

Upper Green Valley Creek Fish Passage Implementation Project

2016

Introduction:

With the Upper Green Valley Fish Passage Implementation Project, the Gold Ridge Resource Conservation District seeks to address a significant instream fish passage barrier in upper Green Valley Creek and stabilize the grade through a 600-ft reach.

The project will upgrade a private road culvert that is a widely recognized barrier to coho salmon, thus restoring fish passage for juvenile and adult coho to 4,810 ft of high quality rearing and intermediate spawning habitat. Another partial barrier upstream of the culvert, an abandoned concrete grade control structure and apron, will also be removed. Additionally, The project will preserve the upstream floodplain connectivity, stabilize the grade throughout the reach, and arrest the incising.

The project design involves removal of the existing culvert and concrete debris, along with the abandoned upstream checkdam, installation of a 15ft wide x 7.75ft high multi-plate arch culvert with an open bottom, construction of a 157ft long step-pool roughened channel through the crossing, and construction of two series of boulder weirs on the upstream and downstream ends of the roughened channel. The reach will be dewatered in stages as needed for culvert replacement and boulder weir construction. Overall project management will be carried out by the Gold Ridge RCD, with Stetson Engineers providing engineering oversight during construction. Miller Pacific, as a subcontractor to Stetson, will oversee construction and testing of the helical piles that will support the grade beam foundations for the bottomless arch culvert. The entire reach will also be revegetated with native riparian species, enhancing approximately an acre of riparian habitat. Planting will be conducted in coordination with Point Blue Conservation Science's environmental education program, Students and Teachers Restoring a Watershed (STRAW), who will maintain the plantings for three years after installation.

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* Parts VII and XI (Flosi et al 1998 and 2002).

Objective(s):

The goal of the project is to restore fish passage and stabilize the grade through a 600-ft stream reach of upper Green Valley Creek, thereby ensuring passage for juvenile and adult coho to an additional 4,810 ft of spawning and rearing habitat.

Project Description:

Location:

The project site is on two properties along Green Valley Creek, approximately 1,700-ft upstream of the confluence with Harrison Creek, and 3.7 miles upstream of the confluence of Atascadero Creek. Coordinates of the barrier are 38.45150000 north latitude and 122.92725400 west longitude. The project will encompass a nearly 600-

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ft stretch of Green Valley Creek, extending approximately 300 feet on either side of the existing culvert. Pasture borders the creek on both sides throughout the project reach.

Project Set Up:

The GRRCD Project Manager will provide overall project oversight, including contract administration, landowner communication, public outreach, bid packet development and bid tour organization, permit application development, subcontractor selection and management, invoicing, and reporting. GRRCD Lead Scientist and Conservation Planner will assist in permitting and bid tour reparations. The GRRCD Ecologist will perform biological surveys and monitoring as required, and assist in dewatering and species relocation. GRRCD Executive Director will review contracts and invoices, and assist in landowner communications and public outreach. GRRCD Project Coordinator will also assist in public outreach efforts, necessary due to the scale and visibility of the project.

Stetson Engineers, as designers of the project, will assist in permitting and bid tours, will provide construction subcontractor oversight and engineering inspections, and will develop as-builts. Their detailed budget is attached, and includes as a subcontractor Miller Pacific, who will oversee construction and testing of the helical piles that will support the grade beam foundations for the bottomless arch culvert.

The Qualified Biologist will lead dewatering with assistance from the GRRCD Ecologist, GRRCD Project Coordinator, and GRRCD Field Technician. The CDFW certified Biologist and/or CDFW Scientist will lead species relocation with assistance from CDFW agents.

The contractor constructing the project will be selected during a competitive bid process as described in the Gold Ridge RCD's Construction Procurement Policy, and will perform actual construction activities. The construction estimate attached was provided by Stetson Engineers upon completion of the design.

Point Blue Conservation Science will implement the revegetation component of the project, including three years of plant maintenance, through their environmental education program Students and Teachers Restoring a Watershed (STRAW). PRBO's revegetation budget is attached. The GRRCD Project Coordinator and Field Technician will assist in planting and maintenance.

Additional budget expenses include GRRCD staff mileage for travel to and from the project site, and the 1602 LSAA permit fee.

Materials:

Construction materials specifications for all construction components are described in the attached plans and technical specifications, and are included in the budget

attachments. These include materials that compose roughened channel (road base and engineered streambed material), rock for the vegetated slopes and weir structures, and the 15' x 7.75' multi-plate arch culvert and foundation.

Tasks:

Task 1: Project Management. The GRRCD Project Manager will perform all duties related to contract administration, bid packet development and bid tour organization, subcontractor management, invoicing, and reporting. The GRRCD Executive Director will review contracts and invoices, and assist in landowner communications and public outreach, due to the high profile nature of the site. GRRCD Lead Scientist and Conservation Planner will assist in bid tour preparations.

Task 2: Permitting. The GRRCD Project Manager will develop the 1602 LSAA, county grading exemption, and all permitting information required for dewatering and species relocation. GRRCD Lead Scientist and Conservation Planner will assist in permit application development.

Task 3: Biological Surveys. The GRRCD Ecologist and GRRCD Field Technician will perform all biological surveys as required for CEQA and permit compliance.

Task 4: Project Construction. The GRRCD Project Manager will oversee subcontractors engaged in project construction, including Stetson Engineers, the Qualified Biologist, and PRBO's STRAW. Stetson will in turn oversee Miller Pacific as a subcontractor. This task includes all activities related to the culvert replacement and construction of the roughened channel and boulder weirs, and revegetation. Construction preparation activities such as dewatering is also included, to be led by the Qualified Biologist. Listed and sensitive species relocation will be conducted by CDFW certified biologist or CDFW Scientist. Construction activities will adhere to the attached Aquatic Invasive Species Protocol.

Task 5: Monitoring and Maintenance. The GRRCD Project Manager will oversee monitoring and maintenance, including post-construction storm monitoring, revegetation survival rate monitoring, and plant maintenance. The GRRCD Project Coordinator and Field Technician will assist in planting and maintenance.

Deliverables:

Task 1 Project Management: Annual and final reports

Task 2 Permitting: Copies of Permits, including 1602 LSAA and county grading exemption

Task 3 Biological Surveys: Copies of biological surveys and reports, including: protected species habitat assessment and relocation plan, and final report of findings with data sheets

Task 4 Project Construction: The following will be submitted to demonstrate

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successful restoration of the 600-ft project reach and riparian corridor as described in the attached plans: As-built construction plans, Post longitudinal profile, Pre- and post-construction photodocumentation.

Task 5 Monitoring and Maintenance: 80% survival rate of revegetation for three years after implementation; photodocumentation of revegetation

Timelines:

This timeline assumes a Notice to Proceed by July 1, 2016 and that construction occurs in summer/fall 2016.

Task 1: Project Management and Grant Administration - Trout Unlimited contract oversight and administration will begin upon receiving a fully-executed CDFW grant agreement and continue through the life of the project, ending on March 31, 2020.

Task 2: Construction Administration: July 1, 2016 – January 31, 2019

Task 3: Mobilization: July 1, 2016 – November 1, 2016

Task 4: Dewatering: July 1, 2016 – October 15, 2016

Task 5: Site Management: July 1, 2016 – November 1, 2016

Task 6: Channel Construction: July 1, 2016 – October 15, 2016

Task 7: Revegetation: November 1, 2016 – November 30, 2019

Task 8: Monitoring: November 1, 2016 – January 31, 2019

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

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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.

