the limited number of projects within these areas that will either disturb the channel bottom or import gravels for instream restoration; the following avoidance and mitigation measure will be adhered to: any gravel imported from offsite shall be from a source known to not contain historic hydraulic gold mine tailings, dredger tailings, or mercury mine waste or tailings.

IX. HYDROLOGY AND WATER QUALITY

1) Instream work shall be conducted during the period of lowest flow.

2) Before work is allowed to proceed at a site, CDFW shall inspect the site to assure that turbidity control measures are in place.

3) The waste water from construction area shall be discharged to an upland location where it will not drain sediment-laden water back to stream channel.

4) For projects within the USACE San Francisco District, if instream work liberates a sediment wedge, 80% of the wedge shall be removed before the sediment is liberated. The required amount can be modified if NOAA or CDFW hydrologists or hydraulic engineers agree that removing a smaller amount will better protect and enhance fish habitat in the area of the project (e.g., leaving some sediment to replenish areas downstream that lack suitable substrate volume or quality).

5) To control erosion during and after project implementation, CDFW shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board.

6) Sediment-laden water caused by construction activity shall be filtered before it leaves the right-of-way or enters the stream network or an aquatic resource area. Silt fences or other detention methods shall be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.

7) If CDFW determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation shall cease until effective CDFW approved sediment control devices are installed and/or abatement procedures are implemented.

8) Poured concrete shall be excluded from the wetted channel for a period of two weeks after it is poured. During that time the poured concrete shall be kept moist, and runoff shall not be allowed to enter flowing stream. Commercial sealants shall be applied to the poured concrete surface where concrete cannot be excluded from the stream flow for two weeks. If sealant is used, water shall be excluded from the site until the sealant is dry.

9) Prior to use, all equipment shall be cleaned to remove external oil, grease, dirt, or mud. Wash sites shall be located in upland locations so that dirty wash water does not flow into the stream channel or adjacent wetlands.

10) Water conservation projects that include water storage tanks and a Forbearance Agreement, for the purpose of storing winter water for summer use, require registration of water use pursuant to the Water Code §1228.3, and require consultation with CDFW and compliance with all lawful conditions required by CDFW. Diversions to fill storage facilities during the winter and spring months shall be made pursuant to a Small Domestic Use Appropriation (SDU) filed with the State Water Resources Control Board (SWRCB). CDFW will review the appropriation of water to ensure fish and wildlife resources are protected. The following conditions shall then be applied:

    a) Seasonal Restriction: No pumping is allowed when stream flow drops below 0.7 cubic feet per second (cfs) except as permitted by CDFW in the event of an emergency.

    b) Bypass Flows: Pumping withdrawal rates shall not exceed 5% of stream flow. If CDFW determines that the streamflow monitoring data indicate that fisheries are not adequately protected, then the bypass flows are subject to revision by CDFW.

c) Cumulative Impacts: Pumping days shall be assigned to participating landowner(s) when stream flows drop below 1.0 cfs to prevent cumulative impacts from multiple pumps operating simultaneously.

d) Pump Intake Screens: Pump intake screens shall comply with the “2000 California Department of Fish and Game Screening Criteria”* for California streams that provide habitat for juvenile Coho Salmon, Chinook Salmon and steelhead trout. The landowner shall be responsible for annual inspection and maintenance of screens. Additionally, the landowner shall be responsible for cleaning screens as needed to keep them free of debris and ensure that screen function complies with the criteria specifications.

e) These conditions do not authorize incidental take of any species, removal of riparian vegetation, or bed, bank, or channel alteration.

f) CDFW shall be granted access to inspect the pump system. Access is limited to the portion of the landowner's real property where the pump is located and those additional portions of the real property which must be traversed to gain access to the pump site. Landowners shall be given reasonable notice and any necessary arrangements will be made prior to requested access including a mutually-agreed-upon time and date. Notice may be given by mail or by telephone with the landowner or an authorized representative of the landowner. The landowner shall agree to cooperate in good faith to accommodate CDFW access.

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* Fish Screening Criteria are from "State of California Resources Agency Department of Fish and Game Fish Screening Criteria, June 19, 2000." The "approach velocity" shall be calculated according to Section 2C "Screens which are not Self Cleaning."

X. LAND USE AND PLANNING

No specific mitigation measures are required for land use and planning.

XI. MINERAL RESOURCES

No specific mitigation measures are required for mineral resources.

XII. NOISE

Personnel shall wear hearing protection while operating or working near noisy equipment (producing noise levels ≥85 dB, including chain saws, excavators, and back hoes). No other specific mitigation measures are required for noise.

