

# South Fork Noyo River Instream Habitat Enhancement Project

2016

## **Introduction:**

Mendocino Land Trust (Grantee) will implement the South Fork Noyo River Instream Habitat Enhancement Project. South Fork Noyo River supports populations of coho salmon and steelhead trout. The purpose of the project is to improve habitat in Little North Fork Navarro River and Bottom Creek. Salmonid recovery plans recommend increasing stream habitat complexity by installing large woody debris (LWD). Adding LWD to South Fork Noyo River will enhance pools, increase gravel sorting, and provide increased habitat complexity.

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, Part VII. 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 create 70 instream features consisting of 160 pieces of LWD within an 11,198-foot section of South Fork Noyo River. 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 on South Fork Noyo River, tributary to Noyo River, tributary to the Pacific Ocean, in the County of Mendocino, State of California; 39.3890 north latitude, -123.6828 west longitude at the downstream end; and 39.3695 north latitude, -123.6593 west longitude at the upstream end; Township 18 North, Range 16 West, and Sections 29, 30, 32, and 33 of the Noyo Hill 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

### **Project Set Up:**

Subcontractors for Heavy Equipment and Hand Labor will construct instream log structures according to the site specific plans to be provided, using locally available logs or logs from other locations. Logs will be moved into location by hand crews, or by using heavy equipment where necessary.

### **Materials:**

A total of 65 pieces of LWD will be used to construct 33 structures. Other materials purchased and used during the project include the following:

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Spike Meals (food): To feed hand labor crews while on spike. Spike Supplies (briquettes, propane, etc.): For preparing meals while on spike. Porta-Potty Rental: For environmental protection, health & safety services for crews on spike. Generator: For operating power equipment used during in-stream structure anchoring process. Rebar, nuts, washers, cable clamps, epoxy glue, and 5/8" Galvanized Cable: Used for anchoring in-stream structures. Wood Drill and Rock Drill Bits: Used for drilling logs/root-wads/trees during in-stream structure anchoring process. Hand Tools (gloves, hard hats, safety glasses, hacksaws, bit extensions, shear-pins): safety equipment, tools and tool supplies used during project implementation. Office Supplies (paper, printer supplies, etc.): used for creating designs, work-plans, all pertinent documents relating to the project, reporting. Straw mulch, metal tags, chainsaw files, personal protection equipment, measuring tapes.

## **Tasks:**

### **Install Instream Habitat Features:**

Install instream habitat features at 70 locations including 160 pieces of LWD within an 11,198 foot section of South Fork Noyo River. Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grantor Project Manager. Work will consist of the following:

- Heavy equipment and hand labor crew members will construct instream log structures according to the site specific plans to be provided, using locally available logs or logs from other locations.
- Approximately 46 logs will be created through the felling of 23 nearby trees using a chainsaw. Approximately 114 logs will be salvaged from nearby areas and placed in the creek with a rubber-tired tractor (equipment) or CCC crews. Trees will be felled directly into the stream channel or away from the channel and delivered and placed with a rubber-tired tractor. 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. Salvage logs may be transported to the site from cull piles 3.25 miles distant.
- Nuts, washers, plates, cable, glue and rebar will be ordered as applicable.
- Location of all project LWD will be documented.
- Various anchoring techniques, which will be approved by the Grantor 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 and bedrock. Anchoring materials will consist of 1" threaded rebar, cable, nuts and washers, and waterproof epoxy.
- The minimum length used for unanchored large woody debris is 1.5 times bankfull width.

## **Erosion Control:**

# South Fork Noyo River Instream Habitat Enhancement Project

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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:**

The specific objective of this project is to create 70 instream features consisting of 160 pieces of LWD within an 11,198-foot section of South Fork Noyo River.

## **Timelines:**

June 15, 2016 through October 31, 2016, June 15, 2017 through October 31, 2017, June 15, 2018 through October 31, 2018, June 15, 2019 through October 31, 2019, install LWD features within approved project reach. Erosion control will be installed as project features are completed.

After completion of all LWD features and following one winter, post project monitoring will take place which includes a longitudinal profile will be repeated along the reach where a pre-project longitudinal profile was conducted.

## **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 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 when there is a threat of heavy rains which will cause flooding.

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). 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*.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Noyo Hill Quad and surrounding quads for South Fork Noyo River Instream Habitat Enhancement Project, T18N R16W S30, S29, S28, S33 and T17N R16W S04, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 American badger <i>Taxidea taxus</i>	AMAJF04010			G5	S3	SC
2 Baker's goldfields <i>Lasthenia californica ssp. bakeri</i>	PDA5T5L0C4			G3TH	SH	1B.2
3 Baker's navarretia <i>Navarretia leucocephala ssp. bakeri</i>	PDPLM0C0E1			G4T2	S2	1B.1
4 Behren's silverspot butterfly <i>Speyeria zerene behrensii</i>	IILEPJ6088	Endangered		G5T1	S1	
5 Blasdale's bent grass <i>Agrostis blasdalei</i>	PMPOA04060			G2	S2	1B.2
6 Bolander's beach pine <i>Pinus contorta ssp. bolanderi</i>	PGPIN04081			G5T2	S2	1B.2
7 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
8 California sedge <i>Carex californica</i>	PMCYP032D0			G5	S2	2B.3
9 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
10 Coastal and Valley Freshwater Marsh	CTT52410CA			G3	S2.1	
11 Fen	CTT51200CA			G2	S1.2	
12 Grand Fir Forest	CTT82120CA			G1	S1.1	
13 Howell's spineflower <i>Chorizanthe howellii</i>	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
14 Humboldt Bay owl's-clover <i>Castilleja ambigua var. humboldtensis</i>	PDSCR0D402			G4T2	S2	1B.2
15 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
16 Lyngbye's sedge <i>Carex lyngbyei</i>	PMCYP037Y0			G5	S2	2B.2
17 Mendocino Coast paintbrush <i>Castilleja mendocinensis</i>	PDSCR0D3N0			G2	S2	1B.2
18 Mendocino Pygmy Cypress Forest	CTT83161CA			G2	S2.1	
19 Mendocino dodder <i>Cuscuta pacifica var. papillata</i>	PDCUS011A2			G5T1	S1	1B.2
20 Mendocino leptonetid spider <i>Calileptoneta wapiti</i>	ILARAU6040			G1	S1	
21 Menzies' wallflower <i>Erysimum menziesii</i>	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
22 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
23 Monterey clover <i>Trifolium trichocalyx</i>	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
24 North Coast phacelia <i>Phacelia insularis var. continentis</i>	PDHYD0C2B1			G2T2	S2	1B.2

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Possible species within the Noyo Hill Quad and surrounding quads for South Fork Noyo River Instream Habitat Enhancement Project, T18N R16W S30, S29, S28, S33 and T17N R16W S04, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
25 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
26 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
27 Oregon coast paintbrush <i>Castilleja litoralis</i>	PDSCR0D012			G4G5T4	S3	2B.2
28 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
29 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
30 Pacific lamprey <i>Entosphenus tridentatus</i>	AFBAA02100			G4	S4	SC
31 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
32 Point Reyes blennosperma <i>Blennosperma nanum var. robustum</i>	PDAST1A022		Rare	G4T2	S2	1B.2
33 Point Reyes horkelia <i>Horkelia marinensis</i>	PDROS0W0B0			G2	S2	1B.2
34 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
35 Sphagnum Bog	CTT51110CA			G3	S1.2	
36 Ten Mile shoulderband <i>Noyo intersessa</i>	IMGASC5070			G2	S2	
37 Thurber's reed grass <i>Calamagrostis crassiglumis</i>	PMPOA17070			G3Q	S2?	2B.1
38 Whitney's farewell-to-spring <i>Clarkia amoena ssp. whitneyi</i>	PDONA05025			G5T1	S1	1B.1
39 Wolf's evening-primrose <i>Oenothera wolfii</i>	PDONA0C1K0			G2	S1	1B.1
40 alpine marsh violet <i>Viola palustris</i>	PDVIO041G0			G5	S1S2	2B.2
41 angel's hair lichen <i>Ramalina thrausta</i>	NLLEC3S340			G5	S2?	2B.1
42 ashy storm-petrel <i>Oceanodroma homochroa</i>	ABNDC04030			G2	S2	SC
43 bluff wallflower <i>Erysimum concinnum</i>	PDBRA160E3			G3	S3	1B.2
44 bunchberry <i>Cornus canadensis</i>	PDCOR01040			G5	S2	2B.2
45 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
46 coast lily <i>Lilium maritimum</i>	PMLIL1A0C0			G2	S2	1B.1
47 coastal bluff morning-glory <i>Calystegia purpurata ssp. saxicola</i>	PDCON040D2			G4T2T3	S2S3	1B.2