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

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

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Stream Habitat Restoration Manual, Volume I, and Volume II Part XI and Part XII. The Grantee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

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Natural Diversity Database
Selected Elements by Common Name - Portrait
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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</i> ssp. <i>bakeri</i>	PDAST5L0C4			G3TH	SH	1B.2
3 Baker's larkspur <i>Delphinium bakeri</i>	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
4 Baker's manzanita <i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>	PDERI04221		Rare	G2T1	S1	1B.1
5 Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	PDPLM0C0E1			G4T2	S2	1B.1
6 Blasdale's bent grass <i>Agrostis blasdalei</i>	PMPOA04060			G2	S2	1B.2
7 Blennosperma vernal pool andrenid bee <i>Andrena blennospermatis</i>	IIHYM35030			G2	S2	
8 Burke's goldfields <i>Lasthenia burkei</i>	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
9 California beaked-rush <i>Rhynchospora californica</i>	PMCYP0N060			G1	S1	1B.1
10 California freshwater shrimp <i>Syncaris pacifica</i>	ICMAL27010	Endangered	Endangered	G1	S1	
11 California giant salamander <i>Dicamptodon ensatus</i>	AAAAH01020			G3	S2S3	
12 California linderiella <i>Linderiella occidentalis</i>	ICBRA06010			G2G3	S2S3	
13 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
14 California tiger salamander <i>Ambystoma californiense</i>	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
15 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
16 Coastal Terrace Prairie	CTT41100CA			G2	S2.1	
17 Coastal and Valley Freshwater Marsh	CTT52410CA			G3	S2.1	
18 Contra Costa goldfields <i>Lasthenia conjugens</i>	PDAST5L040	Endangered		G1	S1	1B.1
19 Crystal Springs lessingia <i>Lessingia arachnoidea</i>	PDAST5S0C0			G1	S1	1B.2
20 Cunningham Marsh cinquefoil <i>Potentilla uliginosa</i>	PDROS1B4A0			GH	SH	1A
21 Dorr's Cabin jewelflower <i>Streptanthus morrisonii</i> ssp. <i>hirtiflorus</i>	PDBRA2G0S2			G2T1	S1	1B.2
22 Franciscan onion <i>Allium peninsulare</i> var. <i>franciscanum</i>	PMLIL021R1			G5T1	S1	1B.2
23 Franciscan thistle <i>Cirsium andrewsii</i>	PDAST2E050			G3	S3	1B.2

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24 Giuliani's dubiraphian riffle beetle <i>Dubiraphia giulianii</i>	IICOL5A020			G1G3	S1S3	
25 Greene's narrow-leaved daisy <i>Erigeron greenei</i>	PDAST3M5G0			G2	S2	1B.2
26 Gualala roach <i>Lavinia symmetricus parvipinnis</i>	AFCJB19025			G4T1T2	S1S2	SC
27 Hoffman's bristly jewelflower <i>Streptanthus glandulosus ssp. hoffmanii</i>	PDBRA2G0J4			G4T2	S2	1B.3
28 Jepson's leptosiphon <i>Leptosiphon jepsonii</i>	PDPLM09140			G3	S3	1B.2
29 Marin hesperian <i>Vespericola marinensis</i>	IMGASA4140			G2	S2	
30 Marin knotweed <i>Polygonum marinense</i>	PDPGN0L1C0			G2Q	S2	3.1
31 Mendocino dodder <i>Cuscuta pacifica var. papillata</i>	PDCUS011A2			G5T1	S1	1B.2
32 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
33 Morrison's jewelflower <i>Streptanthus morrisonii ssp. morrisonii</i>	PDBRA2G0S3			G2T2	S2	1B.2
34 Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	IILEPJ608C	Endangered		G5T1	S1	
35 Napa false indigo <i>Amorpha californica var. napensis</i>	PDFAB08012			G4T2	S2	1B.2
36 Navarro roach <i>Lavinia symmetricus navarroensis</i>	AFCJB19023			G4T1T2	S1S2	SC
37 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
38 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
39 Northern Hardpan Vernal Pool	CTT44110CA			G3	S3.1	
40 Northern Vernal Pool	CTT44100CA			G2	S2.1	
41 Oregon polemonium <i>Polemonium carneum</i>	PDPLM0E050			G3G4	S2	2B.2
42 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
43 Pennell's bird's-beak <i>Cordylanthus tenuis ssp. capillaris</i>	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
44 Peruvian dodder <i>Cuscuta obtusiflora var. glandulosa</i>	PDCUS01111			G5T4T5	SH	2B.2
45 Pitkin Marsh lily <i>Lilium pardalinum ssp. pitkinense</i>	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
46 Pitkin Marsh paintbrush <i>Castilleja uliginosa</i>	PDSCR0D380		Endangered	GXQ	SX	1A

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47 Point Reyes checkerbloom <i>Sidalcea calycosa ssp. rhizomata</i>	PDMAL11012			G5T2	S2	1B.2
48 Point Reyes horkelia <i>Horkelia marinensis</i>	PDROS0W0B0			G2	S2	1B.2
49 Point Reyes salty bird's-beak <i>Chloropyron maritimum ssp. palustre</i>	PDSCR0J0C3			G4?T2	S2	1B.2
50 Rincon Ridge ceanothus <i>Ceanothus confusus</i>	PDRHA04220			G1	S1	1B.1
51 Rincon Ridge manzanita <i>Arctostaphylos stanfordiana ssp. decumbens</i>	PDERI041G4			G3T1	S1	1B.1
52 Russian River tule perch <i>Hysterochypus traski pomo</i>	AFCQK02011			G5T4	S4	SC
53 San Bruno elfin butterfly <i>Callophrys mossii bayensis</i>	IILEPE2202	Endangered		G4T1	S1	
54 San Francisco Bay spineflower <i>Chorizanthe cuspidata var. cuspidata</i>	PDPGN04081			G2T1	S1	1B.2
55 San Francisco owl's-clover <i>Triphysaria floribunda</i>	PDSCR2T010			G2	S2	1B.2
56 Santa Cruz clover <i>Trifolium buckwestiorum</i>	PDFAB402W0			G2	S2	1B.1
57 Sebastopol meadowfoam <i>Limnanthes vinculans</i>	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
58 Sonoma alopecurus <i>Alopecurus aequalis var. sonomensis</i>	PMPOA07012	Endangered		G5T1Q	S1	1B.1
59 Sonoma spineflower <i>Chorizanthe valida</i>	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
60 Sonoma sunshine <i>Blennosperma bakeri</i>	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
61 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
62 The Cedars buckwheat <i>Eriogonum cedrorum</i>	PDPGN087A0			G1	S1	1B.3
63 The Cedars fairy-lantern <i>Calochortus raichei</i>	PMLIL0D1L0			G2	S2	1B.2
64 The Cedars manzanita <i>Arctostaphylos bakeri ssp. sublaevis</i>	PDERI04222		Rare	G2T2	S2	1B.2
65 Thurber's reed grass <i>Calamagrostis crassiglumis</i>	PMPOA17070			G3Q	S2?	2B.1
66 Tidestrom's lupine <i>Lupinus tidestromii</i>	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
67 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
68 Vine Hill ceanothus <i>Ceanothus foliosus var. vineatus</i>	PDRHA040D6			G3T1	S1	1B.1

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69 Vine Hill clarkia <i>Clarkia imbricata</i>	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
70 Vine Hill manzanita <i>Arctostaphylos densiflora</i>	PDERI040C0		Endangered	G1	S1	1B.1
71 bank swallow <i>Riparia riparia</i>	ABPAU08010		Threatened	G5	S2	
72 black swift <i>Cypseloides niger</i>	ABNUA01010			G4	S2	SC
73 blue coast gilia <i>Gilia capitata ssp. chamissonis</i>	PDPLM040B3			G5T2	S2	1B.1
74 bluff wallflower <i>Erysimum concinnum</i>	PDBRA160E3			G3	S3	1B.2
75 bristly sedge <i>Carex comosa</i>	PMCYP032Y0			G5	S2	2B.1
76 brownish beaked-rush <i>Rhynchospora capitellata</i>	PMCYP0N080			G5	S1	2B.2
77 bumblebee scarab beetle <i>Lichnanthe ursina</i>	IICOL67020			G2	S2	
78 burrowing owl <i>Athene cunicularia</i>	ABNSB10010			G4	S3	SC
79 coastal bluff morning-glory <i>Calystegia purpurata ssp. saxicola</i>	PDCON040D2			G4T2T3	S2S3	1B.2
80 coastal triquetrella <i>Triquetrella californica</i>	NBMUS7S010			G2	S2	1B.2
81 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	
82 congested-headed hayfield tarplant <i>Hemizonia congesta ssp. congesta</i>	PDAST4R065			G5T1T2	S1S2	1B.2
83 dark-eyed gilia <i>Gilia millefoliata</i>	PDPLM04130			G2	S2	1B.2
84 dwarf downingia <i>Downingia pusilla</i>	PDCAM060C0			GU	S2	2B.2
85 dwarf soaproot <i>Chlorogalum pomeridianum var. minus</i>	PMLIL0G042			G5T2T3	S2S3	1B.2
86 eulachon <i>Thaleichthys pacificus</i>	AFCHB04010	Threatened		G5	S3	SC
87 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
88 fragrant fritillary <i>Fritillaria liliacea</i>	PMLIL0V0C0			G2	S2	1B.2
89 fringed myotis <i>Myotis thysanodes</i>	AMACC01090			G4	S3	
90 globose dune beetle <i>Coelus globosus</i>	IICOL4A010			G1G2	S1S2	