XIII. POPULATION AND HOUSING

No specific mitigation measures are required for population and housing.

XIV. PUBLIC SERVICES

No specific mitigation measures are required for public services.

XV. RECREATION

No specific mitigation measures are required for recreation.

XVI. TRANSPORTATION/TRAFFIC

The project will not affect transportation/traffic, because erosion control and culvert replacement projects will occur in wildland/rural sites with very little use. There is a potential that culvert replacement at some work sites could temporarily interfere with emergency access. This potential impact will be avoided through implementation of the following mitigation measure at any sites where emergency access might be necessary:

1) During excavation for culvert replacement, the grantee shall provide a route for traffic around or through the construction site.

XVII. UTILITIES AND SERVICE SYSTEMS

No specific mitigation measures are required for utilities and service systems.

SECTION 2: MONITORING AND REPORTING

CDFW shall implement the following measures to ensure that individual restoration projects authorized annually through the RGP (RGP12 and RGP78) will minimize take of listed salmonids, monitor and report take of listed salmonids, and to obtain specific information to account for the effects and benefits of salmonid restoration projects authorized through the RGP.

1) CDFW shall provide USACE, NOAA, and USFWS notification of projects that are authorized through the RGP. The notification shall be submitted at least 90 days prior to project implementation and must contain specific project information including; name of project, type of project, location of project including hydrologic unit code (HUC), creek, watershed, city or town, and county.

2) CDFW Grant Managers shall inspect the work site before, during, and after completion of the action item, to ensure that all necessary mitigation measures to avoid impacts are properly implemented.

3) CDFW shall perform implementation monitoring immediately after the restoration activity is completed to ensure that projects are completed as designed.

4) CDFW shall perform effectiveness/validation monitoring on at least 10 percent of restoration projects funded annually. A random sample, stratified by project type and region, shall be chosen from the pool of new restoration projects approved for funding each year. Pre-treatment monitoring shall be performed for newly selected projects, and post-treatment monitoring will be performed within three years following project completion.

5) Current monitoring forms and instructions used by CDFW for the implementation monitoring and effectiveness monitoring are found in the *California Salmonid Stream Habitat Restoration Manual*. CDFW shall submit a copy of the annual report, no later than March 1 annually to NOAA.

6) The CDFW annual report to NOAA shall include a summary of all restoration action items completed during the previous year. The annual report shall include a summary of the specific type and location of each project, stratified by individual project, 5th field HUC and affected species and evolutionary significant unit (ESU)/Distinct Population Segment (DPS). The report shall include the following project-specific summaries, stratified at the individual project, 5th field HUC, and ESU level:

   a) A summary detailing fish relocation activities; including the number and species of fish relocated and the number and species injured or killed. Any capture, injury, or mortality of adult salmonids or half-pounder steelhead shall be noted in the monitoring data and report. Any injuries or mortality from a fish relocation site that exceeds 3.0% of the affected listed species shall have an explanation describing why.

   b) The number and type of instream structures implemented within the stream channel.

   c) The length of stream bank (feet) stabilized or planted with riparian species.

   d) The number of culverts replaced or repaired, including the number of miles of restored access to unoccupied salmonid habitat.

   e) The distance (miles) of road decommissioned.

   f) The distance (feet) of aquatic habitat disturbed at each project site.

7) CDFW shall incorporate project data into a format compatible with the CDFW/NOAA/Pacific Fisheries Management Council Geographic Information System (GIS) database, allowing scanned project-specific reports and documents to be linked graphically within the GIS database.

8) For Humboldt, Marin, Mendocino, Siskiyou, , and Sonoma Counties, CDFW shall submit an annual report due by January 31 (RGP12) of each year of implemented

projects to the U.S. Fish and Wildlife Service Office, 2800 Cottage Way, Sacramento, California 95825. The report must include:

a) A table documenting the number of California red-legged frogs killed, injured, and handled during each FHR project that utilizes the USACE authorization.

b) A summary of how the terms and conditions of the biological opinions (file no. 08ESMF00-2016-F-0874) and the protective measures by the USACE and CDFW worked.

c) Any suggestions of how the protective measures could be revised to improve conservation of this species while facilitating compliance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

9) For Santa Barbara County, CDFW shall submit an annual report due by February 28 (RGP78) of each year of implemented projects to the U.S. Fish and Wildlife Service Office, 2493 Portola Road, Suite B, Ventura, California 93003. The report must include:

a) A table documenting the number of red-legged frogs killed, injured, and handled during each FHR project that utilizes the USACE authorization.

b) A summary of how the terms and conditions of the biological opinions (file no. 08EVEN00-2016-F-0093 and 2008-F-0441) and the protective measures by the USACE and CDFW worked.

c) Any suggestions of how these protective measures could be revised to improve conservation of this species while facilitating compliance with the Act.

