

## **Introduction:**

The Eel River Watershed Improvement Group (ERWIG) and the California Conservation Corps (CCC) assessed the habitat along the Sproul Creek project reach and found existing large wood (LW) to be well below SONCC target values. The lack of LW is tied to low shelter values, reduced gravel sorting, shallower pools, a plain, single thread channel, and reduced flood plain inundation. The 2016 CDFW stream inventory assessment and the 2014 CDFW South Fork Eel River Watershed Assessment both agree with the findings of the ERWIG/CCC assessment that a lack of LW is resulting in decreased habitat values. During the ERWIG/CCC habitat assessment, locations suitable for habitat enhancement LW structures were identified and LW structures were designed to best optimize habitat at each location.

The Permittee 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, Section VII- Project Implementation*.

## **Objective(s):**

This project is the construction of 61 large wood (LW) features containing a total of 162 pieces of LW. Most of the logs for the project will be sourced from the riparian zone, some will be purchased; all the logs will be redwood and Douglas fir. The project is along 2.0 miles of Sproul Creek, and once complete will contain 75 key pieces. This project will provide habitat to Coho, Chinook and steelhead. Additionally, 400 conifer seedlings will be planted along the project reach.

## **Project Description:**

### **Location:**

The project is located on Sproul Creek, tributary to the South Fork Eel River, tributary to the Eel River. The project site is near the town of Garberville, CA and is located in Township 05 South, Range 03 East, Section 7 and Section 8 of the Garberville 7.5 Minute U.S. Geological Survey Quadrangle. The downstream extent of the project reach is at the confluence of Sproul Creek with West Fork Sproul Creek. The upstream extent is located two miles upstream, approximately 608 upstream from the confluence with Cox Creek. The approximate center of the project coordinates are: 40.03099, -123.86838.

### **Project Set Up:**

ERWIG Staff:ERWIG Executive Director: Task 1. Contract oversight and reporting will be conducted by ERWIG Executive Director with assistance from the ERWIG Project Manager.ERWIG Project Manager: Tasks 1, 3, 4, and 6. Will assist with contract oversight, invoicing, and reporting. Will manage all aspects of

project implementation. Subcontractors: Edwards Excavation & Restoration (LTO & EO): Tasks 3 and 4. Will be responsible for falling trees as the source of LW. Will also be responsible for placing LW according to design plans when equipment access is available. California Conservation Corps (CCC): Task 4. Under supervision of ERWIG staff, will anchor the structures according to design and anchoring specifications. CCC corpsmembers will also move LWD into position using a griphoist come along. Arch/Bot Subcontractor: Task 2. Will conduct research, botanical and archeological surveys, and prepare CEQA reports. Paleontology Subcontractor: Task 2. Will conduct paleontological research, surveys and prepare CEQA report. Registered Professional Forester (RPF): Task 4. Will make sure trees chosen for project use are appropriate. Woodbenders: Task 5. Will plant disturbed areas with native trees and plants. Ross Taylor & Associates: Task 3. Will clear crossings of fish and amphibians.

## **Materials:**

All materials will be purchased by applicant. Some logs will be donated by landowner. Anchoring Hardware: 1` Rebar, Nuts and Plates (Washers), these items are used to anchor logs to live trees, boulders, bedrock and other logs. Power Tools: Portable band saws, and wood drills will be used to anchor the structures. Wood drills are used to drill holes in live trees and logs for rebar attachment. Portable band saws are used to cut rebar to length. Portable generators will be used to power the power tools that are used during the anchoring process. Misc Project Items: Small items such as chuck keys, allen wrenches, socket wrenches, shear pins, hammers and band saw blades, which are used during construction. Misc item also includes erosion control materials, fish exclusion fencing materials (hardware cloth, t-posts), field supplies (boots, waders, flagging and other items necessary for project work) and a time-lapse game camera for first winter observations. Conifer Logs: Are the primary elements of the habitat features, needed to make project features. Some of the logs will be donated by the landowner and some will be purchased. Griphoist: Used to move logs into final position after placement by excavator or after falling a live tree. Redwood Seedlings: Will be used to plant areas disturbed by project activities and areas within the project reach that are lacking canopy cover.