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91 golden larkspur <i>Delphinium luteum</i>	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
92 great blue heron <i>Ardea herodias</i>	ABNGA04010			G5	S4	
93 hoary bat <i>Lasiurus cinereus</i>	AMACC05030			G5	S4	
94 holly-leaved ceanothus <i>Ceanothus purpureus</i>	PDRHA04160			G2	S2	1B.2
95 legenere <i>Legenere limosa</i>	PDCAM0C010			G2	S2	1B.1
96 long-eared myotis <i>Myotis evotis</i>	AMACC01070			G5	S3	
97 longfin smelt <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	SC
98 many-flowered navarretia <i>Navarretia leucocephala ssp. plieantha</i>	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
99 marsh microseris <i>Microseris paludosa</i>	PDAST6E0D0			G2	S2	1B.2
100 mimic tryonia (=California brackishwater snail) <i>Tryonia imitator</i>	IMGASJ7040			G2	S2	
101 minute pocket moss <i>Fissidens pauperculus</i>	NBMUS2W0U0			G3?	S2	1B.2
102 monarch - California overwintering population <i>Danaus plexippus pop. 1</i>	IILEPP2012			G4T2T3	S2S3	
103 narrow-anthered brodiaea <i>Brodiaea leptandra</i>	PMLIL0C022			G3?	S3?	1B.2
104 obscure bumble bee <i>Bombus caliginosus</i>	IHYM24380			G4?	S1S2	
105 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
106 oval-leaved viburnum <i>Viburnum ellipticum</i>	PDCPR07080			G4G5	S3?	2B.3
107 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
108 pappose tarplant <i>Centromadia parryi ssp. parryi</i>	PDAST4R0P2			G3T2	S2	1B.2
109 perennial goldfields <i>Lasthenia californica ssp. macrantha</i>	PDAST5L0C5			G3T2	S2	1B.2
110 pink sand-verbena <i>Abronia umbellata var. breviflora</i>	PDNYC010N4			G4G5T2	S1	1B.1
111 purple-stemmed checkerbloom <i>Sidalcea malviflora ssp. purpurea</i>	PDMAL110FL			G5T1	S1	1B.2
112 rhinoceros auklet <i>Cerorhinca monocerata</i>	ABNNN11010			G5	S3	

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113 rose leptosiphon <i>Leptosiphon rosaceus</i>	PDPLM09180			G1	S1	1B.1
114 round-headed beaked-rush <i>Rhynchospora globularis</i>	PMCYP0N0W0			G4	S1	2B.1
115 saline clover <i>Trifolium hydrophilum</i>	PDFAB400R5			G2	S2	1B.2
116 serpentine daisy <i>Erigeron serpentinus</i>	PDAST3M5M0			G2	S2	1B.3
117 short-leaved evax <i>Hesperievax sparsiflora var. brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
118 steelhead - central California coast DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209G	Threatened		G5T2T3Q	S2S3	
119 swamp harebell <i>Campanula californica</i>	PDCAM02060			G3	S3	1B.2
120 thin-lobed horkelia <i>Horkelia tenuiloba</i>	PDROS0W0E0			G2	S2	1B.2
121 tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered		G3	S3	SC
122 tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020			G2G3	S1S2	SC
123 tufted puffin <i>Fratercula cirrhata</i>	ABNNN12010			G5	S1S2	SC
124 two-fork clover <i>Trifolium amoenum</i>	PDFAB40040	Endangered		G1	S1	1B.1
125 western leatherwood <i>Dirca occidentalis</i>	PDTHY03010			G2	S2	1B.2
126 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
127 western red bat <i>Lasiurus blossevillii</i>	AMACC05060			G5	S3	SC
128 western snowy plover <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened		G3T3	S2	SC
129 western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
130 white beaked-rush <i>Rhynchospora alba</i>	PMCYP0N010			G5	S2	2B.2
131 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
132 white-tailed kite <i>Elanus leucurus</i>	ABNKC06010			G5	S3S4	
133 whiteworm lichen <i>Thamnolia vermicularis</i>	NLTES43860			G3G5	S1	2B.1
134 woolly-headed gilia <i>Gilia capitata ssp. tomentosa</i>	PDPLM040B9			G5T2	S2	1B.1

California Department of Fish and Game
 Natural Diversity Database
 Selected Elements by Common Name - Portrait
 724656 Upper Green Valley Creek Fish Passage Implementation Project
 M 07N 10W Sectio 14
 Sonoma County


Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
135 woolly-headed spineflower <i>Chorizanthe cuspidata</i> var. <i>villosa</i>	PDPGN04082			G2T2	S2	1B.2

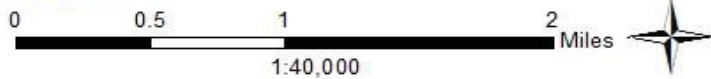
Project Location Topographic Map



Upper Green Valley Creek Fish Passage Implementation Project

Map 1: Project Location Topographic Map
Grantee: Gold Ridge Resource Conservation District
Sonoma County, CA
(Camp Meeker 7.5' quadrangle; USGS 1969)

-  Upper Green Valley Creek Watershed
-  Participating landowner riparian parcels
-  Streams



 **Gold Ridge RCD**
March 2015

Introduction

1. Grantee: Sonoma Resource Conservation District
2. The purpose of this project is to increase the habitat complexity in Felta creek.
3. Permit Disclosure: The Grantee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured.
4. All habitat improvement will follow techniques in the California Stream Habitat Restoration Manual (section VI).

Objective(s):

1. The objective of the project is to provide habitat complexity in Felta Creek to enhance cover, shelter, spawning and rearing conditions for coho salmon and steelhead along a 4,345 foot reach of Felta Creek through the installation of 31 pieces of Large Woody Material (LWM) at 11 sites.

Project Description:

Location: The project will take place along a 4,345 foot reach of Felta Creek, beginning 500 feet downstream of its confluence with Salt Creek and continuing upstream for approximately 3,845 along Felta Creek. Felta Creek meets Mill Creek two miles below the confluence of Salt Creek with Felta Creek. Mill Creek meets Dry Creek another 1.14 miles downstream. Dry Creek and the Russian River join an additional 0.68 miles downstream. The project reach is within private land located west of the city of Healdsburg in Sonoma County.

38.56857000 : -122.91188000 - Downstream end of project.

38.56730000 : -122.91300000 - Upstream end of project.

Project Set Up:

Materials: Douglas fir and redwood logs and rootwads, steel rebar, nuts and washers will be used. Straw mulch and native vegetation will be used as mulch on disturbed areas.

Tasks:

1. Project Management: The SRCD Project Manager/Resource Planner will be responsible for all aspects of project management, including subcontract development (Subcontractor and Biologist), landowner access agreement, scheduling, permitting, CEQA compliance, updating the SRCD Board about the project, construction oversight, and reporting. The Executive Director will review contracts, permits, annual reports, final report, and perform a site review. The District Administrator will manage the budget and be responsible for all invoices.

2. **Biological Surveys:** The Project Manager/Resource Planner will subcontract with the Gold Ridge RCD's Qualified Biologist, coordinate with the Biologist, assist with habitat assessments if needed and assist with relocation of endangered species if needed. Gold Ridge RCD Qualified Biologist will perform all biological habitat assessments as needed to comply with permit requirements before and during construction, coordinate fish and/or CA red legged frog relocation as needed, perform CA red-legged frog identification training to construction crew, and generate reports of observations and relocation plans.
3. **Project Construction:** The project will entail the construction and installation of 11 new LWM structures. Licensed Timber Operator will cut trees that are identified by the Project Manager/Resource Planner, the Landowner, and the Blencowe Watershed Management construction crew. The Project Manager RPF#2905, the Licensed Timber Operator, and Project Technician will perform all aspects of project construction which includes material acquisition, site preparation, pre-project Habitat II survey, mobilization of equipment, construction, anchoring, and erosion control. The construction crew will assist with fish relocation as needed. Blencowe Watershed Management will conform to the techniques and methodologies outlined in the CDFG Salmonid Stream Habitat Restoration Manual, Chapter VII, the Accelerated Recruitment method (Carah, Blencowe, et al. 2014) and will follow protocols in additional supplement section to prevent the spread of invasive aquatic species.

The Project Manager/Resource Planner will provide technical oversight during construction and provide post-construction photos to allow comparison of pre- and post-construction conditions and evaluate project effectiveness. The Executive Director will perform one site visit for quality control and progress.

4. **Reporting:** The Project Manager/Resource Planner will produce annual and final project reports which will include photo documentation. The Executive Director will review all project reports.

Deliverables: Eleven (11) pools will be created through channel structure placement. 0.82 miles of total stream length and overall stream length will be treated for channel structure placement. Annual and final reports detailing project will be submitted as deliverables.