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
48 coastal triquetrella <i>Triquetrella californica</i>	NBMUS7S010			G2	S2	1B.2
49 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	
50 congested-headed hayfield tarplant <i>Hemizonia congesta ssp. congesta</i>	PDAST4R065			G5T1T2	S1S2	1B.2
51 dark-eyed gilia <i>Gilia millefoliata</i>	PDPLM04130			G2	S2	1B.2
52 deceiving sedge <i>Carex saliniformis</i>	PMCYP03BY0			G2	S2	1B.2
53 dwarf alkali grass <i>Puccinellia pumila</i>	PMPOA531L0			G4?	SH	2B.2
54 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
55 globose dune beetle <i>Coelus globosus</i>	IICOL4A010			G1G2	S1S2	
56 great burnet <i>Sanguisorba officinalis</i>	PDROS1L060			G5?	S2	2B.2
57 green yellow sedge <i>Carex viridula ssp. viridula</i>	PMCYP03EM5			G5T5	S2	2B.3
58 hair-leaved rush <i>Juncus supiniformis</i>	PMJUN012R0			G5	S1	2B.2
59 hoary bat <i>Lasiurus cinereus</i>	AMACC05030			G5	S4	
60 lagoon sedge <i>Carex lenticularis var. limnophila</i>	PMCYP037A7			G5T5	S1	2B.2
61 leafy-stemmed mitrewort <i>Mitellastrca caulescens</i>	PDSAX0N020			G5	S4	4.2
62 livid sedge <i>Carex livida</i>	PMCYP037L0			G5	SH	2A
63 lotis blue butterfly <i>Plebejus idas lotis</i>	IILEPG5013	Endangered		G5TH	SH	
64 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
65 marbled murrelet <i>Brachyramphus marmoratus</i>	ABNNN06010	Threatened	Endangered	G3G4	S1	
66 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC
67 northern microseris <i>Microseris borealis</i>	PDAST6E030			G5	S1	2B.1
68 northern red-legged frog <i>Rana aurora</i>	AAABH01021			G4	S2?	SC
69 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Candidate Threatened	G3T3	S2S3	SC

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Selected Elements by Common Name - Portrait

Possible species within the Noyo Hill Quad and surrounding quads for South Fork Noyo River Instream Habitat Enhancement Project, T18N R16W S30, S29, S28, S33 and T17N R16W S04, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
70 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
71 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
72 perennial goldfields <i>Lasthenia californica ssp. macrantha</i>	PDAST5L0C5			G3T2	S2	1B.2
73 pink sand-verbena <i>Abronia umbellata var. breviflora</i>	PDNYC010N4			G4G5T2	S1	1B.1
74 purple martin <i>Progne subis</i>	ABPAU01010			G5	S3	SC
75 purple-stemmed checkerbloom <i>Sidalcea malviflora ssp. purpurea</i>	PDMAL110FL			G5T1	S1	1B.2
76 pygmy cypress <i>Hesperocyparis pygmaea</i>	PGCUP04032			G1	S1	1B.2
77 pygmy manzanita <i>Arctostaphylos nummularia ssp. mendocinoensis</i>	PDERI04280			G3?THQ	SH	1B.2
78 round-headed Chinese-houses <i>Collinsia corymbosa</i>	PDSCR0H060			G1	S1	1B.2
79 running-pine <i>Lycopodium clavatum</i>	PPLYC01080			G5	S3	4.1
80 seacoast ragwort <i>Packera bolanderi var. bolanderi</i>	PDAST8H0H1			G4T4	S2S3	2B.2
81 short-leaved evax <i>Hesperievax sparsiflora var. brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
82 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
83 steelhead - northern California DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209Q	Threatened		G5T2T3Q	S2S3	
84 supple daisy <i>Erigeron supplex</i>	PDAST3M3Z0			G2	S2	1B.2
85 swamp harebell <i>Campanula californica</i>	PDCAM02060			G3	S3	1B.2
86 tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered		G3	S3	SC
87 tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020			G2G3	S1S2	SC
88 tufted puffin <i>Fratercula cirrhata</i>	ABNNN12010			G5	S1S2	SC
89 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
90 western snowy plover <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened		G3T3	S2	SC
91 white beaked-rush <i>Rhynchospora alba</i>	PMCYP0N010			G5	S2	2B.2
92 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2

**South Fork Noyo River Instream Habitat Enhancement Project**  
**Project Location Map**  
**T18N, R16W, Sections 29, 30, 32, 33**  
**Noyo Hill Quad**  
**Mendocino County**



- South Fork Noyo Project Reach
- Parlin Creek Watershed
- South Fork Noyo River Watershed

Mendocino Land Trust  
 South Fork Noyo River Instream Habitat Enhancement Project  
 Site Location Map

Noyo Hill Quad, Mendocino County





## **Introduction:**

The Conservation Fund (Grantee) will implement the East Branch Little North Fork LWD and Instream Barrier Modification. East Branch Little North Fork supports populations of endangered coho salmon. The purpose of the project is to improve habitat in East Branch Little North Fork by adding instream habitat features and by removing a fish passage barrier. Salmonid recovery plans recommend increasing stream habitat complexity in East Branch Little North Fork by installing large woody debris (LWD). Adding LWD to East Branch Little North Fork will enhance pools, increase gravel sorting, and provide increased habitat complexity.

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, Part VII. 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 create 25 instream features consisting of 65 pieces of LWD within a 1.3-mile section of East Branch Little North Fork. 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. A second objective of this project is to improve fish passage and stabilize an estimated 650 cubic yards of landslide debris by excavating a landslide which is blocking East Branch Little North Fork. The removal of the blockage will increase access to 0.79 miles of instream habitat and prevent approximately 250 cubic yards of sediment from entering the stream channel.

## **Project Description:**

### **Location:**

The project is located on East Branch Little North Fork beginning at the confluence with Little North Fork and continuing upstream for 1.3 miles, in the County of Mendocino, State of California. The locations of the project boundaries are approximately 39.3427° north latitude, -123.6714° west longitude at the downstream end; and 39.3395° north latitude, -123.6505° west longitude at the upstream end; Township 17 North, Range 16 West, and Section 8, 16 and 17 of the Mathison Peak 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

### **Project Set Up:**

Subcontractors for Heavy Equipment (LWD), will operate all equipment during implementation and construct instream LWD features.

**Materials:**

Approximately 50 streamside trees will be direct felled as large woody debris to be placed in the East Branch Little North Fork and approximately 15 logs will be salvaged from the slide debris for LWD features construction. One hundred bales of straw mulch will be used for erosion control purposes.

**Tasks:**

**Task 1. Install Instream Habitat Features:**

Install instream habitat features at 25 locations including 65 pieces of LWD along 1.3 miles of East Branch Little North Fork. Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grant Manager. Work will consist of the following:

- Trees for LWD structures will be procured through felling riparian trees with a chainsaw and by salvaging from nearby areas.
- Fifty trees will be felled directly into the stream channel and 15 salvaged pieces of LWD will be placed with equipment.
- Location of all project LWD will be documented.
- The minimum length used for unanchored large woody debris is 1.5 times bankfull width.