10) CDFW shall submit annual reports on July 1 of each year to the 401 Program Managers of the State Water Resources Control Board and the appropriate Regional Water Quality Control Boards documenting work undertaken during the preceding year and identifying for all such work:

a) Project name and grant number;

b) Project purpose and brief description;

c) Name(s) of affected water body(ies);

d) Latitude/longitude in decimal degrees to at least four decimals;

e) For ongoing projects:

i. Project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water best management practices (BMPs).

a. If construction has not started, provide estimated start date and reasons for delay.

ii. Map showing general project progress.

iii. Mitigation for temporary impact status

a. Planned date of initiation and map showing locations of mitigation for temporary impacts to waters of the state and all upland areas of temporary disturbance which could result in a discharge to waters of the state.

b. If mitigation for temporary impacts has already commenced, provide a map and information concerning attainment of performance standards contained in the restoration plan.

iv. Restoration and enhancement status

a. Planned date of initiation of vegetation installation.

b. If installation is in progress, a map of what has been completed to date.

c. If the restoration site has been installed, provide a final map and information concerning attainment of performance standards contained in the individual project specifications.

f) For projects completed during the year:

i. The type(s) of receiving (affected) water body(ies) (e.g. at minimum: river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, or wetland type); and

ii. The total quantity in acres of each type of receiving water body temporarily impacted, and permanently impacted;

iii. Pre- and post-photo documentation of all restoration sites, including revegetation sites.

iv. A report establishing that the performance standards outlined in the individual project specifications have been met.

v. Final map of all restoration areas.

vi. A report establishing that the performance standards outlined in the restoration plan have been met for each project site upland areas and/or waters of temporary disturbance.

g) For each water body type affected, the quantity of waters of the U.S. temporarily and permanently impacted. Fill/excavation discharges shall be reported in acres and fill/excavations discharges for channels, shorelines, riparian corridors, and other linear habitat shall also be reported in linear feet;

h) Actual construction start and end-dates;

i) Whether the project is on-going or completed.

j) Copies of reports documenting the following monitoring activities:

i. Post-project monitoring immediately after the activity is completed to ensure that projects are completed as designed; and

ii. Effectiveness monitoring on a random subset of 10% of the projects, within one to three years after project completion.

11) The Grantee shall notify CDFW so it can report any previously unknown historic archeological and paleontological remains discovered at a site to the USACE as required in the RGP. This information will also be provided to the Native American Heritage Commission, 915 Capitol Mall, Sacramento, CA 95814.

12) Pursuant to RGP78, CDFW shall monitor and maintain the structures or work conducted at a given site for at least three years after construction to ensure the integrity of the structure and successful growth of the planted vegetation.

13) CDFW shall allow representatives of USACE to inspect the authorized activities at any time deemed necessary to ensure that they are being or have been accomplished with the terms and conditions of the RGP.

14) Pursuant to RGP78, CDFW shall notify the USACE annually of the year's projects. If the USACE has not issued a Notice to Proceed (NTP) or identified any issues (verbal or written) within 60 days of receive the notifications, CDFW can proceed with project. The NTP may include site specific special conditions to avoid and minimize adverse impacts to waters of the U.S and shall be valid for the duration of the RGP78 unless there is a change in the project's scope of work.

Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities[0]

STATE OF CALIFORNIA
CALIFORNIA NATURAL RESOURCES AGENCY
DEPARTMENT OF FISH AND WILDLIFE

DATE: March 20, 2018

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1. INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as sensitive natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to botanical field surveys and assessments of special status plants and sensitive natural communities so that reliable information is produced and the potential for locating special status plants and sensitive natural communities is maximized. These protocols may also help those who prepare and review environmental documents determine when botanical field surveys are needed, how botanical field surveys may be conducted, what information to include in a botanical survey report, and what qualifications to consider for botanical field surveyors. These protocols are meant to help people meet California Environmental Quality Act (CEQA)[1] requirements for adequate disclosure of potential impacts to plants and sensitive natural communities. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands[2] or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants[3].

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0 This document replaces the CDFW document entitled "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities".