Timelines:

1. Project Management will begin June 1st, 2016, and final report will be sent in no later than March 30th, 2017. Biological surveys and organization will take place from July 1st, 2016 through October 15th, 2016. Project construction would occur after all permits are obtained and installation would occur during the window of August 1st, 2016 until October 15, 2016. Reporting would occur during June 1st, 2016 through March 30th, 2017.

2. Task 1: Project Management. June 1, 2016 - March 30, 2017 Task 2: Biological Surveys. July 1, 2016 - October 15, 2016 Task 3: Project Construction. August 1st, 2016 - October 15, 2016 Task 4: Reporting. June 30, 2016 - March 30, 2017.

Additional Requirements:

The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of Grantor.

Staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area where it cannot enter the stream channel. Stationary equipment such as motors, pumps, generators, compressors, and welders located within the dry portion of the stream channel or adjacent to the stream, will be positioned over drip-pans. Vehicles will be moved out of the normal high water area of the stream prior to refueling and lubricating. The grantee shall ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the Grantee shall provide to Grantor a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

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

The Grantee shall notify the Grantor Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for Grantor personnel to oversee the implementation of the water diversion plan and the safe removal and relocation of salmonids and other native aquatic species from the project area. If the project requires dewatering of the site and the relocation of listed aquatic

species, the Grantee will implement the following measures to minimize harm and mortality to listed species as well as other native aquatic species:

- 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.
- NMFS Approved fisheries biologists will provide fish relocation data via the Grantee to the Grantor Project Manager on a form provided by Grantor.

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
724717 Felta Creek Stream Habitat Enhancement Project
M 08N 10W Section 1
Sonoma 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</i> ssp. <i>bakeri</i>	PDAST5L0C4			G3TH	SH	1B.2
3 Baker's larkspur <i>Delphinium bakeri</i>	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
4 Baker's manzanita <i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>	PDERI04221		Rare	G2T1	S1	1B.1
5 Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	PDPLM0C0E1			G4T2	S2	1B.1
6 Blasdale's bent grass <i>Agrostis blasdalei</i>	PMPOA04060			G2	S2	1B.2
7 Blennosperma vernal pool andrenid bee <i>Andrena blennospermatis</i>	IIHYM35030			G2	S2	
8 Burke's goldfields <i>Lasthenia burkei</i>	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
9 California beaked-rush <i>Rhynchospora californica</i>	PMCYP0N060			G1	S1	1B.1
10 California freshwater shrimp <i>Syncaris pacifica</i>	ICMAL27010	Endangered	Endangered	G1	S1	
11 California giant salamander <i>Dicamptodon ensatus</i>	AAAAH01020			G3	S2S3	
12 California linderiella <i>Linderiella occidentalis</i>	ICBRA06010			G2G3	S2S3	
13 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
14 California tiger salamander <i>Ambystoma californiense</i>	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
15 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
16 Coastal Terrace Prairie	CTT41100CA			G2	S2.1	
17 Coastal and Valley Freshwater Marsh	CTT52410CA			G3	S2.1	
18 Crystal Springs lessingia <i>Lessingia arachnoidea</i>	PDAST5S0C0			G1	S1	1B.2
19 Dorr's Cabin jewelflower <i>Streptanthus morrisonii</i> ssp. <i>hirtiflorus</i>	PDBRA2G0S2			G2T1	S1	1B.2
20 Freed's jewelflower <i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i>	PDBRA2G071			G2T2	S2	1B.2
21 Giuliani's dubiraphian riffle beetle <i>Dubiraphia giulianii</i>	IICOL5A020			G1G3	S1S3	
22 Greene's narrow-leaved daisy <i>Erigeron greenei</i>	PDAST3M5G0			G2	S2	1B.2
23 Gualala roach <i>Lavinia symmetricus parvipinnis</i>	AFCJB19025			G4T1T2	S1S2	SC

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24 Hoffman's bristly jewelflower <i>Streptanthus glandulosus ssp. hoffmanii</i>	PDBRA2G0J4			G4T2	S2	1B.3
25 Jepson's leptosiphon <i>Leptosiphon jepsonii</i>	PDPLM09140			G3	S3	1B.2
26 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
27 Morrison's jewelflower <i>Streptanthus morrisonii ssp. morrisonii</i>	PDBRA2G0S3			G2T2	S2	1B.2
28 Mt. Saint Helena morning-glory <i>Calystegia collina ssp. oxyphylla</i>	PDCON04032			G4T3	S3	4.2
29 Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	IILEPJ608C	Endangered		G5T1	S1	
30 Napa false indigo <i>Amorpha californica var. napensis</i>	PDFAB08012			G4T2	S2	1B.2
31 Navarro roach <i>Lavinia symmetricus navarroensis</i>	AFCJB19023			G4T1T2	S1S2	SC
32 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
33 Northern Hardpan Vernal Pool	CTT44110CA			G3	S3.1	
34 Northern Vernal Pool	CTT44100CA			G2	S2.1	
35 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
36 Pennell's bird's-beak <i>Cordylanthus tenuis ssp. capillaris</i>	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
37 Peruvian dodder <i>Cuscuta obtusiflora var. glandulosa</i>	PDCUS01111			G5T4T5	SH	2B.2
38 Pitkin Marsh lily <i>Lilium pardalinum ssp. pitkinense</i>	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
39 Pitkin Marsh paintbrush <i>Castilleja uliginosa</i>	PDSCR0D380		Endangered	GXQ	SX	1A
40 Point Reyes checkerbloom <i>Sidalcea calycosa ssp. rhizomata</i>	PDMAL11012			G5T2	S2	1B.2
41 Rincon Ridge ceanothus <i>Ceanothus confusus</i>	PDRHA04220			G1	S1	1B.1
42 Rincon Ridge manzanita <i>Arctostaphylos stanfordiana ssp. decumbens</i>	PDERI041G4			G3T1	S1	1B.1
43 Russian River tule perch <i>Hysteroecarpus traski pomo</i>	AFCQK02011			G5T4	S4	SC
44 Santa Cruz clover <i>Trifolium buckwestiorum</i>	PDFAB402W0			G2	S2	1B.1
45 Sebastopol meadowfoam <i>Limnanthes vinculans</i>	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
46 Sonoma alopecurus <i>Alopecurus aequalis var. sonomensis</i>	PMPOA07012	Endangered		G5T1Q	S1	1B.1

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47 Sonoma spineflower <i>Chorizanthe valida</i>	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
48 Sonoma sunshine <i>Blennosperma bakeri</i>	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
49 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
50 The Cedars buckwheat <i>Eriogonum cedrorum</i>	PDPGN087A0			G1	S1	1B.3
51 The Cedars fairy-lantern <i>Calochortus raichei</i>	PMLIL0D1L0			G2	S2	1B.2
52 The Cedars manzanita <i>Arctostaphylos bakeri ssp. sublaevis</i>	PDERI04222		Rare	G2T2	S2	1B.2
53 Thurber's reed grass <i>Calamagrostis crassiglumis</i>	PMPOA17070			G3Q	S2?	2B.1
54 Tidestrom's lupine <i>Lupinus tidestromii</i>	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
55 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
56 Vine Hill ceanothus <i>Ceanothus foliosus var. vineatus</i>	PDRHA040D6			G3T1	S1	1B.1
57 Vine Hill clarkia <i>Clarkia imbricata</i>	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
58 Vine Hill manzanita <i>Arctostaphylos densiflora</i>	PDERI040C0		Endangered	G1	S1	1B.1
59 bank swallow <i>Riparia riparia</i>	ABPAU08010		Threatened	G5	S2	
60 blue coast gilia <i>Gilia capitata ssp. chamissonis</i>	PDPLM040B3			G5T2	S2	1B.1
61 bluff wallflower <i>Erysimum concinnum</i>	PDBRA160E3			G3	S3	1B.2
62 bristly sedge <i>Carex comosa</i>	PMCYP032Y0			G5	S2	2B.1
63 brownish beaked-rush <i>Rhynchospora capitellata</i>	PMCYP0N080			G5	S1	2B.2
64 burrowing owl <i>Athene cunicularia</i>	ABNSB10010			G4	S3	SC
65 coastal bluff morning-glory <i>Calystegia purpurata ssp. saxicola</i>	PDCON040D2			G4T2T3	S2S3	1B.2
66 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	
67 congested-headed hayfield tarplant <i>Hemizonia congesta ssp. congesta</i>	PDAST4R065			G5T1T2	S1S2	1B.2
68 dwarf downingia <i>Downingia pusilla</i>	PDCAM060C0			GU	S2	2B.2