**Task 2. Instream Barrier Modification for Fish Passage:**

- Task 2a. Build equipment access route with 321 D Excavator placing temporary crib logs retaining fill on mapped alignment.
- Task 2b. Use heavy equipment and hand laborers to remove LWD from the landslide. If necessary, the stream will be diverted. It is expected that most of the logs on the surface of the slide can be salvaged for use as instream LWD and/or staged for future LWD projects.
- Task 2c. Heavy equipment will be used to reshape the channel following the *Proposed Channel Design* (Attachment 1). Equipment operators will excavate the channel grade down approximately 2 feet to the design grade of 4%. Due to the variable substrate, including numerous large logs, some steps may exceed 6 inches. The stream channel will be excavated to approximately 8 feet wide with the stream banks inclined no steeper than 1:1 (100%). LWD will be installed along the stream banks for scour protection.
- Task 2d. Stabilize excavated sediment by trackwalking with heavy equipment. The compacted area will be no greater than 3 foot thick, with a maximum 6-12 inch lifts. Soils will be blended into surrounding slopes and shaped to disperse runoff. Logs entrenched in the slide as well as some excavated LWD will be placed and used to protect the toe of the remaining landslide debris from lateral scour. Retain upstream pond as additional aquatic habitat.
- Task 2e. Efforts will be made to retain the existing instream pool upstream of the landslide.

### **Task 3. 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:**

Install instream habitat features at 25 locations including 65 pieces of LWD along 1.3 miles of East Branch Little North Fork.

### **Timelines:**

July 1, 2016 through October 31, 2016, and July 1, 2017 through October 31, 2017, move heavy equipment in and remediate passage problem at landslide and install large wood features. Move equipment out and conduct erosion control.

### **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 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 when there is a threat of heavy rains which will cause flooding.

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). 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 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 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.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Mathison Peak Quad and surrounding quads for East Branch Little North Fork LWD and Instream Barrier Modification, T17N R16W S08, S17, and S16, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Baker's goldfields <i>Lasthenia californica ssp. bakeri</i>	PDAST5L0C4			G3TH	SH	1B.2
2 Behren's silverspot butterfly <i>Speyeria zerene behrensii</i>	IILEPJ6088	Endangered		G5T1	S1	
3 Blasdale's bent grass <i>Agrostis blasdalei</i>	PMPOA04060			G2	S2	1B.2
4 Bolander's beach pine <i>Pinus contorta ssp. bolanderi</i>	PGPIN04081			G5T2	S2	1B.2
5 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
6 California sedge <i>Carex californica</i>	PMCYP032D0			G5	S2	2B.3
7 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
8 Coastal and Valley Freshwater Marsh	CTT52410CA			G3	S2.1	
9 Grand Fir Forest	CTT82120CA			G1	S1.1	
10 Howell's spineflower <i>Chorizanthe howellii</i>	PDPGN040C0	Endangered	Threatened	G1	S1	1B.2
11 Humboldt Bay owl's-clover <i>Castilleja ambigua var. humboldtiensis</i>	PDSCR0D402			G4T2	S2	1B.2
12 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
13 Lyngbye's sedge <i>Carex lyngbyei</i>	PMCYP037Y0			G5	S2	2B.2
14 Mendocino Coast paintbrush <i>Castilleja mendocinensis</i>	PDSCR0D3N0			G2	S2	1B.2
15 Mendocino Pygmy Cypress Forest	CTT83161CA			G2	S2.1	
16 Mendocino dodder <i>Cuscuta pacifica var. papillata</i>	PDCUS011A2			G5T1	S1	1B.2
17 Mendocino leptonetid spider <i>Calileptoneta wapiti</i>	ILARAU6040			G1	S1	
18 Menzies' wallflower <i>Erysimum menziesii</i>	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
19 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
20 Monterey clover <i>Trifolium trichocalyx</i>	PDFAB402J0	Endangered	Endangered	G1	S1	1B.1
21 Navarro roach <i>Lavinia symmetricus navarroensis</i>	AFCJB19023			G4T1T2	S1S2	SC
22 North Coast phacelia <i>Phacelia insularis var. continentis</i>	PDHYD0C2B1			G2T2	S2	1B.2
23 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
24 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Mathison Peak Quad and surrounding quads for East Branch Little North Fork LWD and Instream Barrier Modification, T17N R16W S08, S17, and S16, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
25 Oregon coast paintbrush <i>Castilleja litoralis</i>	PDSCROD012			G4G5T4	S3	2B.2
26 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
27 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
28 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
29 Point Reyes blennosperma <i>Blennosperma nanum var. robustum</i>	PDAST1A022		Rare	G4T2	S2	1B.2
30 Point Reyes checkerbloom <i>Sidalcea calycosa ssp. rhizomata</i>	PDMAL11012			G5T2	S2	1B.2
31 Point Reyes horkelia <i>Horkelia marinensis</i>	PDROS0W0B0			G2	S2	1B.2
32 Pomo bronze shoulderband <i>Helminthoglypta arrosa pomoensis</i>	IMGASC2033			G2G3T1	S1	
33 Siskiyou checkerbloom <i>Sidalcea malviflora ssp. patula</i>	PDMAL110F9			G5T2	S2	1B.2
34 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
35 Sphagnum Bog	CTT51110CA			G3	S1.2	
36 Ten Mile shoulderband <i>Noyo intersessa</i>	IMGASC5070			G2	S2	
37 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
38 Whitney's farewell-to-spring <i>Clarkia amoena ssp. whitneyi</i>	PDONA05025			G5T1	S1	1B.1
39 alpine marsh violet <i>Viola palustris</i>	PDVIO041G0			G5	S1S2	2B.2
40 angel's hair lichen <i>Ramalina thrausta</i>	NLLEC3S340			G5	S2?	2B.1
41 ashy storm-petrel <i>Oceanodroma homochroa</i>	ABNDC04030			G2	S2	SC
42 bluff wallflower <i>Erysimum concinnum</i>	PDBRA160E3			G3	S3	1B.2
43 bunchberry <i>Cornus canadensis</i>	PDCOR01040			G5	S2	2B.2
44 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
45 coast lily <i>Lilium maritimum</i>	PMLIL1A0C0			G2	S2	1B.1
46 coastal bluff morning-glory <i>Calystegia purpurata ssp. saxicola</i>	PDCON040D2			G4T2T3	S2S3	1B.2
47 coastal triquetrella <i>Triquetrella californica</i>	NBMUS7S010			G2	S2	1B.2

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Mathison Peak Quad and surrounding quads for East Branch Little North Fork LWD and Instream Barrier Modification, T17N R16W S08, S17, and S16, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
48 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	
49 congested-headed hayfield tarplant <i>Hemizonia congesta ssp. congesta</i>	PDAST4R065			G5T1T2	S1S2	1B.2
50 dark-eyed gilia <i>Gilia millefoliata</i>	PDPLM04130			G2	S2	1B.2
51 deceiving sedge <i>Carex saliniformis</i>	PMCYP03BY0			G2	S2	1B.2
52 dwarf alkali grass <i>Puccinellia pumila</i>	PMPOA531L0			G4?	SH	2B.2
53 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
54 globose dune beetle <i>Coelus globosus</i>	IICOL4A010			G1G2	S1S2	
55 great burnet <i>Sanguisorba officinalis</i>	PDROS1L060			G5?	S2	2B.2
56 hair-leaved rush <i>Juncus supiniformis</i>	PMJUN012R0			G5	S1	2B.2
57 lagoon sedge <i>Carex lenticularis var. limnophila</i>	PMCYP037A7			G5T5	S1	2B.2
58 leafy-stemmed mitrewort <i>Mitellastra caulescens</i>	PDSAX0N020			G5	S4	4.2
59 livid sedge <i>Carex livida</i>	PMCYP037L0			G5	SH	2A
60 lotis blue butterfly <i>Plebejus idas lotis</i>	IILEPG5013	Endangered		G5TH	SH	
61 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
62 marbled murrelet <i>Brachyramphus marmoratus</i>	ABNNN06010	Threatened	Endangered	G3G4	S1	
63 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC
64 northern microseris <i>Microseris borealis</i>	PDAST6E030			G5	S1	2B.1
65 northern red-legged frog <i>Rana aurora</i>	AAABH01021			G4	S2?	SC
66 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Candidate Threatened	G3T3	S2S3	SC
67 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
68 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
69 perennial goldfields <i>Lasthenia californica ssp. macrantha</i>	PDAST5L0C5			G3T2	S2	1B.2