## **Tasks:**

### **Task 1: Project Management and Administration**

Description of Activities: Grant oversight including invoicing and reporting will be conducted by Permittee Executive Director and Project Manager (Staff). Upon final execution of the Grant and prior to receiving a Notice to Proceed, Permittee shall deliver the following items to the CDFW Grant Manager: 1. Request to spend project funds in order to prepare for implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a

Streambed Alteration Agreement, etc.). Requests shall be sent by email or telephone. 2. Access agreement that will be project specific and meet grant agreement requirements. 3. Subcontractor Agreements. A written copy of the sub agreement shall be submitted to the CDFW Grant 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. 4. CEQA survey interim reports for archaeological and botanical surveys. Interim reports shall be delivered prior to receiving notice to proceed, as part of the Notification of Lake or Streambed Alteration Application (LSAA) package. Final Archaeological, botanical, and paleontological surveys shall be delivered prior to the End Term date. 5. Send Grantor LSAA with a check for the most current permit fee. The Permittee shall notify the CDFW Grant Manager a minimum of 10 business days prior to the beginning of project implementation.

**Deliverables:** 1600 Permit, Subcontractor Agreements, Access Agreements, Invoices, Invoice Progress Reports

Start Date: 04/01/2022

End Date: 06/30/2024

## **Task 2: CEQA Surveys**

Description of Activities: Archaeological, botanical, and paleontological subcontractors will conduct research and surveys within the project reach to fulfill CEQA requirements for FRGP. Interim survey reports will be delivered to CDFW Grant Manager prior to receiving a Notice to Proceed. Botanist will note wetland habitat to avoid.

**Deliverables:** Interim and Final Survey Reports

**Start Date:** 04/15/2022

**End Date:** 12/31/2022

## **Task 3: Site Preparations**

Description of Activities: The ERWIG Project Manager will finalize site-specific designs based on channel morphology, equipment access, and LW availability. They will submit designs for CDFW Project Manager approval. The ERWIG Project Manager will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along the project reach. Pre-project photos and metrics will be collected by ERWIG. Tools and materials will be purchased by ERWIG prior to the start of implementation and on an as-needed basis throughout the project. Before the excavator uses stream crossings, ERWIG staff will set up exclusion fencing. In conjunction with CDFW, Ross Taylor and Associates will remove fish and amphibians from two stream crossing locations and release them at appropriate locations upstream or downstream of crossings. Ross Taylor and

Associates will write all reports necessary for the e-fishing activities. Both of the stream crossings used by equipment will be wet fords and will only be crossed by one excavator two times.

**Deliverables:** Finalized design plans, pre-project photos and metrics, fish re-location report.

Start Date:05/01/2022

End Date:07/31/2022

## **Task 4: Large Wood Structure Construction**

Description of Activities: Upon approval from the CDFW Project Manager, construction will begin on 61 LW features under the direction of the ERWIG Project Manager. Some features may involve cutting down or uprooting trees, which will be accomplished by the LTO or the licensed equipment operator, respectively. A registered professional forester will be consulted during tree selection and no trees will be cut without approval from the RPF. With approval from the grant manager, the licensed equipment operator will place logs into the stream in accordance with design plans. When necessary, CCC Corpsmembers will move logs into position using a grip hoist come along. Site construction, wood placement, and anchoring will be in accordance with the CDFW California Salmonid Stream Habitat Restoration Manual, Section VII (Flosi et al. 2010). The project will utilize living riparian trees as anchors by wedging the logs between them where feasible. CCC Corpsmembers will anchor the sites according to design and anchoring specifications.

Corpsmembers 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 wood drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be inserted through the log and secured with nuts and washers. Corpsmembers will be supervised by a trained Conservationist 1 (C1) and the ERWIG 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. To address concerns over invasive species this project will follow the ERWIG Aquatic Invasive Species Decontamination Protocol, which is in line with the CDFW Aquatic Invasive Species Decontamination Protocol. ERWIG staff will monitor water quality when necessary.

**Deliverables:**61 LW structures made up of 162 logs. Water quality monitoring report.

Start Date:06/15/2022

End Date:10/31/2023

Seasonal Implementation Timeline 6/15 to 10/31

## **Task 5: Riparian Planting**

Description of Activities: Woodbenders will return in the winter following completion of Task 4, to plant 400 redwood seedlings, with a primary focus in areas lacking sufficient conifer cover or riparian vegetation.

**Deliverables:** Four hundred planted redwood seedlings.

Start Date:12/01/2022

End Date:03/31/2024

Seasonal Implementation Timeline 12/1 to 4/1

## **Task 6: Post Project Photo & Data Collection**

Description of Activities: Following implementation ERWIG will take post-project photos and quantitative implementation metrics (performance measures) will be collected which satisfy the Project Annual Progress Reports and Final Report. A First Winter Observation Summary will be written as outlined in the PSN.