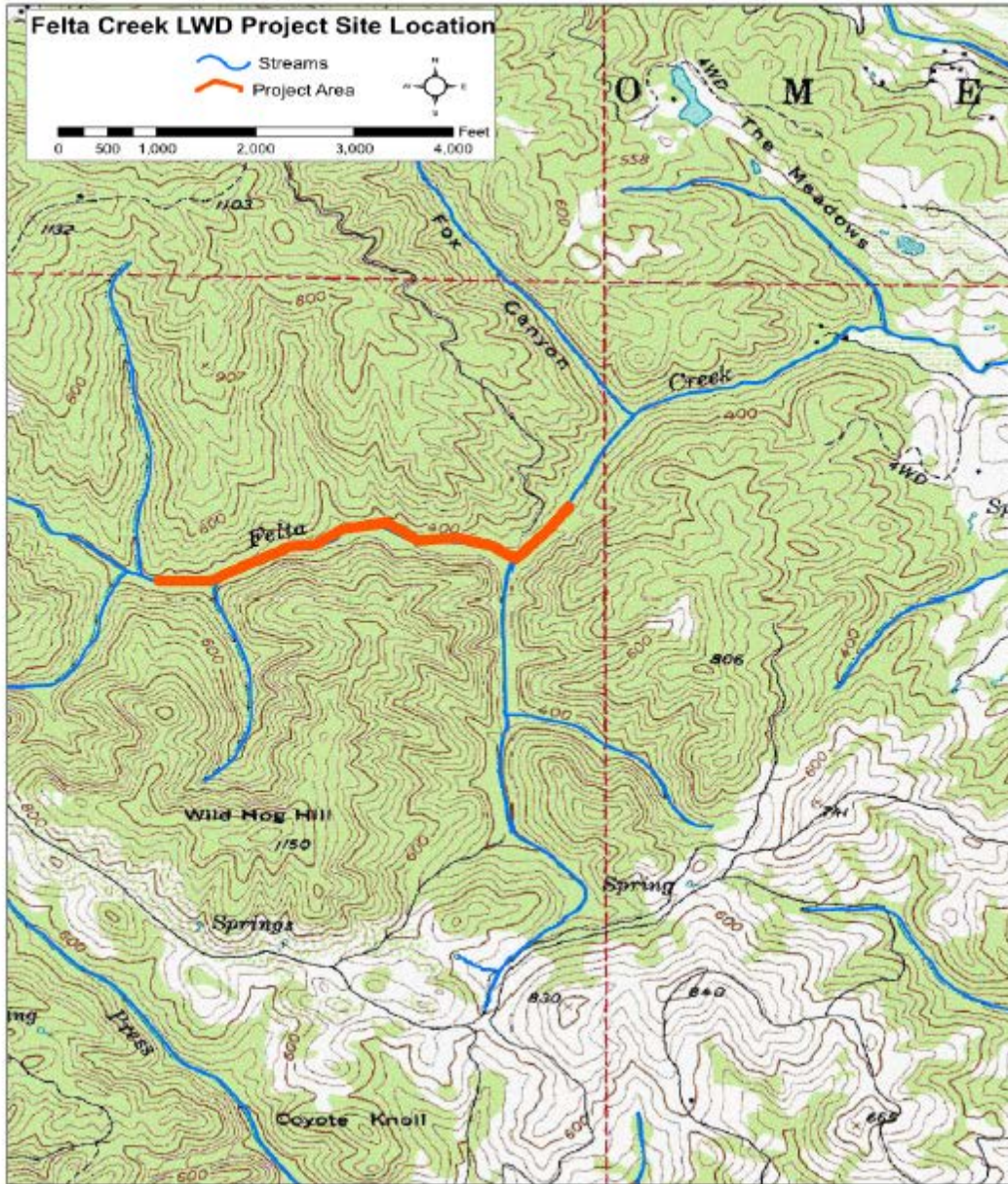
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69 dwarf soaproot <i>Chlorogalum pomeridianum var. minus</i>	PMLIL0G042			G5T2T3	S2S3	1B.2
70 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
71 fragrant fritillary <i>Fritillaria liliacea</i>	PMLIL0V0C0			G2	S2	1B.2
72 golden larkspur <i>Delphinium luteum</i>	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
73 great blue heron <i>Ardea herodias</i>	ABNGA04010			G5	S4	
74 hardhead <i>Mylopharodon conocephalus</i>	AFCJB25010			G3	S3	SC
75 hoary bat <i>Lasiurus cinereus</i>	AMACC05030			G5	S4	
76 holly-leaved ceanothus <i>Ceanothus purpureus</i>	PDRHA04160			G2	S2	1B.2
77 legenere <i>Legenere limosa</i>	PDCAM0C010			G2	S2	1B.1
78 longfin smelt <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	SC
79 many-flowered navarretia <i>Navarretia leucocephala ssp. plieantha</i>	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
80 marsh microseris <i>Microseris paludosa</i>	PDAST6E0D0			G2	S2	1B.2
81 minute pocket moss <i>Fissidens pauperculus</i>	NBMUS2W0U0			G3?	S2	1B.2
82 monarch - California overwintering population <i>Danaus plexippus pop. 1</i>	IILEPP2012			G4T2T3	S2S3	
83 narrow-anthered brodiaea <i>Brodiaea leptandra</i>	PMLIL0C022			G3?	S3?	1B.2
84 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Candidate Threatened	G3T3	S2S3	SC
85 obscure bumble bee <i>Bombus caliginosus</i>	IHYM24380			G4?	S1S2	
86 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
87 oval-leaved viburnum <i>Viburnum ellipticum</i>	PDCPR07080			G4G5	S3?	2B.3
88 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
89 pappose tarplant <i>Centromadia parryi ssp. parryi</i>	PDAST4R0P2			G3T2	S2	1B.2
90 perennial goldfields <i>Lasthenia californica ssp. macrantha</i>	PDAST5L0C5			G3T2	S2	1B.2

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91 purple-stemmed checkerbloom <i>Sidalcea malviflora ssp. purpurea</i>	PDMAL110FL			G5T1	S1	1B.2
92 rhinoceros auklet <i>Cerorhinca monocerata</i>	ABNNN11010			G5	S3	
93 round-headed beaked-rush <i>Rhynchospora globularis</i>	PMCYP0N0W0			G4	S1	2B.1
94 saline clover <i>Trifolium hydrophilum</i>	PDFAB400R5			G2	S2	1B.2
95 serpentine cryptantha <i>Cryptantha dissita</i>	PDBOR0A0H2			G2	S2	1B.2
96 serpentine daisy <i>Erigeron serpentinus</i>	PDAST3M5M0			G2	S2	1B.3
97 short-leaved evax <i>Hesperevax sparsiflora var. brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
98 steelhead - central California coast DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209G	Threatened		G5T2T3Q	S2S3	
99 swamp harebell <i>Campanula californica</i>	PDCAM02060			G3	S3	1B.2
100 thin-lobed horkelia <i>Horkelia tenuiloba</i>	PDROS0W0E0			G2	S2	1B.2
101 tufted puffin <i>Fratercula cirrhata</i>	ABNNN12010			G5	S1S2	SC
102 two-fork clover <i>Trifolium amoenum</i>	PDFAB40040	Endangered		G1	S1	1B.1
103 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
104 western red bat <i>Lasiurus blossevillii</i>	AMACC05060			G5	S3	SC
105 white beaked-rush <i>Rhynchospora alba</i>	PMCYP0N010			G5	S2	2B.2
106 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
107 white-tailed kite <i>Elanus leucurus</i>	ABNKC06010			G5	S3S4	

Felta Creek Stream Habitat Enhancement Project
M 08N 10W Section 1
Sonoma County



Introduction:

Through the Mill Creek Dam Fish Passage Project, Trout Unlimited (TU) will address NMFS CCC Coho Salmon Recovery Task RR-CCC-6.1.2.2 by modifying or removing the flashboard dam on lower Mill Creek near the confluence with Wallace Creek—this barrier is the highest priority barrier within the Russian River population for remediation. This project will remediate the barrier and restore passage by constructing a roughened channel that provides an adult passage option and a roughened ramp fishway/side channel to allow juvenile passage.

