Lower Scotts Creek Salmonid Habitat Improvement Project

Introduction

The Grantee for the Lower Scotts Creek Salmonid Habitat Improvement Project is the Resource Conservation District of Santa Cruz County (RCD).

The proposed project will construct nine to ten instream wood complexes, grade two backwater connections with two existing off-channel ponds, grade one backwater floodplain connection with an existing floodplain drain, and reconfigure the confluence area of Archibald Creek to form a backwater connection with Scotts Creek. The objective of the proposed Project is to increase the resilience of the entire system to climate variation by addressing both salmonid rearing and refuge habitat during high flows and extremely low flows. Specifically, the Project will increase accessibility to off-channel, alcove, and instream refuge and rearing habitat for juvenile and adult Central California Coast (CCC) coho (*Oncorhynchus kisutch*) and CCC steelhead (*Oncorhynchus mykiss*).

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 outlined in the California Salmonid Stream Habitat Restoration Manual (Part VII Project Implementation).

Objectives

The goals of the proposed project is to increase the amount of available off-channel/alcove, floodplain and instream habitat for winter refugia and summer rearing by grading four new connections between lower Scotts Creek and existing off-channel features, and constructing nine instream wood complexes.

Project Description

Location

Scotts Creek is located approximately 13 miles north of the city of Santa Cruz, on the central coast of California between the San Francisco and Monterey Bays. The project reach extends from 3000 feet to 6000 feet upstream from the CA-1 Bridge over Scotts Creek. The coordinates of the upstream boundary of the Project reach are N37.054229° W122.226761°. The downstream boundary coordinates are N37.047529° W122.225974°

Project Set Up

- Task 1 will be performed by the RCD (Executive Director, Program Director, Grants Manager, Grants Administrator), Cal Poly staff, and consultant, Kelli Camara.
- Task 2 will be performed by Cal Poly staff, the RCD Grants Manager, and consultant, Kelli Camara

- Task 3 will be performed by consultants Alnus Ecological, and Kelli Camara with assistance from Cal Poly staff and the RCD Grants Manager. The NMFS Salmon Ecology Group will complete fisheries monitoring and relocation which will not be funded by FRGP or used as cost-share.
- Task 4 will be performed by Cal Poly staff, RCD Grants Manager, Alnus Ecological and a Licensed Contractor that is yet to be identified.
- Task 5 will be performed by Cal Poly staff and volunteers from the Watershed Stewardship Project, in coordination with consultants, Kelli Camara and Alnus Ecological and the RCD Grants Manager.

Materials

- Nine large wood complexes (Each: one redwood log, one boulder, one redwood rootwad, one toppled in-situ alder and two live standing alders)
- Native Plants for revegetation
- Eyebolts
- Quick link
- Nuts and Washers
- lag screws
- Silt fence
- Impervious plastic
- T-posts
- Low block and mortar floodwall
- Erosion control material
- Excavator
- 10-yard dump truck
- Front-end loader
- Bulldozer
- Level logger

Tasks

Task 1: Project Oversight

Conduct grant management tasks including reporting and invoicing, completion of final report, prevailing wage oversight, ensuring completion of deliverables by applicable due dates and compliance with grant conditions. The RCD Communications Specialist will provide assistance with public outreach and/or press opportunities associated with the Project. The RCD Grants Manager, Program Director and consultant, Kelli Camara, will complete project contracting and construction bidding.

Task 2: Project Permitting

Draft and finalize the CDFW permit application. Secure all other required permits using cost-share funding.

Task 3: Biological Monitoring

Conduct required surveys and monitoring and relocation of sensitive species as needed. NMFS Salmon Ecology Group will complete fisheries monitoring and relocations which will not be funded by FRGP or used as cost-share. Cal Poly staff, assisted by NOAA Fisheries staff, will conduct snorkel surveys at appropriate locations within the project reach to characterize salmonid utilization of the reach and the proposed features. These surveys will document presence/absence, density, and life-stage.