**Deliverables:** Post-project metrics and photos, First Winter Observation Summary.

Start Date:09/01/2022

End Date:05/31/2024

## **Task 7: Reporting**

Description of Activities: ERWIG Staff will write and deliver annual reports, a draft final report, and a final report.

**Deliverables:** Annual reports, draft final report in electronic format, final report in electronic and hard copy formats.

Start Date:11/01/2022

End Date:06/30/2024

## **Additional Requirements:**

The Permittee 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. 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 Permittee shall notify the CDFW a minimum of five working days before the project site is dewatered 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 Permittee 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 Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.

c. The Permittee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW personnel and pursuant to conditions in the United State Army Corp of Engineers (USACE) Regional General Permit and National Marine Fisheries Service (NMFS) Biological Opinion.

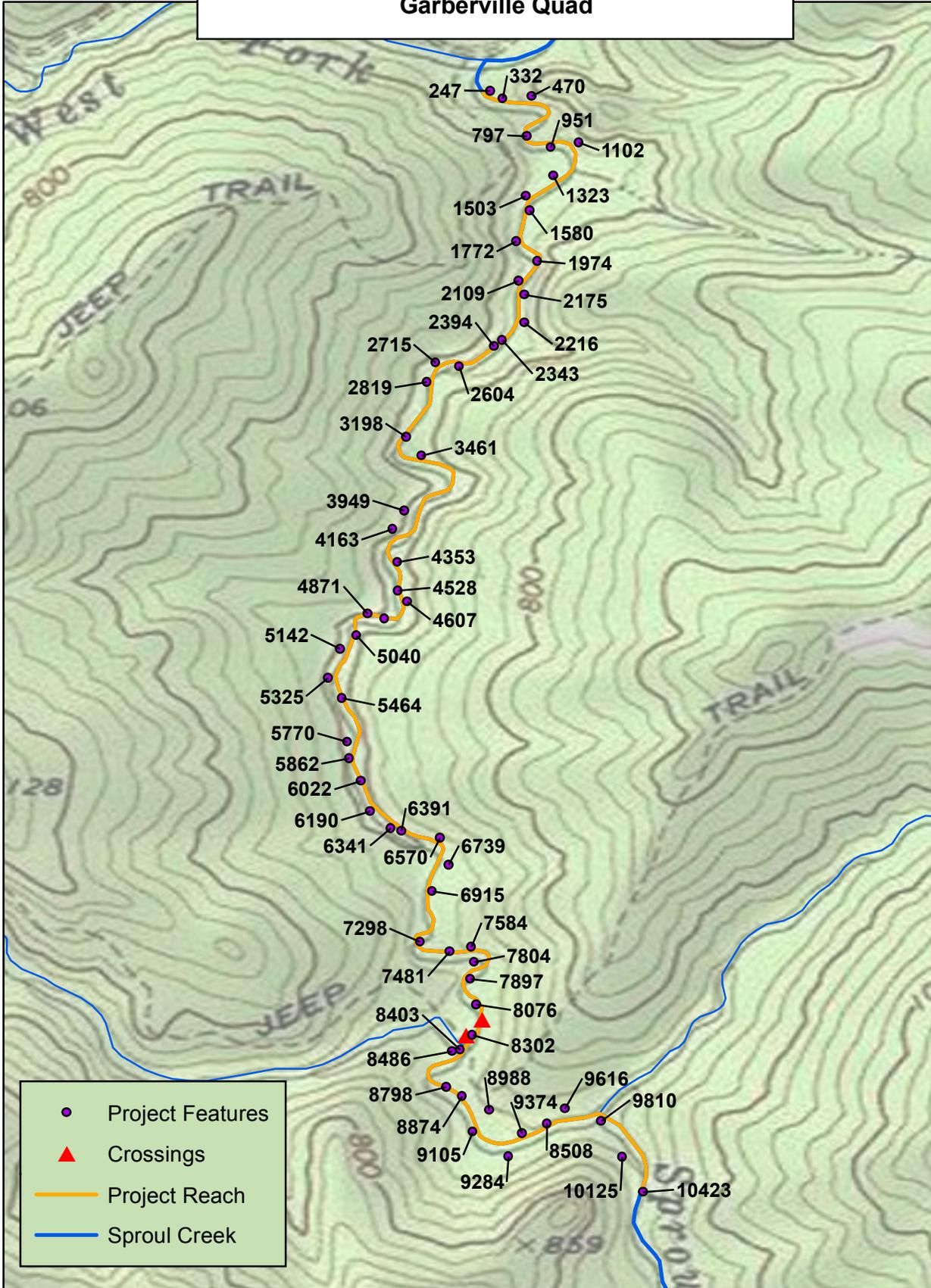
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. U.S. Fish and Wildlife Service (USFWS) Approved fisheries biologists will provide fish relocation data via the Permittee to the CDFW personnel on a form provided by CDFW.