This project is needed because the dam blocks access to approximately 11.2 miles of high-quality habitat spawning and rearing in the Mill Creek watershed. This is 62% of the anadromous stream in one of the most important coho streams in the Russian River. The project will improve passage conditions for coho salmon (*Oncorhynchus kisutch*) and steelhead (*Oncorhynchus mykiss*) at various life history stages and various flows. NMFS (2012) has identified the barrier in the project as “the highest priority barrier within the Russian River population for remediation.” The dam is a complete barrier to upstream juvenile salmonid passage and a partial barrier to upstream adult passage. The dam is a barrier for coho under most flow conditions. Broodstock program monitoring efforts have documented how the dam is blocking coho passage. In the fall of 2012, agencies and other partners eliminated a severe partial barrier to fish passage (a human-modified waterfall) below the Mill Creek dam. Now, there are no barriers in the watershed below the Mill Creek flashboard dam, and the project will reconnect access to habitat in Mill, Angel, Palmer, and Wallace creeks.

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* Parts VII and XI (Flosi et al 1998 and 2002).

Objective(s):

Overall project objectives are to remediate the highest priority barrier for coho within the Russian River and to restore access to 11.2 mi. of high-quality habitat in the Mill Creek watershed by constructing a roughened channel and side channel to allow adult and juvenile passage.

Project Description:

Location:

The project is located in Healdsburg, CA near Mill Creek Road, which is 2.73 miles from the intersection of Westside Road and Highway 101 (see Attachment 4, Project Location Topographic Map). The project is located approximately 2 miles above the confluence of Felta and Mill creeks, 3.1 miles above the confluence of Dry and Mill creeks, and 3.9 miles above the confluence of Dry Creek and Russian River. Coordinates of the current barrier are 38.59591100 north latitude and 122.90752800 west longitude. The length of the project site reach is approximately 380 ft. and the area is approximately 8,500 sq. ft.

Project Set Up:

The Trout Unlimited Stewardship Manager will provide all contracting oversight and administration including but not limited to securing contracts and agreements (grantors, subcontractors, and landowners), scheduling, implementation oversight, invoicing, reporting and agency communication. This task will occur throughout the life of the project. Trout Unlimited's California Director and Staff Counsel will provide oversight and contracting support. The National Resource Director of TU will assist with grant administration, contracting, and compliance. Lastly, the Conservation Grants Assistant will assist in processing invoices and vendor payments, grant tracking, and reporting.

A general construction subcontractor with extensive experience in habitat restoration construction, Prunuske Chatham, Inc. (PCI), will manage and perform all construction and revegetation tasks and a portion of the post-construction monitoring tasks. PCI will hire and oversee local subcontractors, as needed, for portions of the work. Key requirements for secondary subcontractors will include availability within project timeline, cost efficiency, and ability to comply with CDFW contract conditions.

Materials:

The following list outlines the general materials required in various project tasks. Other smaller, miscellaneous materials may be needed.

Site management and mobilization materials to facilitate and sustain construction operations, and to replace infrastructure and landscaping removed on properties during construction activities:

- Safety equipment and signs
- Small hand tools that will be expended during project construction
- Miscellaneous hardware
- Site repair materials
- Wire, power cords and electrical fittings to power site and equipment
- Gravel for access road, ramp and pads
- Lumber and hardware to repair/replace fencing
- 5,000 gallon water tank(s) for temporary water supply
- PVC pipe and fittings

Dewatering to allow equipment to work in channel and install project elements:

- Sump pumps
- Sand or gravel bags
- Plastic sheeting
- Pipe, HDPE, various diameters
- Pipe, PVC, various diameters
- Pipe and pump fittings

Channel Construction for installation of roughened channel fill and side channel:

- Boulders, range from 2 to 6 ton, to form key elements
- Rock and gravel for interstitial fill

- Shotcrete to line side channel and stabilize banks

Erosion Control (permanent and temporary):

- Wattles, burlap encased
- Plastic sheeting
- Stakes, wooden, various sizes
- Coir, twine mat
- Compost
- Straw mulch

Planting and Plant Establishment for revegetation and vegetation survival:

- Plants, including tree pots, and 1 gallons
- Browse protectors
- Weed protection mats
- Irrigation supplies
- Replacement irrigation parts and/or DriWater

Tasks:

Task 1: Project Management and Grant Administration.

Trout Unlimited will provide contracting oversight and administration including but not limited to obtaining permits, securing contracts (grantors, subcontractors, landowners), scheduling, invoicing, reporting and agency communication.

Task 2: Construction Administration (PCI)

Construction administration represents all of the supplemental site activities it takes to coordinate and run a large construction project, including such activities as:

- Public notification
- Construction workplan and schedule
- Requests for information regarding design
- Conducting tours and meetings with landowner, stakeholders, and agency staff
- Procurement and management of subcontractors
- Procurement of materials and equipment
- Geotechnical and Structural engineering consultations and inspections
- Construction period engineering tasks
- Overall project coordination, management, and reporting
- Conduct as-built survey and final project walk through

Task 3: Mobilization (PCI)

Mobilization includes preparing for construction activities, including moving equipment and materials on to the site, conducting pre-construction biological surveys and crew trainings, and setting up site for construction start up. At end of construction, demobilization activities include moving equipment and remaining materials out and cleaning up the site.

Task 4: Dewatering (PCI)

Dewatering and fish relocation includes the following activities:

- Final design of dewatering system based on site conditions
- Installation of coffer dams
- Installation of first set of sump pumps; including running power to pumps
- Plumbing streamflow bypass pipe
- Fish rescue/relocation will be conducted by certified CDFW Biologist or CDFW Scientist
- Installation of second set of sumps in reservoir staging area to maintain workable conditions
- Installation of local sumps to handle seepage and groundwater infiltration into channel construction zone.
- Installation and maintenance of turbid water tank and discharge system
- System removal at project completion

Task 5: Site Management (PCI)

Site management includes all the work associated with preparing the site for construction and repairing it after construction. Activities include:

- Conducting vegetation management for reducing risk of migratory bird nesting activity in project area
- Preparing safety plan, training crew, installing signage for public
- Developing access ramps and pads, including removing obstructing infrastructure and landscaping
- Repairing and restoring access areas and landscaping after construction
- Preparing staging area for heavy equipment use and materials storage
- Restoring staging area (channel reservoir area) after construction work
- Installing temporary water supplies for residents
- Removing and then replacing residents' water intake systems

Task 6: Channel Construction (PCI)

Channel construction consists of the primary construction tasks, other than dewatering, associated with the installation of the engineered roughened channel fill and fishway/side channel. Activities include:

- Removing trees within the project footprint and grubbing
- Demolition of the dam's concrete apron and any bedrock/large boulders in project footprint
- Rough excavation of the main channel and side channel areas in preparation for installing shotcrete
- and engineered stream beds
- Installing the channel beds and banks, shotcrete walls, and bed liners
- Implementing temporary erosion control treatments if rain events are forecasted
- Installing permanent erosion control on exposed slopes

Also included in this task is the work to remove up to 1000 feet of galvanized steel pipe along the right bank that was once used to deliver water from the dam downstream to the historic ranch property.

Task 7: Revegetation (PCI)

Revegetation includes planting of disturbed areas and new cut slopes on the project area's right bank with approximately 200 native trees, shrubs, and grass plugs to revegetate the site and provide beneficial wildlife habitat, as well as pole planting the downstream left bank boulder fill with willow sprigs. Three years of maintenance, including watering and weed control, will be performed to ensure maximum plant survival. Monitoring and reporting of plant survival and other metrics per permit conditions will be performed.

Task 8: Monitoring (PCI and UCCE/CSG)

Physical Monitoring: The site will be monitored by PCI for 2 years post-construction to document stability and functioning. Long profiles will be surveyed annually after each high flow season to document slopes and thalweg geometry. Repeat photography at set photo points will visually document any changes in channel configuration or sediment distribution. An evaluation of actual fish passage conditions through the site will be completed during one low fish passage flow and one high fish passage flow. Direct measurements of velocities and water depths at multiple locations throughout the engineered roughened channels will be made. Preliminary findings will be reported in progress reports and a final report will be produced at the end of the 2-year monitoring period.

Biological Monitoring: Biological effectiveness will be documented by UC cooperative Extension (UCCE) and California Sea Grant (CSG) as part of their on-going monitoring for the Russian River Coho Salmon Captive Broodstock Program (RRCSCBP). (No FRGP funding is requested for this project sub-task.)