Task 4 Construction

The locations, configurations, and extents of all features will be staked or flagged in the field by Cal Poly staff with assistance from RCD Grants Manager, and Alnus Ecological. Cal Poly staff will clear all access routes. Clearing activities will include mowing weeds, removing brush, limbing trees, or removing trees when necessary. All removed trees will be low-stumped. Whenever feasible and appropriate, existing native vegetation located in the proposed areas of disturbance will be stockpiled to the side of the project area or in a nursery and replanted following construction using cost-share funding. A licensed contractor will construct each feature requiring earthwork. Features requiring earthwork will be constructed using a combination of one or more of the following pieces of heavy equipment: excavator, 10-yard dump truck, front-end loader, and bulldozer. Features will be constructed during summer low-flow conditions. No stream dewatering will be required to construct these features since construction will take place outside of the wetted channel. All excavated material will be end hauled to the disposal area specified in the design drawings. In preparation for construction of large wood complexes instream, Cal Poly staff will construct flow diversion structures around the work area by installing silt fence lined with impervious plastic, and supported by t-posts. The licensed contractor will construct nine instream wood complexes to the specifications of design drawings and engineering docket. The contractor/operator may utilize a combination of hand crews, rigging, and heavy equipment. Cal Poly staff will construct a low block and mortar floodwall around an existing well adjacent to the project reach. The licensed contractor will decommission 860 feet of an existing road according to the specifications found in the design drawings. Cal Poly staff will use hand tools and light equipment to plant seed and native vegetation and install erosion control materials on all disturbed areas within the project reach, including the decommissioned road segment.

RCD staff, with assistance from Cal Poly, will complete photo documentation and construction oversight services.

1. Create one new connection between lower Scotts Creek and an existing floodplain drain by grading a portion of the levee on the left bank of lower Scotts Creek, for the purpose of improving floodplain connectivity and facilitating a return to a natural flood cycle. The proposed connection will be graded perpendicular to Scotts Creek at station 4400. The total area of grading associated with the connection grading is 1677square feet, with a grading volume of 168 cubic yards. The maximum depth of the grading will be 9' where it intersects the top of the existing levee. The breaches will be graded at the elevation of the existing floodplain drain invert. This improved connection is expected to form off-channel backwater habitat for salmonids over a range of flow conditions from winter base to peak flows, improve access to floodplain refuge habitat for salmonids during peak flows, and provide a return flow path for salmonids on the receding limb of flood flows, thereby reducing the potential for floodplain stranding. The channels will be revegetated with a palette of locally-sourced native plants including rushes (juncus) to stabilize soils and increase roughness.

2. Create two backwater connections between Scotts Creek and two existing floodplain ponds by grading portions of the left bank levee and floodplain. These connections will become functional at or above baseflows and fully connect the ponds and floodplain to Scotts Creek at high flows. These connections will provide backwater and side-channel refuge habitat and access to off-channel refuge habitat for salmonids. The channels will be revegetated with a palette of locally-sourced native plants including rushes (juncus) to stabilize soils and increase roughness.

3. Reconfigure the confluence of Archibald Creek and Scotts Creek by grading a portion of the left bank and floodplain. The new configuration will form a backwater connection with Scotts Creek and a low-gradient side-channel component of Archibald Creek. This feature will become functional as a backwater connection at or above baseflows in Scotts Creek, and as a low-gradient side-channel for Archibald Creek when Archibald Creek flows at or above baseflows. The channels will be revegetated with a palette of locally-sourced native plants including rushes (juncus) to stabilize soils and increase roughness.