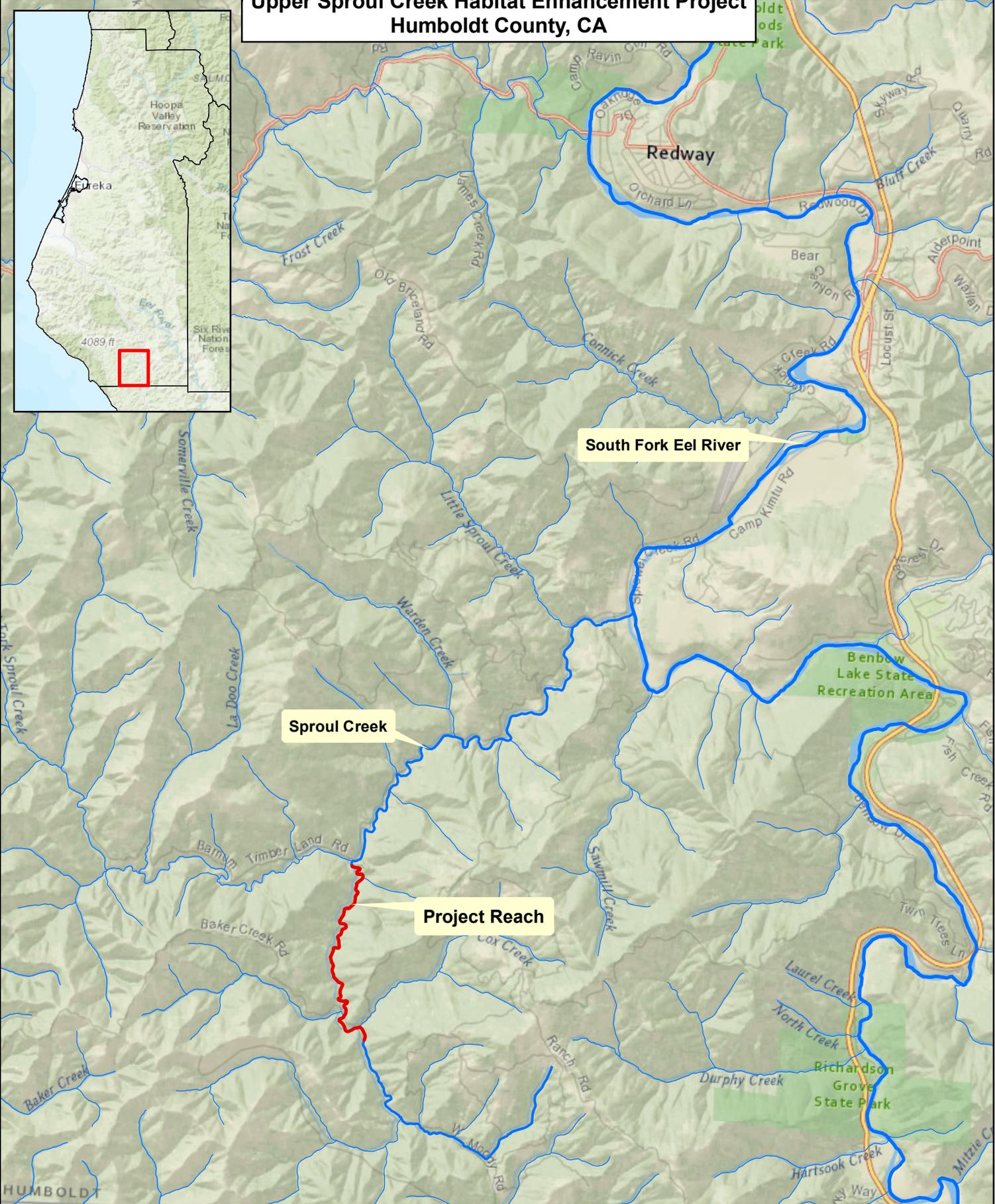
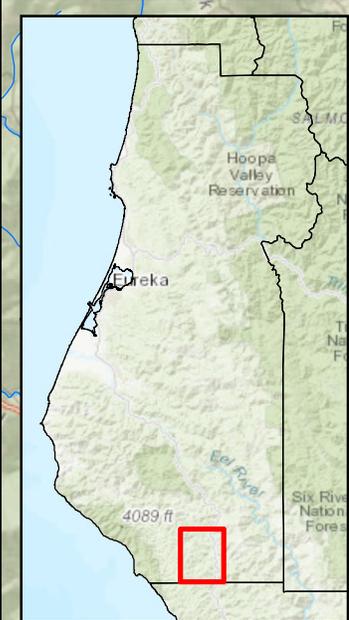
Final structure design and placement will be determined by field consultation between the Permittee and the CDFW Personnel.