Through that monitoring program, spawner surveys are conducted to document sightings of live fish, carcasses, and redds as adult coho return to the Russian River watershed to spawn during the winter months and are performed in accordance with CDFW protocols. Each study reach is surveyed at approximately two week intervals, beginning once flows are sufficient to allow entrance of adult salmon into the tributaries and generally continuing through the end of February for coho and mid-April for steelhead. Any live fish observed are identified to species, sex, and origin (wild or broodstock hatchery). Approximate fork length, fish condition, and location are also recorded. Photographs and video footage of spawning behavior are taken to help confirm sightings and identification, and all carcasses are scanned for presence of a coded wire tag (CWT), a PIT tag, an adipose clip, and other marks or tags. Carcass heads are removed and, if present, the CWT is retrieved to determine release year, season, and stocking stream. Otoliths are collected for future analysis of movement, growth and feeding patterns. A unique identifier tag is attached to all carcasses to estimate escapement and observer efficiency. Additional sampling from carcasses includes scale sampling and fin clipping for genetic analysis. When a completed redd is observed, pot and tail spill measurements are taken. If a redd is built by an unknown species of salmonid, these metrics aid in species identification. Redd locations are flagged and mapped using a handheld GPS unit. On subsequent visits, redd age and condition are noted until the redd is no longer visible.

UCCE and CSG will conduct pre- and post-project evaluation by continuing to conduct spawner surveys each winter and operating PIT tag antennas at sites downstream and upstream of the dam. In addition, snorkel surveys are conducted every summer on the entire length of Mill Creek to document the presence and distribution of juvenile salmonids and to confirm successful spawning the previous winter. This will document the number and proportion of fish that make it upstream of the site each year. The Broodstock program will also continue to release PIT-tagged juvenile coho into Mill Creek each year and operate stationary PIT tag detection systems throughout the watershed to track movement and survival patterns from the time coho are released until they return as adults.

Prior to release, approximately 20% of the program coho are weighed, measured, and PIT-tagged. Information about individual fish, including age, size at release, and release season are recorded along with each unique tag number. When a PIT-tagged fish swims through an antenna, a transceiver located on the stream bank records the unique tag number and the time that the fish passed through the antenna. Data collected at antennas placed above and below the dam site will be used to estimate the number, proportion, and timing of adult coho that migrate upstream of the dam site.

Deliverables:

Task 1: Project Management and Grant Administration (TU)

- Agreement between TU and CDFW and contracts with subcontractors
- Progress reports and other materials (e.g., outreach materials) as required by the CDFW grant agreement
- Final Report
- Regarding the Clearinghouse for Dam Removal Information: no dam is being removed, so we presume the project information would not be of interest; if it is, TU will enter the information into the CDRI

Task 2: Construction Administration (PCI)

- Construction schedule
- Photo documentation of construction
- Project status reports
- As-built drawing (profile) and documentation

Task 3: Mobilization/ Task 4: Dewatering/ Task 5: Site Management (PCI)

- No deliverables

Task 6: Channel Construction (PCI)

- Constructed fish passage project: 100 feet of roughened channel in main channel at 6% (50 feet) and 8% (50 feet) slope for adult fish passage and 100 feet of a roughened fishway/side channel at 3.2% slope for juvenile and adult passage.

Task 7: Revegetation (PCI)

- Installed plants: 236 container trees, shrubs, willow sprigs, and grasses (see Sheet 9 of 65% Plans)
- 80% plan survival (3 years)
- Planting success report at end of 3-year post construction maintenance period

Task 8: Monitoring (PCI, UCCE/CSG)

- Effectiveness monitoring interim memos for Progress Reports
- Effectiveness monitoring final reports (at end of 2nd year post-construction period)
- Physical monitoring – Summary and analysis of annual post-construction long profile surveys, repeat photography, and low flow and high flow fish passage condition measurements (velocities and depths)
- Biological monitoring – Summary of coho and steelhead spawning and rearing distributions in Mill Creek pre- and post-construction, and an evaluation of changes due to project implementation.

Timelines:

This timeline assumes a Notice to Proceed by July 1, 2016 and that construction occurs in summer/fall 2016.

Task 1: Project Management and Grant Administration - Trout Unlimited contract oversight and administration will begin upon receiving a fully-executed CDFW grant agreement and continue through the life of the project, ending on March 31, 2020.

Task 2: Construction Administration: July 1, 2016 – January 31, 2019

Task 3: Mobilization: July 1, 2016 – November 1, 2016

Task 4: Dewatering: July 1, 2016 – October 15, 2016

Task 5: Site Management: July 1, 2016 – November 1, 2016

Task 6: Channel Construction: July 1, 2016 – October 15, 2016

Task 7: Revegetation: November 1, 2016 – November 30, 2019

Task 8: Monitoring: November 1, 2016 – January 31, 2019

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. Listed and sensitive species relocation will be conducted by CDFW certified biologist or CDFW Scientist.
- b. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- c. 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*.
- d. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and NMFS Biological Opinion.
- e. 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.
- f. USFWS Approved fisheries biologists will provide fish relocation data via the Grantee to the CDFW Grant Manager on a form provided by CDFW.

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

All construction will take place out of the wetted channel either by implementing the project from the bank and out of the channel or by constructing cofferdams, removing aquatic species located within the project reach by CDFW certified biologist or CDFW Scientist, and dewatering the channel.

No more than 500 linear feet (250 feet on each side of the channel) of riparian vegetation will be removed. All disturbed areas will be re-vegetated with native grasses, trees, or shrubs.

All dewatering efforts associated with small dam removal will abide by the applicable minimization measures (Section D. Sideboards, Minimization Measures, and Other Requirements).

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
724746 Mill Creek Dam Fish Passage Project
M 09N 10W Section25
Sonoma 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</i> ssp. <i>bakeri</i>	PDAST5L0C4			G3TH	SH	1B.2
3 Baker's larkspur <i>Delphinium bakeri</i>	PDRAN0B050	Endangered	Endangered	G1	S1	1B.1
4 Baker's manzanita <i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>	PDERI04221		Rare	G2T1	S1	1B.1
5 Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	PDPLM0C0E1			G4T2	S2	1B.1
6 Blasdale's bent grass <i>Agrostis blasdalei</i>	PMPOA04060			G2	S2	1B.2
7 Blennosperma vernal pool andrenid bee <i>Andrena blennospermatis</i>	IIHYM35030			G2	S2	
8 Burke's goldfields <i>Lasthenia burkei</i>	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
9 California beaked-rush <i>Rhynchospora californica</i>	PMCYP0N060			G1	S1	1B.1
10 California freshwater shrimp <i>Syncaris pacifica</i>	ICMAL27010	Endangered	Endangered	G1	S1	
11 California giant salamander <i>Dicamptodon ensatus</i>	AAAAH01020			G3	S2S3	
12 California linderiella <i>Linderiella occidentalis</i>	ICBRA06010			G2G3	S2S3	
13 California red-legged frog <i>Rana draytonii</i>	AAABH01022	Threatened		G2G3	S2S3	SC
14 California tiger salamander <i>Ambystoma californiense</i>	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
15 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
16 Coastal Terrace Prairie	CTT41100CA			G2	S2.1	
17 Coastal and Valley Freshwater Marsh	CTT52410CA			G3	S2.1	
18 Crystal Springs lessingia <i>Lessingia arachnoidea</i>	PDAST5S0C0			G1	S1	1B.2
19 Dorr's Cabin jewelflower <i>Streptanthus morrisonii</i> ssp. <i>hirtiflorus</i>	PDBRA2G0S2			G2T1	S1	1B.2
20 Freed's jewelflower <i>Streptanthus brachiatus</i> ssp. <i>hoffmanii</i>	PDBRA2G071			G2T2	S2	1B.2
21 Giuliani's dubiraphian riffle beetle <i>Dubiraphia giulianii</i>	IICOL5A020			G1G3	S1S3	
22 Greene's narrow-leaved daisy <i>Erigeron greenei</i>	PDAST3M5G0			G2	S2	1B.2
23 Gualala roach <i>Lavinia symmetricus parvipinnis</i>	AFCJB19025			G4T1T2	S1S2	SC