California Department of Fish and Game

Natural Diversity Database

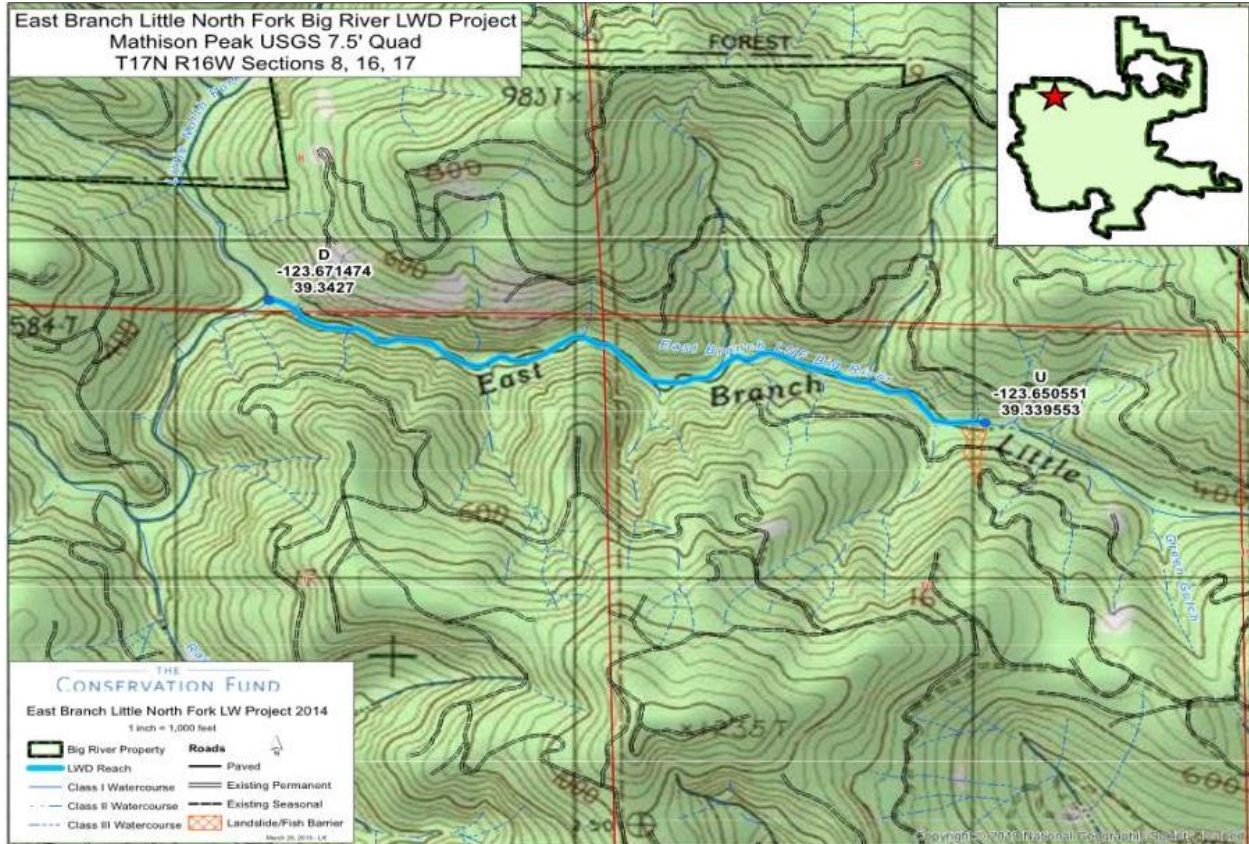
Selected Elements by Common Name - Portrait

Possible species within the Mathison Peak Quad and surrounding quads for East Branch Little North Fork LWD and Instream Barrier Modification, T17N R16W S08, S17, and S16, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
70 pink sand-verbena <i>Abronia umbellata</i> var. <i>breviflora</i>	PDNYC010N4			G4G5T2	S1	1B.1
71 purple martin <i>Progne subis</i>	ABPAU01010			G5	S3	SC
72 purple-stemmed checkerbloom <i>Sidalcea malviflora</i> ssp. <i>purpurea</i>	PDMAL110FL			G5T1	S1	1B.2
73 pygmy cypress <i>Hesperocyparis pygmaea</i>	PGCUP04032			G1	S1	1B.2
74 pygmy manzanita <i>Arctostaphylos nummularia</i> ssp. <i>mendocinoensis</i>	PDERI04280			G3?THQ	SH	1B.2
75 round-headed Chinese-houses <i>Collinsia corymbosa</i>	PDSCR0H060			G1	S1	1B.2
76 running-pine <i>Lycopodium clavatum</i>	PPLYC01080			G5	S3	4.1
77 seacoast ragwort <i>Packera bolanderi</i> var. <i>bolanderi</i>	PDAST8H0H1			G4T4	S2S3	2B.2
78 short-leaved evax <i>Hesperrevax sparsiflora</i> var. <i>brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
79 small groundcone <i>Kopsiopsis hookeri</i>	PDORO01010			G4G5	S1S2	2B.3
80 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
81 steelhead - northern California DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209Q	Threatened		G5T2T3Q	S2S3	
82 supple daisy <i>Erigeron supplex</i>	PDAST3M3Z0			G2	S2	1B.2
83 swamp harebell <i>Campanula californica</i>	PDCAM02060			G3	S3	1B.2
84 tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered		G3	S3	SC
85 tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020			G2G3	S1S2	SC
86 tufted puffin <i>Fratercula cirrhata</i>	ABNNN12010			G5	S1S2	SC
87 western snowy plover <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened		G3T3	S2	SC
88 white beaked-rush <i>Rhynchospora alba</i>	PMCYP0N010			G5	S2	2B.2
89 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
90 white-tailed kite <i>Elanus leucurus</i>	ABNKC06010			G5	S3S4	



**East Branch Little North Fork LWD and Instream Barrier Modification  
Project Location Map  
T17N, R16W Section 8, 16, 17  
Mathison Peak Quad  
Mendocino County**



# Baechtel Creek Riparian and Coho Habitat Enhancement Project

2016

## **Introduction:**

Mendocino Land Trust (Grantee) will implement the Baechtel Creek Riparian and Coho Habitat Enhancement Project. Aquatic habitat in Baechtel Creek has declined significantly over the last 25 years due to excessive sediment input, riparian degradation, and unpermitted summer water diversions. The project will improve complete cattle exclusion riparian fencing along 220 feet of Baechtel Creek, create alternate water sources to address livestock needs, and install native trees and shrubs at four sites where shade is lacking. The purpose of the project is to improve habitat along one half-mile of Baechtel Creek by supplementing on-going efforts to provide short-term and long-term benefits to coho salmon by restoring shade through riparian planting, excluding cattle through fencing and providing alternate water sources for cattle. Baechtel Creek supports populations of coho salmon, Chinook salmon, and steelhead trout.

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, Part XI. 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 exclude cattle from a one half-mile section of Baechtel Creek, plant riparian trees and shrubs, and provide an alternate water source for cattle. The goal of this project is to improve coho habitat by reducing livestock impacts on 0.5 mile of stream, thus increasing riparian canopy cover, resulting in lower summer water temperatures.