1 Available at: http://resources.ca.gov/ceqa

2 Available at: http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/techbio.aspx

3 U.S. Fish and Wildlife Service Survey Guidelines: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/

Department of Fish and Wildlife Trustee and Responsible Agency Mission

The mission of the California Department of Fish and Wildlife (CDFW) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish & G. Code, § 1802). CDFW, as trustee agency under CEQA Guidelines section 15386, provides expertise in reviewing and commenting on environmental documents and provides protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) and Native Plant Protection Act (NPPA) provide additional protections for such species, including take prohibitions (Fish & G. Code, § 2050 *et seq.*; Fish & G. Code, § 1908). As a responsible agency, CDFW has the authority to issue permits for the take of species listed under CESA and NPPA if the take is incidental to an otherwise lawful activity; CDFW has determined that the impacts of the take have been minimized and fully mitigated; and the take would not jeopardize the continued existence of the species (Fish & G. Code, § 2081, subd. (b); Cal. Code Regs., tit. 14 § 786.9, subd. (b)). Botanical field surveys are one of the preliminary steps to detect special status plant species and sensitive natural communities that may be impacted by a project.

Definitions

Botanical field surveys provide information used to determine the potential environmental effects of proposed projects on special status plants and sensitive natural communities as required by law (e.g., CEQA, CESA, and federal Endangered Species Act (ESA)).

Special status plants, for the purposes of this document, include all plants that meet one or more of the following criteria:

- Listed or proposed for listing as threatened or endangered under the ESA or candidates for possible future listing as threatened or endangered under the ESA (50 C.F.R., § 17.12).
- Listed or candidates for listing by the State of California as threatened or endangered under CESA (Fish & G. Code, § 2050 et seq.)[4]. In CESA, “endangered species” means a native species or subspecies of plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish & G. Code, § 2062). “Threatened species” means a native species or subspecies of plant that,

[4] Refer to current online published lists available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline

although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by CESA (Fish & G. Code, § 2067). "Candidate species" means a native species or subspecies of plant that the California Fish and Game Commission has formally noticed as being under review by CDFW for addition to either the list of endangered species or the list of threatened species, or a species for which the California Fish and Game Commission has published a notice of proposed regulation to add the species to either list (Fish & G. Code, § 2068).

- Listed as rare under the California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.). A plant is rare when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish & G. Code, § 1901).
- Meet the definition of rare or endangered under CEQA Guidelines section 15380, subdivisions (b) and (d), including:
    - Plants considered by CDFW to be "rare, threatened or endangered in California." This includes plants tracked by the California Natural Diversity Database (CNDDB) and the California Native Plant Society (CNPS) as California Rare Plant Rank (CRPR) 1 or 2[5];
    - Plants that may warrant consideration on the basis of declining trends, recent taxonomic information, or other factors. This may include plants tracked by the CNDDB and CNPS as CRPR 3 or 4[6].
- Considered locally significant plants, that is, plants that are not rare from a statewide perspective but are rare or uncommon in a local context such as within a county or region (CEQA Guidelines, § 15125, subd. (c)), or as designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include plants that are at the outer limits of their known geographic range or plants occurring on an atypical soil type.

Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status plants or their

[5] See CNDDB's Special Vascular Plants, Bryophytes, and Lichens List for plant taxa with a CRPR of 1 or 2: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline

[6] CRPR 3 plants (plants about which more information is needed) and CRPR 4 plants (plants of limited distribution) may warrant consideration under CEQA Guidelines section 15380. Impacts to CRPR 3 plants may warrant consideration under CEQA if sufficient information is available to assess potential impacts to such plants. Impacts to CRPR 4 plants may warrant consideration under CEQA if cumulative impacts to such plants are significant enough to affect their overall rarity. Data on CRPR 3 and 4 plants should be submitted to CNDDB. Such data aids in determining and revising the CRPR of plants. See CNDDB's Special Vascular Plants, Bryophytes, and Lichens List for plant taxa with a CRPR of 3 or 4: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline

habitat. CDFW's *List of California Terrestrial Natural Communities*[7] is based on the best available information, and indicates which natural communities are considered sensitive at the current stage of the California vegetation classification effort. See the Vegetation Classification and Mapping Program (VegCAMP) website for additional information on natural communities and vegetation classification[8].

2. BOTANICAL FIELD SURVEYS

Evaluate the need for botanical field surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs in an area that may be directly or indirectly affected by a project (project area), and it is unknown whether or not special status plants or sensitive natural communities occur in the project area;
- Special status plants or sensitive natural communities have historically been identified in a project area; or
- Special status plants or sensitive natural communities occur in areas with similar physical and biological properties as a project area.

Survey Objectives

Conduct botanical field surveys in a manner which maximizes the likelihood of locating special status plants and sensitive natural communities that may be present. Botanical field surveys should be floristic in nature, meaning that every plant taxon that occurs in the project area is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status plants or that are restricted to lists of likely potential special status plants are not considered floristic in nature and are not adequate to identify all plants in a project area to the level necessary to determine if they are special status plants.