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
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M 09N 10W Section25
Sonoma County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 Hoffman's bristly jewelflower <i>Streptanthus glandulosus ssp. hoffmanii</i>	PDBRA2G0J4			G4T2	S2	1B.3
25 Jepson's leptosiphon <i>Leptosiphon jepsonii</i>	PDPLM09140			G3	S3	1B.2
26 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
27 Morrison's jewelflower <i>Streptanthus morrisonii ssp. morrisonii</i>	PDBRA2G0S3			G2T2	S2	1B.2
28 Mt. Saint Helena morning-glory <i>Calystegia collina ssp. oxyphylla</i>	PDCON04032			G4T3	S3	4.2
29 Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	IILEPJ608C	Endangered		G5T1	S1	
30 Napa false indigo <i>Amorpha californica var. napensis</i>	PDFAB08012			G4T2	S2	1B.2
31 Navarro roach <i>Lavinia symmetricus navarroensis</i>	AFCJB19023			G4T1T2	S1S2	SC
32 North Coast semaphore grass <i>Pleuropogon hooverianus</i>	PMPOA4Y070		Threatened	G2	S2	1B.1
33 Northern Hardpan Vernal Pool	CTT44110CA			G3	S3.1	
34 Northern Vernal Pool	CTT44100CA			G2	S2.1	
35 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
36 Pennell's bird's-beak <i>Cordylanthus tenuis ssp. capillaris</i>	PDSCR0J0S2	Endangered	Rare	G4G5T1	S1	1B.2
37 Peruvian dodder <i>Cuscuta obtusiflora var. glandulosa</i>	PDCUS01111			G5T4T5	SH	2B.2
38 Pitkin Marsh lily <i>Lilium pardalinum ssp. pitkinense</i>	PMLIL1A0H3	Endangered	Endangered	G5T1	S1	1B.1
39 Pitkin Marsh paintbrush <i>Castilleja uliginosa</i>	PDSCR0D380		Endangered	GXQ	SX	1A
40 Point Reyes checkerbloom <i>Sidalcea calycosa ssp. rhizomata</i>	PDMAL11012			G5T2	S2	1B.2
41 Rincon Ridge ceanothus <i>Ceanothus confusus</i>	PDRHA04220			G1	S1	1B.1
42 Rincon Ridge manzanita <i>Arctostaphylos stanfordiana ssp. decumbens</i>	PDERI041G4			G3T1	S1	1B.1
43 Russian River tule perch <i>Hysteroecarpus traski pomo</i>	AFCQK02011			G5T4	S4	SC
44 Santa Cruz clover <i>Trifolium buckwestiorum</i>	PDFAB402W0			G2	S2	1B.1
45 Sebastopol meadowfoam <i>Limnanthes vinculans</i>	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
46 Sonoma alopecurus <i>Alopecurus aequalis var. sonomensis</i>	PMPOA07012	Endangered		G5T1Q	S1	1B.1

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
47 Sonoma spineflower <i>Chorizanthe valida</i>	PDPGN040V0	Endangered	Endangered	G1	S1	1B.1
48 Sonoma sunshine <i>Blennosperma bakeri</i>	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
49 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
50 The Cedars buckwheat <i>Eriogonum cedrorum</i>	PDPGN087A0			G1	S1	1B.3
51 The Cedars fairy-lantern <i>Calochortus raichei</i>	PMLIL0D1L0			G2	S2	1B.2
52 The Cedars manzanita <i>Arctostaphylos bakeri ssp. sublaevis</i>	PDERI04222		Rare	G2T2	S2	1B.2
53 Thurber's reed grass <i>Calamagrostis crassiglumis</i>	PMPOA17070			G3Q	S2?	2B.1
54 Tidestrom's lupine <i>Lupinus tidestromii</i>	PDFAB2B3Y0	Endangered	Endangered	G1	S1	1B.1
55 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
56 Vine Hill ceanothus <i>Ceanothus foliosus var. vineatus</i>	PDRHA040D6			G3T1	S1	1B.1
57 Vine Hill clarkia <i>Clarkia imbricata</i>	PDONA050K0	Endangered	Endangered	G1	S1	1B.1
58 Vine Hill manzanita <i>Arctostaphylos densiflora</i>	PDERI040C0		Endangered	G1	S1	1B.1
59 bank swallow <i>Riparia riparia</i>	ABPAU08010		Threatened	G5	S2	
60 blue coast gilia <i>Gilia capitata ssp. chamissonis</i>	PDPLM040B3			G5T2	S2	1B.1
61 bluff wallflower <i>Erysimum concinnum</i>	PDBRA160E3			G3	S3	1B.2
62 bristly sedge <i>Carex comosa</i>	PMCYP032Y0			G5	S2	2B.1
63 brownish beaked-rush <i>Rhynchospora capitellata</i>	PMCYP0N080			G5	S1	2B.2
64 burrowing owl <i>Athene cunicularia</i>	ABNSB10010			G4	S3	SC
65 coastal bluff morning-glory <i>Calystegia purpurata ssp. saxicola</i>	PDCON040D2			G4T2T3	S2S3	1B.2
66 coho salmon - central California coast ESU <i>Oncorhynchus kisutch</i>	AFCHA02034	Endangered	Endangered	G4	S2?	
67 congested-headed hayfield tarplant <i>Hemizonia congesta ssp. congesta</i>	PDAST4R065			G5T1T2	S1S2	1B.2
68 dwarf downingia <i>Downingia pusilla</i>	PDCAM060C0			GU	S2	2B.2

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
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Sonoma County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
69 dwarf soaproot <i>Chlorogalum pomeridianum var. minus</i>	PMLIL0G042			G5T2T3	S2S3	1B.2
70 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
71 fragrant fritillary <i>Fritillaria liliacea</i>	PMLIL0V0C0			G2	S2	1B.2
72 golden larkspur <i>Delphinium luteum</i>	PDRAN0B0Z0	Endangered	Rare	G1	S1	1B.1
73 great blue heron <i>Ardea herodias</i>	ABNGA04010			G5	S4	
74 hardhead <i>Mylopharodon conocephalus</i>	AFCJB25010			G3	S3	SC
75 hoary bat <i>Lasiurus cinereus</i>	AMACC05030			G5	S4	
76 holly-leaved ceanothus <i>Ceanothus purpureus</i>	PDRHA04160			G2	S2	1B.2
77 legenere <i>Legenere limosa</i>	PDCAM0C010			G2	S2	1B.1
78 longfin smelt <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	SC
79 many-flowered navarretia <i>Navarretia leucocephala ssp. plieantha</i>	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
80 marsh microseris <i>Microseris paludosa</i>	PDAST6E0D0			G2	S2	1B.2
81 minute pocket moss <i>Fissidens pauperculus</i>	NBMUS2W0U0			G3?	S2	1B.2
82 monarch - California overwintering population <i>Danaus plexippus pop. 1</i>	IILEPP2012			G4T2T3	S2S3	
83 narrow-anthered brodiaea <i>Brodiaea leptandra</i>	PMLIL0C022			G3?	S3?	1B.2
84 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
85 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
86 oval-leaved viburnum <i>Viburnum ellipticum</i>	PDCPR07080			G4G5	S3?	2B.3
87 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
88 pappose tarplant <i>Centromadia parryi ssp. parryi</i>	PDAST4R0P2			G3T2	S2	1B.2
89 perennial goldfields <i>Lasthenia californica ssp. macrantha</i>	PDAST5L0C5			G3T2	S2	1B.2
90 purple-stemmed checkerbloom <i>Sidalcea malviflora ssp. purpurea</i>	PDMAL110FL			G5T1	S1	1B.2

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
724746 Mill Creek Dam Fish Passage Project
M 09N 10W Section25
Sonoma County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
91 rhinoceros auklet <i>Cerorhinca monocerata</i>	ABNNN11010			G5	S3	
92 round-headed beaked-rush <i>Rhynchospora globularis</i>	PMCYP0N0W0			G4	S1	2B.1
93 saline clover <i>Trifolium hydrophilum</i>	PDFAB400R5			G2	S2	1B.2
94 serpentine cryptantha <i>Cryptantha dissita</i>	PDBOR0A0H2			G2	S2	1B.2
95 serpentine daisy <i>Erigeron serpentinus</i>	PDAST3M5M0			G2	S2	1B.3
96 short-leaved evax <i>Hesperevax sparsiflora var. brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
97 steelhead - central California coast DPS <i>Oncorhynchus mykiss irideus</i>	AFCHA0209G	Threatened		G5T2T3Q	S2S3	
98 swamp harebell <i>Campanula californica</i>	PDCAM02060			G3	S3	1B.2
99 thin-lobed horkelia <i>Horkelia tenuiloba</i>	PDROS0W0E0			G2	S2	1B.2
100 tufted puffin <i>Fratercula cirrhata</i>	ABNNN12010			G5	S1S2	SC
101 two-fork clover <i>Trifolium amoenum</i>	PDFAB40040	Endangered		G1	S1	1B.1
102 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
103 western red bat <i>Lasiurus blossevillii</i>	AMACC05060			G5	S3	SC
104 white beaked-rush <i>Rhynchospora alba</i>	PMCYP0N010			G5	S2	2B.2
105 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
106 white-tailed kite <i>Elanus leucurus</i>	ABNKC06010			G5	S3S4	

Mill Creek Location Topographic Map



United States Geological Survey
7.5 Minute Topographic Map, Guemeville Quadrangle
0 0.125 0.25 0.5 0.75 1 Miles