## **Project Description:**

### **Location:**

The project is located on Baechtel Creek, tributary to Outlet Creek, tributary to Eel River, in the County of Mendocino, State of California. The project boundaries are located at approximately 39.3794 north latitude, -123.3548 west longitude at the upstream end; and 39.3842 north latitude, -123.3526 west longitude at the downstream end; Township 18 North, Range 14 West, and Section 25 and Township 18 North, Range 13 West and Section 30 of the Willits 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

### **Project Set Up:**

The Subcontractor for Fencing and Water System will perform the tasks of installing the fence, water gaps, water line, troughs, and storage tank.

# Baechtel Creek Riparian and Coho Habitat Enhancement Project

2016

The Subcontractor Agroecologist and the Grantee will participate in plant and browse protector installation. They will monitor the plantings for the duration of this project during spring and summer months, and will install Dri-Water quarts to the plants as needed.

The Subcontractor Ranch Hands will perform all monitoring and maintenance of the water system and fence line for the life of this contract, and at least ten years thereafter. This work includes checking the fence line for breaks from tree fall, and to check the water system regularly from May to October to ensure it is functioning properly. They will also monitor and maintain both water gaps, and will raise/lower them according to the season as appropriate.

## **Materials:**

Fencing components include: 4-point barbed wire, 2-strand smooth wire, 6' T-posts, Prefabricated H-Braces, Prefabricated Corners, and a ranch gate. Water gap fencing components include: Prefabricated H-Brace, 4"x4"x8' steel post (20 gage), 2-strand smooth wire ( 9 gage), 4-point barbed wire (12.5 gage), Post-crete, 5/16" galvanized cable with hook & loops prefabricated, 2x6x8' redwood boards, clips, Staples, and H-brace components Water system components include: 2" poly line with intake screen, 1,500 gallon tank, 2 water troughs (300 gal), miscellaneous plumbing connectors, float valve, 2 float switches, 2 wildlife escape ramps, gravel for trough foundations.

## **Tasks:**

### **Task 1. Exclusion Fencing:**

Riparian fencing already exists on the north bank, except for a 220-foot section where the cattle cross the northern range land. This section of fencing will be completed and a ranch gate will be installed to allow cattle to be moved from one range to the other. The new section of fence will follow wildlife friendly guidelines (CDFW & NRCS) of smooth wire on bottom and top strands, set at the appropriate height based upon hillslope. The upper water gap has fallen to dis-repair due to high flow events, and no longer excludes livestock from walking upstream. The lower water gap is composed of hog wire panels that catch debris and could impede passage of adult salmonids. A water gap design in use and recently approved (2014) by CDFW exists on Outlet Creek associated with the Caltrans - Willits Bypass Project. This design will be applied to the upper and lower water gap sites on Baechtel Creek. It is fish friendly, with smooth wires on the bottom two strands. The water gap can be lowered into the channel when livestock are present, and can be raised in preparation of high flow events. Fence corners and H-braces will be prefabricated units set with Post-crete.

### **Task 2. Alternate Water Source Installation:**

The ranch will provide water troughs, water tank, and the ranch gate for this project. The ranch hand will monitor and maintain the water system, fencing, and raise/lower the water gaps as appropriate. The water system will take a portion of water from a nearby

spring, which does not have a channel or visible hydrologic connection to the stream system. Water will be piped downhill to the storage tank near the upper water gap. A 2" water line will be used to minimize damage from wildlife (bears especially) in areas where it cannot be buried. The 1,500 gallon storage tank will be equipped with a float valve that will shut off the input when full. Both water troughs will have floating shutoff switches to only activate delivery when there is a draw on the system. Both troughs will have wildlife escape ramps, and the troughs will be set upon gravel foundations, as recommended by the Natural Resources Conservation Service.

**Task 3. Riparian Planting:**

Planting white alder and native willows at three sites will promote re-establishment of the riparian canopy in areas where high survival can be achieved. Installing coyote brush on the upslope site will begin the plant succession process and aid in stabilizing the bank. Dri-Water will be needed for the first two years to ensure at least 80% survival. Each Dri-Water quart can supply water to a plant for up to three months, depending upon weather conditions. Monitoring and replacing the Dri-Water quarts will occur twice each summer to ensure plant survival. Agroecologist and the Grantee will participate in plant and browse protector installation. Agroecologist will monitor the plantings for the duration of this project during spring and summer months, and will install Dri-Water quarts to the plants as needed.

**Deliverables:**

Approximately 220 feet of wildlife friendly riparian fencing, one new gate and two water gaps that can be raised/lowered according to season (Upper - 80ft, Lower - 40 ft). One hundred native riparian plantings, protected, and watered. One water system from spring to tank to trough including: 1,500 gallon tank, two 300 gallon troughs with wildlife escape ramps. Twenty monthly reports of project and fiscal status, two annual reports which include: accomplishments, fiscal status, photo monitoring, implementation checklists. One final report which includes: accomplishments, fiscal status, photo monitoring, implementation checklists Monthly progress reports throughout life of contract.

**Timelines:**

September 1, 2016 through October 31, 2016, the Subcontractor for Fencing and Water System will implement project as designed: fencing, water gaps, water system installation. Subcontractor Ranch Hand will monitor the fence, water gap, and water system from spring to trough to ensure proper function and no water wasting, and will perform repairs as needed.

January 1, 2017 through March 31, 2017, Subcontractor Agroecologist and Grantee will install plants and browse protectors. Subcontractor Agroecologist will monitor plantings and will install Dri-Water quarts as needed. Subcontractor Ranch Hand will monitor fence line and repair breaks prior to introduction of livestock to landscape. They will also lower/raise the water gaps as appropriate to the season and livestock presence.

# Baechtel Creek Riparian and Coho Habitat Enhancement Project

2016

April 1, 2017 through October 31, 2017, Subcontractor Agroecologist will monitor plantings and will install Dri-Water quarts as needed.

January 1, 2018 through March 31, 2018, Subcontractor Agroecologist will monitor plantings and will install Dri-Water quarts as needed.

## **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 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 when there is a threat of heavy rains which will cause flooding.

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). 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.

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.

Supply an agreement detailing that the landowner or proponent will maintain the livestock exclusion fence(s) for a period of 10 years and totally exclude livestock from the riparian zone. Maintenance will include repair of fences to a level that will effectively exclude livestock from the livestock exclusion project area. Maintenance will not include damage that exceeds 50 percent of the fence due to natural disaster.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Willits Quad and surrounding quads for Baechtel Creek Riparian and Coho Habitat Enhancement Project, T18N R14W S25 and T18N R13W S30, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 American badger <i>Taxidea taxus</i>	AMAJF04010			G5	S3	SC
2 Baker's meadowfoam <i>Limnanthes bakeri</i>	PDLIM02020		Rare	G1	S1	1B.1
3 Baker's navarretia <i>Navarretia leucocephala ssp. bakeri</i>	PDPLM0C0E1			G4T2	S2	1B.1
4 Humboldt marten <i>Martes caurina humboldtensis</i>	AMAJF01012			G5T1	S1	SC
5 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
6 Mayacamas popcornflower <i>Plagiobothrys lithocaryus</i>	PDBOR0V0P0			GH	SH	1A
7 Milo Baker's lupine <i>Lupinus milo-bakeri</i>	PDFAB2B4E0		Threatened	G1Q	S1	1B.1
8 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
9 Nuttall's ribbon-leaved pondweed <i>Potamogeton epihydrus</i>	PMPOT03080			G5	S2S3	2B.2
10 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
11 Roderick's fritillary <i>Fritillaria roderickii</i>	PMLIL0V0M0		Endangered	G1Q	S1	1B.1
12 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
13 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
14 Valley Oak Woodland	CTT71130CA			G3	S2.1	
15 angel's hair lichen <i>Ramalina thrausta</i>	NLLEC3S340			G5	S2?	2B.1
16 coast range bindweed <i>Calystegia collina ssp. tridactylosa</i>	PDCON04036			G4T1	S1	1B.2
17 deep-scarred cryptantha <i>Cryptantha excavata</i>	PDBOR0A0W0			G1	S1	1B.3
18 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	Candidate Threatened	G5T2T3Q	S2S3	SC
19 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
20 glandular western flax <i>Hesperolinon adenophyllum</i>	PDLIN01010			G3	S3	1B.2
21 grass alisma <i>Alisma gramineum</i>	PMALI01010			G5	S3?	2B.2
22 marbled murrelet <i>Brachyramphus marmoratus</i>	ABNNN06010	Threatened	Endangered	G3G4	S1	