For each botanical field survey conducted, include a list of all plants and natural communities detected in the project area. More than one field visit is usually necessary to adequately capture the floristic diversity of a project area. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the special status plants and sensitive natural communities in the project area is also useful to assess the significance of a particular plant population or natural community.

Survey Preparation

Before botanical field surveys are conducted, the botanical field surveyors should compile relevant botanical information in the general project area to provide a regional

[7] Available at: https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities#natural%20communities%20lists

[8] Available at: https://www.wildlife.ca.gov/Data/VegCAMP

context. Consult the CNDDB[9] and BIOS[10] for known occurrences of special status plants and sensitive natural communities in the project area prior to botanical field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties (e.g. soils) of the project area and surrounding ecoregion[11]. Then, develop a list of special status plants and sensitive natural communities with the potential to occur within the vegetation and habitat types identified. The list of special status plants with the potential to occur in the project area can be created with the help of the CNDDB QuickView Tool[12] which allows the user to generate lists of CNDDB-tracked elements that occur within a particular U.S. Geological Survey 7.5' topographic quad, surrounding quads, and counties within California. Resulting lists should only be used as a tool to facilitate the use of reference sites, with the understanding that special status plants and sensitive natural communities in a project area may not be limited to those on the list. Botanical field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on a list. Include in the botanical survey report the list of potential special status plants and sensitive natural communities that was created, and the list of references used to compile the background botanical information for the project area.

Survey Extent

Botanical field surveys should be comprehensive over the entire project area, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects could occur, such as those from fuel modification, herbicide application, invasive species, and altered hydrology. Surveys restricted to known locations of special status plants may not identify all special status plants and sensitive natural communities present, and therefore do not provide a sufficient level of information to determine potential impacts.

Field Survey Method

Conduct botanical field surveys using systematic field techniques in all habitats of the project area to ensure thorough coverage. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct botanical field surveys by traversing the entire project area to ensure thorough coverage, documenting all plant taxa observed. Parallel survey transects may be necessary to ensure thorough survey coverage in some habitats. The level of effort should be sufficient to provide comprehensive reporting. Additional time should be allocated for plant identification in the field.

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9 Available at: https://www.wildlife.ca.gov/Data/CNDDB

10 Available at: https://www.wildlife.ca.gov/Data/BIOS

11 Ecological Subregions of the United States, available at: http://www.fs.fed.us/land/pubs/ecoregions/toc.html

12 Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. When creating a list of special status plants with the potential to occur in a project area, special care should be taken to search all quads with similar geology, habitats, and vegetation to those found in the project area.

Timing and Number of Visits

Conduct botanical field surveys in the field at the times of year when plants will be both evident and identifiable. Usually this is during flowering or fruiting. Space botanical field survey visits throughout the growing season to accurately determine what plants exist in the project area. This usually involves multiple visits to the project area (e.g. in early, mid, and late-season) to capture the floristic diversity at a level necessary to determine if special status plants are present[13]. The timing and number of visits necessary to determine if special status plants are present is determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which botanical field surveys are conducted.

Reference Sites

When special status plants are known to occur in the type(s) of habitat present in a project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those special status plants are identifiable at the times of year the botanical field surveys take place and to obtain a visual image of the special status plants, associated habitat, and associated natural communities.

Use of Existing Surveys

For some project areas, floristic inventories or botanical survey reports may already exist. Additional botanical field surveys may be necessary for one or more of the following reasons:

- Botanical field surveys are not current[14];
- Botanical field surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems);
- Botanical field surveys did not cover the entire project area;
- Botanical field surveys did not occur at the appropriate times of year;
- Botanical field surveys were not conducted for a sufficient number of years to detect plants that are not evident and identifiable every year (e.g. geophytes, annuals and some short-lived plants);

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[13] U.S. Fish and Wildlife Service Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants available at: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/

[14] Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to “Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations”, available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=116396&inline

- Botanical field surveys did not identify all plants in the project area to the taxonomic level necessary to determine rarity and listing status;
- Fire history, land use, or the physical or climatic conditions of the project area have changed since the last botanical field survey was conducted;
- Changes in vegetation or plant distribution have occurred since the last botanical field surveys were conducted, such as those related to habitat alteration, fluctuations in abundance, invasive species, seed bank dynamics, or other factors; or
- Recent taxonomic studies, status reviews or other scientific information has resulted in a revised understanding of the special status plants with potential to occur in the project area.