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.

**Project Location Topographic Map  
Upper Sproul Creek Habitat Enhancement Project  
Garberville Quad**



# Watershed Map Upper Sproul Creek Habitat Enhancement Project Humboldt County, CA





**Selected Elements by Scientific Name**  
**California Department of Fish and Wildlife**  
**California Natural Diversity Database**



**Query Criteria:** Quad IS (Garberville (4012317) OR Harris (4012316) OR Noble Butte (3912386) OR Piercy (3912387) OR Bear Harbor (3912388) OR Briceland (4012318) OR Ettersburg (4012328) OR Miranda (4012327) OR Fort Seward (4012326))

Possible species within the Garberville and surrounding quads for 1725677 - Upper Sproul Creek Habitat Enhancement Project, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G4	S3	SSC
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Arabis mcdonaldiana</i> McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
<i>Arborimus pomo</i> Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
<i>Arctostaphylos stanfordiana ssp. raichei</i> Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
<i>Ascaphus truei</i> Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
<i>Astragalus agnicidus</i> Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Calamagrostis foliosa</i> leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
<i>Carex arcta</i> northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
<i>Castilleja litoralis</i> Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
<i>Castilleja mendocinensis</i> Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
<i>Ceanothus foliosus var. vineatus</i> Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
<i>Coptis laciniata</i> Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
<i>Empidonax traillii brewsteri</i> little willow flycatcher	ABPAE33041	None	Endangered	G5T3T4	S1S2	
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Eriogonum kelloggii</i></b> Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
<b><i>Erythronium oregonum</i></b> giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
<b><i>Erythronium revolutum</i></b> coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
<b><i>Eumetopias jubatus</i></b> Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	
<b><i>Falco peregrinus anatum</i></b> American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<b><i>Gentiana setigera</i></b> Mendocino gentian	PDGEN060S0	None	None	G2	S2	1B.2
<b><i>Gilia capitata ssp. pacifica</i></b> Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
<b><i>Howellia aquatilis</i></b> water howellia	PDCAM0A010	Threatened	None	G3	S2	2B.2
<b><i>Kopsiopsis hookeri</i></b> small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
<b><i>Mitellastra caulescens</i></b> leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
<b><i>Montia howellii</i></b> Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
<b><i>Myotis evotis</i></b> long-eared myotis	AMACC01070	None	None	G5	S3	
<b><i>Myotis thysanodes</i></b> fringed myotis	AMACC01090	None	None	G4	S3	
<b><i>Myotis yumanensis</i></b> Yuma myotis	AMACC01020	None	None	G5	S4	
<b>Northern Interior Cypress Forest</b> Northern Interior Cypress Forest	CTT83220CA	None	None	G2	S2.2	
<b><i>Noyo intersessa</i></b> Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
<b><i>Oncorhynchus kisutch pop. 2</i></b> coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G5T2Q	S2	
<b><i>Oncorhynchus mykiss irideus pop. 36</i></b> summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
<b><i>Pandion haliaetus</i></b> osprey	ABNKC01010	None	None	G5	S4	WL
<b><i>Pekania pennanti</i></b> Fisher	AMAJF01020	None	None	G5	S2S3	SSC
<b><i>Piperia candida</i></b> white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Rana boylei</i></b> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<b><i>Rhyacotriton variegatus</i></b> southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
<b><i>Sedum eastwoodiae</i></b> Red Mountain stonecrop	PDCRA0A0L1	None	None	G5T2	S2	1B.2
<b><i>Sidalcea malachroides</i></b> maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
<b><i>Sidalcea malviflora ssp. patula</i></b> Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
<b><i>Silene campanulata ssp. campanulata</i></b> Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
<b><i>Taricha rivularis</i></b> red-bellied newt	AAAAF02020	None	None	G2	S2	SSC
<b><i>Tracyina rostrata</i></b> beaked tracyina	PDAST9D010	None	None	G2	S2	1B.2
<b>Upland Douglas Fir Forest</b> Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
<b><i>Usnea longissima</i></b> Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
<b><i>Viburnum ellipticum</i></b> oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 51