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Willits Quad and surrounding quads for Baechtel Creek Riparian and Coho Habitat Enhancement Project, T18N R14W S25 and T18N R13W S30, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
23 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC
24 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Candidate Threatened	G3T3	S2S3	SC
25 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
26 scabrid alpine tarplant <i>Anisocarpus scabridus</i>	PDASTDU020			G3	S3	1B.3
27 sharp-shinned hawk <i>Accipiter striatus</i>	ABNKC12020			G5	S4	
28 thin-lobed horkelia <i>Horkelia tenuiloba</i>	PDROS0W0E0			G2	S2	1B.2
29 watershield <i>Brasenia schreberi</i>	PDCAB01010			G5	S3	2B.3
30 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
31 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
32 yellow warbler <i>Setophaga petechia</i>	ABPBX03010			G5	S3S4	SC
33 yellow-breasted chat <i>Icteria virens</i>	ABPBX24010			G5	S3	SC

**Baechtel Creek Riparian and Coho Habitat Enhancement Project**  
**Project Location Map**  
**T18N, R14W, Section 25; T18N, R13W, Section 30**  
**Willits Quad**  
**Mendocino County**





# Little North Fork Navarro River Coho Stream Habitat Enhancement Project

2016

## **Introduction:**

The California Conservation Corps (Grantee) will implement the Little North Fork Navarro River Coho Stream Habitat Enhancement Project. Little North Fork Navarro River and Bottom Creek, the two creeks included in this project, support populations of coho salmon and steelhead trout. The purpose of the project is to improve habitat in Little North Fork Navarro River and Bottom Creek. Salmonid recovery plans recommend increasing stream habitat complexity by installing large woody debris (LWD). Adding LWD to Little North Fork Navarro and Bottom Creek will enhance pools, increase gravel sorting, and provide increased habitat complexity.

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, Part VII. 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 create 33 instream features consisting of 65 pieces of LWD within a 1,210-foot section of Little North Fork Navarro River and a 2,400-foot section of Bottom Creek. 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:**

Grantee will perform work on foot section of Little North Fork River, beginning 4.4 miles upstream of the confluence with the North Branch North Fork Navarro River and continuing upstream for 1,210 feet. The locations of the project boundaries are approximately 39.19802° north latitude, -123.47549° west longitude at the downstream end; and 39.19736° north latitude, -123.47149° west longitude at the upstream end; Township 16 North, Range 14 West, Section 31. Grantee will also perform work on a section of Bottom Creek, beginning at the confluence with Little North Fork Navarro River and continuing upstream 2,400 feet. The locations of the project boundaries are approximately 39.19860° north latitude, -123.47949° west longitude at the downstream end; and 39.20431° north latitude, -123.47818° west longitude at the upstream end; Township 16 North, Range 15 West, Section 36. This project is located on the Bailey Ridge 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map as depicted in the Project Location Map.

## **Project Set Up:**

Grantee Laborers will provide the hand labor for the instream LWD structures. Mendocino Redwood Company staff will move logs to staging area(s) using heavy equipment as needed for structure construction.

## **Materials:**

Sixty-five pieces of LWD will be used to construct 33 structures. Other materials purchased and used during the project include the following:

Laborer Meals (food): To feed Corps Member crews while on spike. Spike Supplies (briquettes, propane, etc.): For preparing Corps Member meals while on spike. Porta-Potty Rental: For environmental protection, health & safety services for crews on spike. Heavy Equipment: For transporting/staging of logs/root-wads for construction of in-stream structures. Generator: For operating power equipment used during in-stream structure anchoring process. Rebar, nuts, washers, cable clamps, epoxy glue, and 5/8" Galvanized Cable: Used for anchoring in-stream structures. Wood Drill Bits: Used for drilling logs/root-wads/trees during in-stream structure anchoring process Rock Drill Bits: Used for drilling boulders/bedrock during in-stream structure anchoring process. Hand Tools (gloves, hard hats, safety glasses, hacksaws, bit extensions, shear-pins, etc.). Safety equipment, tools and tool supplies used during project implementation. Office Supplies (paper, printer supplies, etc.): Used for creating designs, work-plans, all pertinent documents relating to the project, reporting.

## **Tasks:**

### **Task 1. Install Instream Habitat Features:**

Install instream habitat features at 33 locations including 65 pieces of large wood/root wads along 1,210 feet of Little North Fork Navarro River and 2,400 feet of Bottom Creek. Final structure design and placement will be determined by field consultation between the Grantee and the CDFW Grantor Project Manager. Work will consist of the following:

- Heavy equipment operators will deliver logs to an approved staging area as needed.
- 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 LWD will be documented.
- Various anchoring techniques, which will be approved by the Grantor 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 and bedrock. Anchoring materials will consist of 1" threaded rebar, cable, nuts and washers, and waterproof epoxy.
- The minimum length used for unanchored large woody debris is 1.5 times bankfull width.

**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:**

The specific objective of this project is to create 33 instream features consisting of 65 pieces of LWD within a 1,210-foot section of Little North Fork Navarro River and a 2,400-foot section of Bottom Creek.

**Timelines:**

June 15, 2016 through October 31, 2016, June 15, 2017 through October 31, 2017, June 15, 2018 through October 31, 2018, June 15, 2019 through October 31, 2019, install LWD features within approved project reach. 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 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 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 when there is a threat of heavy rains which will cause flooding.

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). 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*.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible species within the Bailey Ridge Quad and surrounding quads for Little North Fork Navarro River Coho Stream Habitat Enhancement Project, T16N R15W S36 and T16N R14W S31, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 American peregrine falcon <i>Falco peregrinus anatum</i>	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
2 Baker's navarretia <i>Navarretia leucocephala ssp. bakeri</i>	PDPLM0C0E1			G4T2	S2	1B.1
3 Behren's silverspot butterfly <i>Speyeria zerene behrensii</i>	IILEPJ6088	Endangered		G5T1	S1	
4 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
5 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
6 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
7 Navarro roach <i>Lavinia symmetricus navarroensis</i>	AFCJB19023			G4T1T2	S1S2	SC
8 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
9 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
10 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
11 Pomo bronze shoulderband <i>Helminthoglypta arrosa pomoensis</i>	IMGASC2033			G2G3T1	S1	
12 Raiche's manzanita <i>Arctostaphylos stanfordiana ssp. raichei</i>	PDERI041G2			G3T1	S1	1B.1
13 Roderick's fritillary <i>Fritillaria roderickii</i>	PMLIL0V0M0		Endangered	G1Q	S1	1B.1
14 Santa Cruz clover <i>Trifolium buckwestiorum</i>	PDFAB402W0			G2	S2	1B.1
15 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
16 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
17 coast lily <i>Lilium maritimum</i>	PMLIL1A0C0			G2	S2	1B.1
18 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
19 glandular western flax <i>Hesperolinon adenophyllum</i>	PDLIN01010			G3	S3	1B.2
20 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
21 marbled murrelet <i>Brachyramphus marmoratus</i>	ABNNN06010	Threatened	Endangered	G3G4	S1	
22 minute pocket moss <i>Fissidens pauperculus</i>	NBMUS2W0U0			G3?	S2	1B.2
23 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC

California Department of Fish and Game

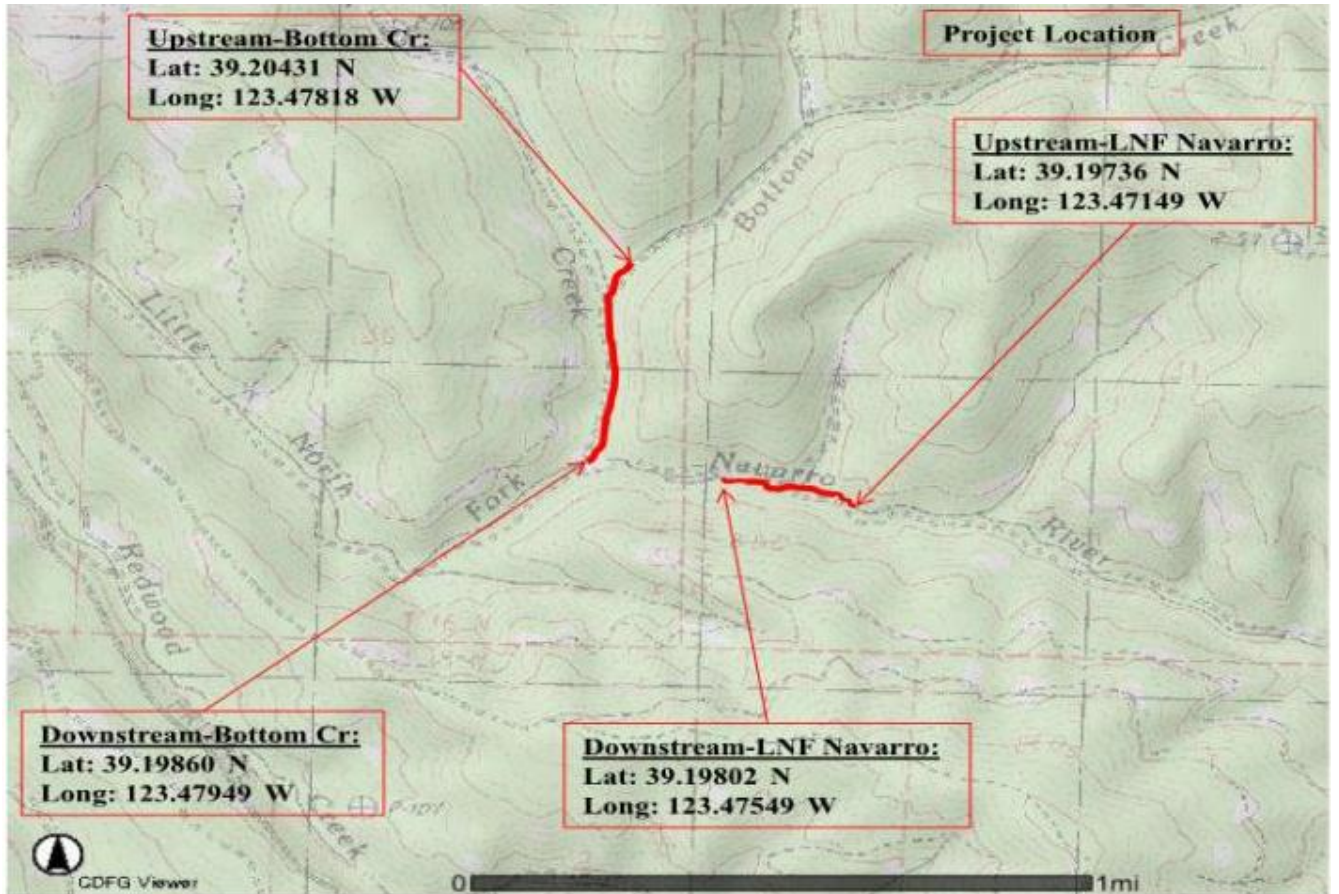
Natural Diversity Database


Selected Elements by Common Name - Portrait

Possible species within the Bailey Ridge Quad and surrounding quads for Little North Fork Navarro River Coho Stream Habitat Enhancement Project, T16N R15W S36 and T16N R14W S31, Mendocino County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 northern red-legged frog <i>Rana aurora</i>	AAABH01021			G4	S2?	SC
25 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Candidate Threatened	G3T3	S2S3	SC
26 steelhead - northern California DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209Q	Threatened		G5T2T3Q	S2S3	
27 swamp harebell <i>Campanula californica</i>	PDCAM02060			G3	S3	1B.2
28 tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020			G2G3	S1S2	SC
29 watershield <i>Brasenia schreberi</i>	PDCAB01010			G5	S3	2B.3
30 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
31 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2

**Little North Fork Navarro River Coho Stream Habitat Enhancement Project  
Project Location Map  
T16N, R14W Section 31, and T16N, R15W, Section 36  
Bailey Ridge Quad  
Mendocino County**



 = Project Reach

**Introduction:** The Mendocino County Resource Conservation District (MCRCD) will treat six sites along the west bank riparian road of Grubb Creek to reduce chronic delivery and the potential for catastrophic sediment delivery by installing four properly sized culverts, constructing drainage improvements at two existing properly sized culverts, spreading native grass seed and rice straw on disturbed soils, and monitoring features. This project is necessary as the riparian road along Grubb Creek has been a direct contributor of sediment to the channel for decades, and reducing that volume will benefit salmonid spawning and rearing habitat. Grubb Creek maintains ample cool water for summer rearing, yet is limited by the amount of complex pool habitat and riffles needed to support a robust population of juvenile steelhead. Also, Grubb Creek is a significant contributor of cool water in summer to Tenmile Creek.

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* Part X Flosi et al 2002.

**Objective:** The objective of this project is to improve natural drainage and install properly sized culverts on a riparian road to reduce sediment input and potential for catastrophic road failure into Grubb Creek, tributary to Tenmile Creek, tributary to South Fork Eel River. .

## **Project Description:**

**Location:** Grubb Creek is a tributary to Tenmile Creek approximately four miles upstream from where Tenmile Creek flows into the South Fork Eel River. project includes six features on the west side of Grubb Creek over 1/2 mile of road, approximately 1/4 mile upstream from its confluence with Tenmile Creek. The downstream extent of work (feature 1) is at 39.76956000 north latitude: 123.57953000 west longitude, and the upstream extent of work (feature 6) is at 39.77495000: -123.58210000 west longitude.

**Project Set Up:** The MCRCD will administer this project to ensure completion according to agreement specifications. The Executive Director will review and approve subcontracts, monthly/annual/final reports, and permit applications. The Business Manager will set up the filing and account system for the project, perform the bookkeeping tasks of invoicing and tracking, and compile fiscal information required for the annual and final reports. The Conservation Director will assist with permit applications, monitoring protocol, and annual/final report completion. The Project Director will coordinate all the project details, secure the subcontractors and materials, serve as communications liaison with the landowner and agency representatives, and complete monthly/annual/final reports. The Professional Geologist Subcontractor will oversee construction. The General Engineering Subcontractor will implement construction activities.

**Materials:** Corrugated metal culverts (48", 60", 72"), a double-walled plastic culvert (24"), 1/4 ton rip rap and quarry cobble, quarry supplied and pit run road base, native grass seed, rice straw, and burlap wrapped straw wattles.