Negative Surveys

Adverse conditions from yearly weather patterns may prevent botanical field surveyor from determining the presence of, or accurately identifying, some special status plants in the project area. Disease, drought, predation, fire, herbivory or other disturbance may also preclude the presence or identification of special status plants in any given year. Discuss all adverse conditions in the botanical survey report[15].

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that the plant occurrence no longer exists at a location, particularly if adverse conditions are present. For example, botanical field surveys over a number of years may be necessary if the special status plant is an annual or short-lived plant having a persistent, long-lived seed bank and populations of the plant are known to not germinate every year. Visiting the project area in more than one year increases the likelihood of detecting special status plants, particularly if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may help ensure that the timing of botanical field surveys was appropriate.

3. REPORTING AND DATA COLLECTION

Adequate information about special status plants and sensitive natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants and sensitive natural communities and will guide the development of avoidance, minimization, and mitigation measures. The information necessary to assess impacts to special status plants and sensitive natural communities is described below. For comprehensive, systematic botanical field surveys where no special status plants or sensitive natural communities were found, reporting

and data collection responsibilities for botanical field surveyor remain as described

[15] U.S. Fish and Wildlife Service Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants available at: https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/

below, excluding specific occurrence information.

Special Status Plant and Sensitive Natural Community Observations

Record the following information for locations of each special status plant and sensitive natural community detected during a botanical field survey of a project area.

- The specific geographic locations where the special status plants and sensitive natural communities were found. Preferably this will be done by use of global positioning system (GPS) and include the datum[16] in which the spatial data was collected and any uncertainty or error associated with the data. If GPS is not available, a detailed map (1:24,000 or larger) showing locations and boundaries of each special status plant population and sensitive natural community in relation to the project area is acceptable. Mark occurrences and boundaries as accurately as possible;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If a special status plant is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of each special status plant in each life stage such as seedling, vegetative, flowering and fruiting;
- The density of special status plants, identifying areas of relatively high, medium and low density of each special status plant in the project area; and
- Digital images of special status plants and sensitive natural communities in the project area, with diagnostic features.

Special Status Plant and Sensitive Natural Community Documentation

When a special status plant is located, data must be submitted to the CNDDB. Data may be submitted in a variety of formats depending on the amount and type of data that is collected[17]. The most common way to submit data is the Online CNDDB Field Survey Form[18], or equivalent written report, accompanied by geographic locality information (GPS coordinates, GIS shapefiles, KML files, topographic map, etc.). Data submitted in digital form must include the datum[19] in which it was collected.

If a sensitive natural community is found in a project area, document it with a Combined

16 NAD83, NAD27 or WGS84

17 See https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data for information on acceptable data submission formats.

18 Available at: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data

19 NAD83, NAD27 or WGS84

Vegetation Rapid Assessment and Relevé Field Form[20] and submit the form to VegCAMP[21].

Voucher Collection

Voucher specimens provide verifiable documentation of special status plant presence and identification and a scientific record. This information is vital to conservation efforts and valuable for scientific research. Collection of voucher specimens should be conducted in a manner that is consistent with conservation ethics, and in accordance with applicable state and federal permit requirements (e.g. scientific, educational, or management permits pursuant to Fish & G. Code, § 2081, subd. (a)). Voucher collections of special status plants (or possible special status plants) should only be made when such actions would not jeopardize the continued existence of the population. A plant voucher collecting permit[22] is required from CDFW prior to the take or possession of a state-listed plant for voucher collection purposes, and the permittee must comply with all permit conditions.

Voucher specimens should be deposited in herbaria that are members of the Consortium of California Herbaria[23] no later than 120 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant collector names and permit numbers on specimen labels (if applicable).

Botanical Survey Reports

Botanical survey reports provide an important record of botanical field survey results and project area conditions. Botanical survey reports containing the following information should be prepared whenever botanical field surveys take place, and should also be submitted with project environmental documents:

Project and location description

- A description of the proposed project;
- A detailed map of the project area that identifies topographic and landscape features and includes a north arrow and bar scale;
- A vegetation map of the project area using Survey of California Vegetation Classification and Mapping Standards[24] at a thematic and spatial scale that allows the display of all sensitive natural communities;
- A soil map of the project area; and

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20 Available at: https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/Submit

21 Combined Vegetation Rapid Assessment and Releve Field Forms can be emailed to VegCAMP staff. Contact information available at: https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/Other-Info

22 Applications available at: https://www.wildlife.ca.gov/Conservation/Plants/Permits

23 A list of Consortium of California Herbaria participants is available at: http://ucjeps.berkeley.edu/consortium/participants.html

24 Available at: https://www.wildlife.ca.gov/data/vegcamp/publications-and-protocols

- A written description of the biological setting, including all natural communities; geological and hydrological characteristics; and land use or management history.