4. Construct nine instream wood complexes using a combination of materials including in-situ red alders, imported redwood logs and rootwads, and imported boulders. Each large wood complex will be constructed from one redwood log, one boulder, one redwood rootwad, one toppled in-situ alder, and two live standing alders located on the left bank. One end of the redwood log will be anchored to the streambed by the boulder, and the other end will be braced against the trunk of the upstream live standing alders. The live toppled alder will be pinned beneath the redwood log and braced against the trunk of the downstream live standing alder. The redwood rootwad will be attached to the mid-point of the redwood log. One end of the redwood log will be attached to the boulder while the other end will be braced against a live standing alder tree and free to rise and fall with changes in stage. The rootwad attached near the log's midpoint will also be free to rise and fall relative to the log. The structure will be able to float above the bedload. The large wood complex will be braced against live standing alders to provide additional resistance against drag forces. Bracing the large wood complex against the trunk of live standing alders rather than creating fixed attachment points will allow the complex to rise and fall above the bedload with changes in stream stage as would occur with naturally recruited large wood pieces. Flexible joints will be achieved using two eye bolts linked together with a quick link. A hole will be bored through each of the structural elements of the wood complex. The boulder attachment point will consist of one eyebolt epoxied into a slip fit bore hole in the boulder. The log attachment point will consist of one eyebolt fastened through a clearance-fit through hole in the redwood log, secured with a nut and washer. The rootwad attachment point will be identical to the log attachment point, or alternatively, consist of an eyeleted lag screw threaded into a pilot hole bored into the rootwad. Shouldered eyebolts and screws or shoulder washers shall be used to prevent bending at the head of the eyebolt. The boulders will be partially buried in the bed substrate to oppose the drag force on the structure in the direction of flow.

4.1. Five of these wood complexes will be distributed along two sub-reaches of low complexity: two wood complexes will be constructed between stations 3400 and 3600, and three wood complexes will be constructed between stations 4600 – 4900. These wood complexes will increase channel complexity, provide instream cover, improve sediment sorting, and encourage the formation of instream pool habitat.

4.2. Four of these wood complexes will be constructed in association with the four floodplain, pond, and tributary connections. One wood

complex will be constructed at each of the four confluence areas between Scotts Creek and the floodplain, pond, and tributary connections at stations 3300, 3900, 4400, and 5600. These four wood complexes will be configured to maintain sediment transport, provide instream cover, and encourage pool formation at each of these confluence areas.

Task 5: Effectiveness Monitoring

Longitudinal Profile or Channel Topo Survey

Cal Poly staff will conduct a spatially referenced longitudinal profile or topo survey of the project reach or sub-reach or reaches within the project reach. The longitudinal profile or topo survey will be spatially referenced using one or more of the following techniques: new survey monuments, existing survey control monuments, or GPS. Longitudinal profiling or topo surveying will be conducted once in the low flow season before construction, once in the low flow season immediately following construction, and once in each of the first and second post-construction seasons.

Longitudinal Profile or Topo Survey of Proposed Off-Channel Features

Cal Poly staff will conduct a spatially referenced longitudinal profile or topo survey of the proposed off-channel features. The longitudinal profile or topo survey will be spatially referenced using one or more of the following techniques: new survey monuments, existing survey control monuments, or GPS. Longitudinal profiling or topographic surveying will be conducted once in the low flow season before construction, and once in each of the first and second post-construction seasons.

Pre- and Post-Project Photo Monitoring

Cal Poly staff will conduct photo monitoring at monumental photo points. At least one photo point will be established at each of the proposed features including nine instream wood complexes and four off-channel features. Cal Poly staff will conduct photo monitoring once prior to construction, once closely following construction, and once in each of the first and second post-construction seasons.

Flow Surveys or Determinations of Connectivity for Proposed Off-Channel Features

Flow velocities are not expected to be appreciable in each of the proposed off-channel features, with the exception of the enhanced Archibald Creek confluence area. Cal Poly staff will observe the four off-channel features during the first and second storm season following construction to determine the timing and duration of connectivity with Scotts Creek. Cal Poly staff will take flow measurements when feasible

and appropriate in the first storm season following construction to characterize the hydrologic function of each feature.

Biologic Surveys

Cal Poly staff, assisted by NOAA Fisheries staff, will conduct snorkel surveys at appropriate locations within the project reach to characterize salmonid utilization of the reach and the proposed features. The lower reach of Scotts Creek is not well understood in terms of fish utilization, and there is not sufficient pre-construction data to characterize baseline conditions. However, going forward, effectiveness monitoring may be able to show patterns of utilization in the lower reach, particularly how fish are utilizing constructed features versus the reach overall. Effectiveness analyses will focus on characterizing patterns of utilization going forward. If snorkel surveys reveal that there are concentrations of biological activity in particular areas of the stream, inferences might be made about the physical attributes that are associated with concentrated utilization. These surveys will document presence/absence, density, and life-stage. Snorkel surveys will be performed once in spring of 2016, and once in spring of 2017 but prior to March 1st, 2017

Water Quality Monitoring

Water quality will be sampled using a handheld multi-parameter DO meter. Samples will be taken opportunistically in each of the four off-channel features in the first and second post-construction seasons.