**Tasks:**

- Task 1: Review, approve, and secure agreements and subcontracts associated with this project.
- Task 2: Complete monthly reporting including associated bookkeeping tasks and record keeping, project status update and monitoring reports.
- Task 3: Submit a Notification of Lake or Streambed Alteration to CDFW.
- Task 4: The Project Director will schedule site visits and serve as guide for rare plant and archaeological surveys as required for California Environmental Quality Act compliance.
- Task 5: The Project Director will solicit bids for construction. The Project Director and Professional Geologist Subcontractor will rank the bids and provide a recommendation to the Executive Director for subcontracting with the General Engineering Subcontractor. Ensure the tires, tracks, and chassis on vehicles and equipment brought to the project are free of mud to prevent the spread of seeds from exotic invasive plant species.
- Task 6: The Project Director will order materials for the project.
- Task 7: The MCRCD will send the Notice to Proceed to subcontractors once approved by CDFW.
- Task 8: The Professional Geologist Subcontractor will complete the pre-implementation and implementation checklists and establish photo-monitoring points as described in CDFG protocols.
- Task 9: With oversight provided by the Professional Geologist Subcontractor, the General Engineering Subcontractor will treat the sites according to design. All culvert installations will occur when the channels are dry.
- Task 10: During construction at work sites, the landowner will operate excavator to load pit run road base into the General Engineering Subcontractor's dump truck for use.
- Task 11: Once site construction is completed, native grass seed and rice straw will be spread on disturbed soils to promote root growth and prevent mobilization of sediment to the channel. The Landowner and assistant will spread native grass seed and rice straw at completed work sites. If straw wattles are needed at the inlet slopes of sites 5 and 6, the General Engineering Subcontractor will perform that task.
- Task 12: The Professional Geologist Subcontractor will complete the implementation checklists during construction according to CDFG protocol.
- Task 13: The Professional Geologist Subcontractor will complete the post-implementation checklist and photo-monitoring after construction is complete.
- Task 14: Project Director, Executive Director and Conservation Director complete and submit annual report to CDFW.



Task 15: Project Director conduct post-project photo monitoring the spring following implementation to document project performance after a season of rainfall has occurred.

Task 16: Project Director write and submit a draft annual report to CDFW for review, incorporate any changes/suggestions, and submit the annual report. Executive Director and Conservation Director review and edit the draft before submittal.

Task 17: Project Director write and submit a draft final report to CDFW for review, incorporate any changes/suggestions, and then submit the final report. Executive Director and Conservation Director review and edit the draft before submittal.

**Deliverables:** Project deliverables include:

- At least 45 feet of improved, rock-lined inboard ditch, and slope stabilization at feature 1. 2.
- One armored inlet, one armored dip, and one critical dip at feature 2. 3.
- Replace one crossing with 24" x 40' double walled plastic culvert and one critical dip at feature 3. 4.
- Replace one crossing with a 72" x 40' metal culvert, with two rolling dips at feature 4.
- Replace one crossing with a 60" x 60' metal culvert at feature 5. 6.
- Replace one crossing with a 48" x 40' culvert, excavate 60 cubic yards perched fill, and armor inlet/outlet at feature 6.
- Monthly status reports during life of agreement.
- Two annual reports, and
- One final report.

**Timelines:**

2016

July – August

Task 1: Establish agreement with CDFW; Set up filing and accounting for project; Subcontract with Professional Geologist Subcontractor for services; Communicate with Landowner about project status during entire project.

Task 2: Submit monthly reports.

Task 3: Submit Notification of Lake or Streambed Alteration to CDFW.

Task 4: Schedule site visit for rare plant and archaeological surveys.

Task 5: Solicit bids for construction, and rank and select General Engineering Subcontractor.

Task 6: Order materials and schedule delivery for project.

Task 7: Send Notice to Proceed to Subcontractors.

Task 8: Complete pre-implementation and implementation checklists and initial photo monitoring.

September – October

Task 9: Implement project as designed.

Task 10: Landowner will assist project with use of excavator to provide pit run road base.

Task 11: Landowner and assistant will spread native grass seed and rice straw at sites with exposed soil.

Task 12: Professional Geologist Subcontractor will complete the implementation checklist.

Task 13: Professional Geologist Subcontractor will complete the post-implementation checklist and photo monitoring after construction.

November - December

Task 14: Complete and submit draft and final annual report to CDFW.

2017

January – March

Task 15: Conduct photo monitoring after several rainfall events have occurred.

Task 16: Complete and submit draft final report to CDFW.

Task 17: Incorporate recommended changes and submit final report to CDFW.

### **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 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.

California Department of Fish and Wildlife

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Tan Oak Park, Bell Springs, Updegraff Ridge, Iron Peak, Laytonville, Cahto Peak, Lincoln Ridge, Leggett, and Noble Butte Quads for Grubb Creek Upslope Sediment Reduction Project, T 22N, R 15W, S07, Tan Oak Park Quad, Mendocino County, United States

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Baker's meadowfoam <i>Limnanthes bakeri</i>	PDLIM02020		Rare	G1	S1	1B.1
2 Butte County morning-glory <i>Calystegia atriplicifolia ssp. buttensis</i>	PDCON04012			G5T3	S3	4.2
3 California floater <i>Anodonta californiensis</i>	IMBIV04020			G3Q	S2?	
4 Crotch bumble bee <i>Bombus crotchii</i>	IIHYM24480			G3G4	S1S2	
5 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
6 Kellogg's buckwheat <i>Eriogonum kelloggii</i>	PDPGN083A0	Candidate	Endangered	G2	S2	1B.2
7 Konocti manzanita <i>Arctostaphylos manzanita ssp. elegans</i>	PDERI04271			G5T3	S3	1B.3
8 Mcdonald's rockcress <i>Arabis mcdonaldiana</i>	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
9 Mendocino gentian <i>Gentiana setigera</i>	PDGEN060S0			G2	S1	1B.2
10 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
11 North Central Coast Fall-Run Steelhead Stream	CARA2631CA			GNR	SNR	
12 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
13 Northern Interior Cypress Forest	CTT83220CA			G2	S2.2	
14 Nuttall's ribbon-leaved pondweed <i>Potamogeton epihydrus</i>	PMPOT03080			G5	S2S3	2B.2
15 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
16 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
17 Raiche's manzanita <i>Arctostaphylos stanfordiana ssp. raichei</i>	PDERI041G2			G3T1	S1	1B.1
18 Red Mountain catchfly <i>Silene campanulata ssp. campanulata</i>	PDCAR0U0A2		Endangered	G5T3Q	S3	4.2
19 Red Mountain stonecrop <i>Sedum laxum ssp. eastwoodiae</i>	PDCRA0A0L1	Candidate		G5T2	S2	1B.2
20 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
21 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
22 Upland Douglas Fir Forest	CTT82420CA			G4	S3.1	
23 Vine Hill ceanothus <i>Ceanothus foliosus var. vineatus</i>	PDRHA040D6			G3T1	S1	1B.1

California Department of Fish and Wildlife

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Tan Oak Park, Bell Springs, Updegraff Ridge, Iron Peak, Laytonville, Cahto Peak, Lincoln Ridge, Leggett, and Noble Butte Quads for Grubb Creek Upslope Sediment Reduction Project, T 22N, R 15W, S07, Tan Oak Park Quad, Mendocino County, United States

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
25 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	
26 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	Candidate Threatened	G5T2T3Q	S2S3	SC
27 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
28 grass alisma <i>Alisma gramineum</i>	PMALI01010			G5	S3?	2B.2
29 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC
30 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
31 oval-leaved viburnum <i>Viburnum ellipticum</i>	PDCPR07080			G4G5	S3?	2B.3
32 robust false lupine <i>Thermopsis robusta</i>	PDFAB3Z0D0			G2	S2	1B.2
33 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
34 steelhead - northern California DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209Q	Threatened		G5T2T3Q	S2S3	
35 watershield <i>Brasenia schreberi</i>	PDCAB01010			G5	S3	2B.3
36 western pearlshell <i>Margaritifera falcata</i>	IMBIV27020			G4G5	S1S2	
37 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
38 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2

Grubb Creek Upslope Sediment Reduction Project  
Project Location Map  
T 22N, R 15W S 07  
Tan Oak Park Quad  
Mendocino County