Detailed description of survey methodology and results

- Names and qualifications of botanical field surveyor(s);
- Dates of botanical field surveys (indicating the botanical field surveyor(s) that surveyed each area on each survey date), and total person-hours spent;
- A discussion of the survey preparation methodology;
- A list of special status plants and sensitive natural communities with potential to occur in the region;
- Description(s) of reference site(s), if visited, and the phenological development of special status plant(s) at those reference sites;
- A description and map of the area surveyed relative to the project area;
- A list of all plant taxa occurring in the project area, with all taxa identified to the taxonomic level necessary to determine whether or not they are a special status plant;
- Detailed data and maps for all special status plants and sensitive natural communities detected. Information specified above under the headings “Special Status Plant and Sensitive Natural Community Observations,” and “Special Status Plant and Sensitive Natural Community Documentation,” should be provided for the locations of each special status plant and sensitive natural community detected. Copies of all California Native Species Field Survey Forms and Combined Vegetation Rapid Assessment and Relevé Field Forms should be sent to the CNDDB and VegCAMP, respectively, and included in the project environmental document as an Appendix[25];
- A discussion of the potential for a false negative botanical field survey;
- A discussion of how climatic conditions may have affected the botanical field survey results;
- A discussion of how the timing of botanical field surveys may affect the comprehensiveness of botanical field surveys;
- Any use of existing botanical field surveys and a discussion of their applicability to the project;
- The deposition locations of voucher specimens, if collected; and
- A list of references used, including persons contacted and herbaria visited.

[25] It is not necessary to submit entire environmental documents to the CNDDB

Assessment of potential project impacts

- A discussion of the significance of special status plant populations in the project area considering nearby populations and total range and distribution;
- A discussion of the significance of sensitive natural communities in the project area considering nearby occurrences and natural community distribution;
- A discussion of project related direct, indirect, and cumulative impacts to special status plants and sensitive natural communities;
- A discussion of the degree and immediacy of all threats to special status plants and sensitive natural communities, including those from invasive species;
- A discussion of the degree of impact, if any, of the project on unoccupied, potential habitat for special status plants; and
- Recommended measures to avoid, minimize, or mitigate impacts to special status plants and sensitive natural communities.

4. BOTANICAL FIELD SURVEYOR QUALIFICATIONS

Botanical field surveyors should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with plants of the region, including special status plants;
- Familiarity with natural communities of the region, including sensitive natural communities;
- Experience with the CNDDB, BIOS, and Survey of California Vegetation Classification and Mapping Standards;
- Experience conducting floristic botanical field surveys as described in this document, or experience conducting such botanical field surveys under the direction of an experienced botanical field surveyor;
- Familiarity with federal, state, and local statutes and regulations related to plants and plant collecting; and
- Experience analyzing the impacts of projects on native plant species and sensitive natural communities.

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APPENDIX D

Procedure for the Programmatic Evaluation of Paleontological Resources for the 2018 Fisheries Habitat Restoration Project

There shall be three phases to the process of investigating paleontological resources: 1) project initiation where basic data will be compiled, reviewed and sorted to determine the next steps that need to be taken on any given project; 2) evaluation of individual projects that may encounter paleontological resources; and 3) mitigation planning to develop mitigation strategies for projects that have identified paleontological resources. The three phases are summarized below.

Project Initiation

The logistics and time needs for conducting paleontological evaluations shall be assessed in the project initiation phase. The guidelines outlined below will facilitate rapid evaluation of individual projects and ensure cooperation among evaluators, pertinent agencies, and landowners. Landowner cooperation is through property access and local area information. The evaluation procedure generally follows standards implemented by other agencies conducting ground disturbance activities such as CalTrans.

Evaluation of the likelihood of encountering paleontological resources and land management issues shall be assessed by adhering to the following guidelines and the corresponding actions:

1. If the project does not involve ground disturbing work, then a negative declaration report shall be prepared.

2. If the project involves ground disturbing work and there is no likelihood of encountering paleontological resources, then a negative declaration report shall be prepared. However, if there is a likelihood of encountering paleontological resources at the project site, then the evaluator schedules a field investigation by contacting the CDFW grant manager and having them arrange landowner access for the paleontological resource field staff; and if necessary, arrange a meeting with the landowners and the paleontological resources investigation field staff.