Reach Scale Monitoring

Continuous flow data will be recorded using an existing stream gage located on lower Scotts Creek near the upstream extend of the project reach. Manual flow measurements will be taken opportunistically to verify the accuracy of the automated gage station and further calibrate the existing rating curve. In conjunction with these upstream readings, manual flow readings will be taken at the downstream extent of the project reach to determine what inflows or outflows may be present along the reach. Continuous flow data will cover the year of construction, and the first and second years following construction.

Floodplain Inundation

One level-logger will be placed in one of the off -channel ponds, and one-level logger will be placed in the existing floodplain drain following construction. These level-loggers will record continuous data over the winter and spring in the first and second seasons following construction in order to characterize the timing and duration of floodplain inundation.

Deliverables

Task 1 Project Oversight

- Monthly progress reports
- Monthly invoices
- Final Report which will include the following:
- Grant Number
- Project Name
- Geographic Area
- Location of Work
- Photo documentation
- Final project budget and match
- Record drawings (which will include a post longitudinal profile)
- Miles of instream habitat treated
- Type of channel reconfiguration and connectivity
- Miles of stream treated for channel reconfiguration and connectivity
- Miles of off-channel stream created
- Number of instream pools created for channel reconfiguration
- Type of materials used for channel structure placement
- Miles of stream treated with channel structure placement
- Number of instream pools created by structure placement
- Number of structures placed in channel

Task 2 Project Permitting

- Copy of final DFW permit

Task 3 Biological monitoring

- Copy of monitoring logs/surveys completed

Task 4 Construction

- Pre, during and post photo documentation
- Notice of Completion

Task 5 Effectiveness Monitoring

- Monitoring Report summarizing the following:
- “As-built” survey upon project completion
- Longitudinal Profile or Channel Topo Survey Results
- Longitudinal Profile or Topo Survey Results of Proposed Off-Channel Features
- Pre- and Post-Project Photos
- Flow Surveys or Determinations of Connectivity for Proposed Off-Channel Features
- Biologic Survey Results
- Water Quality Monitoring Results

- Reach Scale Continuous Flow Data and Verification Results
- Floodplain Inundation Data

Timelines

Task 1: Project Oversight
Begin June 1, 2015 and completed Dec 15, 2016. Deliverables for Monthly Reports and Invoices will be completed monthly and Final Report completed Dec 15, 2016.

Task 2: Project Permitting
Begin June 1, 2015 and completed August 1, 2015.

Task 3: Biological Monitoring
Begin August 1, 2015 and completed November 15, 2015.

Task 4: Construction
Begin August 1 2015 and completed November 15, 2015

Task 5: Effectiveness Monitoring
Begin August 1, 2015 and completed November 30, 2016.

Additional Requirements:

1. The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Timing of 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.

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

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

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

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

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

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

3. 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.

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

5. 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.*

6. 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.

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Common Name - Portrait
D023 Lower Scott Creek salmonid habitat improvement project

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	American badger *Taxidea taxus*	AMAJF04010			G5	S4	SC
2	American peregrine falcon *Falco peregrinus anatum*	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
3	An isopod *Calasellus californicus*	ICMAL34010			G2	S2	
4	Anderson's manzanita *Arctostaphylos andersonii*	PDERI04030			G2	S2?	1B.2
5	Antioch specid wasp *Philanthus nasalis*	IIHYM20010			G1	S1	
6	Ben Lomond buckwheat *Eriogonum nudum var. decurrens*	PDPGN08492			G5T1	S1	1B.1
7	Ben Lomond spineflower *Chorizanthe pungens var. hartwegiana*	PDPGN040M1	Endangered		G2T1	S1	1B.1
8	Blasdale's bent grass *Agrostis blasdalei*	PMPOA04060			G2	S2	1B.2
9	Bonny Doon manzanita *Arctostaphylos silvicola*	PDERI041F0			G1	S1	1B.2
10	Butano Ridge cypress *Hesperocyparis abramsiana var. butanoensis*	PGCUP04082	Endangered	Endangered	G1T1	S1	1B.2
11	California black rail *Laterallus jamaicensis coturniculus*	ABNME03041		Threatened	G4T1	S1	
12	California red-legged frog *Rana draytonii*	AAABH01022	Threatened		G2G3	S2S3	SC
13	Choris' popcornflower *Plagiobothrys chorisianus var. chorisianus*	PDBOR0V061			G3T2Q	S2	1B.2
14	Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
15	Cooper's hawk *Accipiter cooperii*	ABNKC12040			G5	S3	
16	Dolloff Cave spider *Meta dolloff*	ILARA17010			G1	S1	
17	Dudley's lousewort *Pedicularis dudleyi*	PDSCR1K0D0		Rare	G2	S2	1B.2
18	Empire Cave pseudoscorpion *Neochthonius imperialis*	ILARAD1010			G1	S1	
19	Empire Cave pseudoscorpion *Fissilicreagris imperialis*	ILARAE5010			G1	S1	
20	Franciscan thistle *Cirsium andrewsii*	PDAST2E050			G3	S3	1B.2
21	Indian Valley bush-mallow *Malacothamnus aboriginum*	PDMAL0Q020			G2	S2	1B.2
22	Kellman's bristle moss *Orthotrichum kellmanii*	NBMUS56190			G2	S2	1B.2
23	Kellogg's horkelia *Horkelia cuneata var. sericea*	PDROS0W043			G4T2	S2?	1B.1

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24	Kings Mountain manzanita *Arctostaphylos regismontana*	PDERI041C0			G2	S2	1B.2
25	Loma Prieta hoita *Hoita strobilina*	PDFAB5Z030			G2	S2	1B.1
26	Mackenzie's Cave amphipod *Stygobromus mackenziei*	ICMAL05530			G1	S1	
27	Maritime Coast Range Ponderosa Pine Forest	CTT84132CA			G1	S1.1	
28	Methuselah's beard lichen *Usnea longissima*	NLLEC5P420			G4	S4	4.2
29	Monterey Pine Forest	CTT83130CA			G1	S1.1	
30	Monterey pine *Pinus radiata*	PGPIN040V0			G1	S1	1B.1
31	Mount Hermon (=barbate) June beetle *Polyphylla barbata*	IICOL68030	Endangered		G1	S1	
32	Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	IILEPJ608C	Endangered		G5T1	S1	
33	N. Central Coast Calif. Roach/Stickleback/Steelhead Stream	CARA2633CA			GNR	SNR	
34	North Central Coast Drainage Sacramento Sucker/Roach River	CARA2623CA			GNR	SNR	
35	North Central Coast Short-Run Coho Stream	CARA2632CA			GNR	SNR	
36	Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
37	Northern Interior Cypress Forest	CTT83220CA			G2	S2.2	
38	Northern Maritime Chaparral	CTT37C10CA			G1	S1.2	
39	Ohlone manzanita *Arctostaphylos ohloneana*	PDERI042Y0			G1	S1	1B.1
40	Ohlone tiger beetle *Cicindela ohlone*	IICOL026L0	Endangered		G1	S1	
41	Pajaro manzanita *Arctostaphylos pajaroensis*	PDERI04100			G1	S1	1B.1
42	Point Reyes horkelia *Horkelia marinensis*	PDROS0W0B0			G2	S2	1B.2
43	Point Reyes meadowfoam *Limnanthes douglasii ssp. sulphurea*	PDLIM02038		Endangered	G4T2	S2	1B.2
44	San Francisco campion *Silene verecunda ssp. verecunda*	PDCAR0U213			G5T2	S2.2	1B.2
45	San Francisco collinsia *Collinsia multicolor*	PDSCR0H0B0			G2	S2	1B.2
46	San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	AMAFF08082			G5T2T3	S2S3	SC
47	San Francisco garter snake *Thamnophis sirtalis tetrataenia*	ARADB3613B	Endangered	Endangered	G5T2Q	S2	
48	San Francisco popcornflower *Plagiobothrys diffusus*	PDBOR0V080		Endangered	G1Q	S1	1B.1