3. If the project involves land administered by the US Forest Service, the Bureau of Land Management, the National Park Service, the US Army Corps of Engineers, the Native American tribal lands, or the California Department of Parks and Recreation, then the paleontology report containing site forms, site significance, and mitigation measures shall be coordinated with the involved entities. However, if those agencies are not involved, then the paleontology report with all pertinent information (site forms, site significance, mitigation measures or negative declarations) shall be provided to the CDFW and to the CDFW grant manager

Individual Project Evaluation

The appropriate regional archaeological information center shall be contacted for a record search and the Native American Heritage Commission shall also be contacted for a Sacred Lands File Check. If paleontological resources are likely to be present, then qualified staff shall evaluate the paleontological resources in coordination with any affected agencies including any affected Native American tribe. If paleontological resources are present, then the evaluator will (1) delineate the extent and type of resources present, (2) discuss any issues with pertinent agencies, Native American tribes, project managers, and local experts with regards to potential mitigation planning, and (3) develop a mitigation plan designed to protect sensitive paleontological resources. However, if no resources are present, then a negative declaration report shall be prepared.

Mitigation Planning

Mitigation plans shall be developed to avoid or lessen impacts to the resource if paleontological resources are discovered at any project site. These mitigation plans shall be consistent with current mitigation strategies employed by other entities conducting CEQA investigations. The initial investigation report, along with mitigation recommendations, shall be compiled and delivered to the appropriate CDFW grant/contract manager and the project manager of the proposed project in question. Minimum report elements shall include:

1) Project description and location.
2) Results of the investigation.
3) Mitigation recommendations and plans.
4) Maps depicting project location and paleontological resource locations.

APPENDIX E

Procedure for the Programmatic Evaluation of Archeological Resources for the 2018 Fisheries Habitat Restoration Project

Cultural resource investigations are used to identify archaeological resources in the California Department of Fish and Wildlife's (CDFW) funded action items Fisheries Habitat Restoration (FHR) project areas. When archaeological resources are found, measures are implemented to protect these resources. The purpose of the investigations described below are to: 1) locate and record cultural resources within the project area; 2) evaluate the significance of cultural resources in the study area; 3) assess potential impacts to cultural resources resulting from implementation of the project and; 4) recommend appropriate mitigation measures when necessary.

Investigative Methods

Background research for each project shall include an examination of historical maps, aerial photographs, archaeological site records and a survey at the appropriate regional information center of the Historical Resources Information System. The background research shall also include a review of pertinent ethnographic literature. For all action items, an intensive archaeological field survey that covers the entire project area will be completed.

The California Office of Historical Preservation has established regional information centers as local repositories for all archaeological reports that are prepared under cultural resource management regulations. For each of the action items, a background literature search shall be conduced at the appropriate regional information center as required by state guidelines and current professional standards. Following completion of the archeological studies, a report shall be prepared summarizing the findings of the research. A copy of the report shall be deposited with the California Office of Historical Preservation. The literature review will determine if there are any previously recorded archeological resources or historic structures within the project area, and whether the area has been included within any previous archaeological research or reconnaissance project.

Project notification letters shall be sent to the Native American Heritage Commission along with a request for a Sacred Lands File search of the project areas and appropriate Native American contacts for the action items as soon as funding and contracts are fully routed. In addition, letters shall be sent to local Native American tribes stating that archaeological surveys are being conducted in areas that may be of interest to them. The letters shall request any additional information and shall ask specifically if the tribe(s) have any concerns regarding the project.

In addition to a records search at the Northwest Information Center, pertinent published ethnographic literature and various inventories shall be reviewed including but not limited to: 1) California Athabascan Groups (Baumhoff 1958); 2) California Inventory of Historic Resources; 3) California Historic Property Inventory and; 4) Government Land Office Land Plot Map.

Intensive surveys are conducted instream and along the bank of the areas included in the project area. All locations of exposed soil along road cuts, skid trails and creek banks are

inspected. In areas where mineral soil is visibly obscured, a geology pick shall be used to scrape the surface vegetation and expose the mineral soil to inspect for cultural resources.

1) Any archaeological sites identified during an investigation shall be recorded in a manner consistent with the Office of Historic Preservations Manual titled Instructions for Recording Historic Resources 1955. The Grantee shall report any previously unknown historic, archeological and paleontological remains discovered at a site to CDFW which will then report to the US Army Corps of Engineers as required in the Regional General Permit (RGP). This information will also be provided to the Native American Heritage Commission, 915 Capitol Mall, Sacramento, CA 95814.

2) An accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the process stated in Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 shall be followed.

In the event of a discovery of archeological or historic resource within the jurisdiction of the California State Lands Commission (CSLC), grantees will be responsible for reporting and submitting any required information to the CSLC.