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
49	Santa Clara red ribbons *Clarkia concinna ssp. automixa*	PDONA050A1			G5?T3	S3.3	4.3
50	Santa Cruz Mountains beardtongue *Penstemon rattanii var. kleei*	PDSCR1L5B1			G4T2	S2	1B.2
51	Santa Cruz Mountains pussypaws *Calyptridium parryi var. hesseae*	PDPOR09052			G3G4T2	S2	1B.1
52	Santa Cruz clover *Trifolium buckwestiorum*	PDFAB402W0			G2	S2	1B.1
53	Santa Cruz cypress *Hesperocyparis abramsiana var. abramsiana*	PGCUP04081	Endangered	Endangered	G1T1	S1	1B.2
54	Santa Cruz kangaroo rat *Dipodomys venustus venustus*	AMAFD03042			G4T1	S1	
55	Santa Cruz microseris *Stebbinsoseris decipiens*	PDAST6E050			G2	S2.2	1B.2
56	Santa Cruz tarplant *Holocarpha macradenia*	PDAST4X020	Threatened	Endangered	G1	S1	1B.1
57	Santa Cruz wallflower *Erysimum teretifolium*	PDBRA160N0	Endangered	Endangered	G2	S2	1B.1
58	Schreiber's manzanita *Arctostaphylos glutinosa*	PDERI040G0			G1	S1	1B.2
59	Scotts Valley polygonum *Polygonum hickmanii*	PDPGN0L310	Endangered	Endangered	G1	S1	1B.1
60	Scotts Valley spineflower *Chorizanthe robusta var. hartwegii*	PDPGN040Q1	Endangered		G2T1	S1	1B.1
61	Smith's blue butterfly *Euphilotes enoptes smithi*	IILEPG2026	Endangered		G5T1T2	S1S2	
62	Steller (=northern) sea-lion *Eumetopias jubatus*	AMAJC03010	Threatened		G3	S2	
63	Toren's grimmia *Grimmia torenii*	NBMUS32330			G2	S2	1B.3
64	Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010		Candidate Threatened	G3G4	S2S3	SC
65	Zayante band-winged grasshopper *Trimerotropis infantilis*	IIORT36030	Endangered		G1	S1	
66	arcuate bush-mallow *Malacothamnus arcuatus*	PDMAL0Q0E0			G1Q	S1	1B.2
67	bank swallow *Riparia riparia*	ABPAU08010		Threatened	G5	S2S3	
68	bent-flowered fiddleneck *Amsinckia lunaris*	PDBOR01070			G2?	S2?	1B.2
69	black swift *Cypseloides niger*	ABNUA01010			G4	S2	SC
70	burrowing owl *Athene cunicularia*	ABNSB10010			G4	S3	SC
71	chaparral ragwort *Senecio aphanactis*	PDAST8H060			G3?	S2	2B.2

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
72	coastal marsh milk-vetch *Astragalus pycnostachyus var. pycnostachyus*	PDFAB0F7B2			G2T2	S2	1B.2
73	coho salmon - central California coast ESU *Oncorhynchus kisutch*	AFCHA02034	Endangered	Endangered	G4	S2?	
74	deceiving sedge *Carex saliniformis*	PMCYP03BY0			G2	S2	1B.2
75	elongate copper moss *Mielichhoferia elongata*	NBMUS4Q022			G4	S2	2B.2
76	globose dune beetle *Coelus globosus*	IICOL4A010			G1G2	S1S2	
77	great blue heron *Ardea herodias*	ABNGA04010			G5	S4	
78	hoary bat *Lasiurus cinereus*	AMACC05030			G5	S4?	
79	longfin smelt *Spirinchus thaleichthys*	AFCHB03010	Candidate	Threatened	G5	S1	SC
80	maple-leaved checkerbloom *Sidalcea malachroides*	PDMAL110E0			G3G4	S3S4.2	4.2
81	marbled murrelet *Brachyramphus marmoratus*	ABNNN06010	Threatened	Endangered	G3G4	S1	
82	marsh microseris *Microseris paludosa*	PDAST6E0D0			G2	S2	1B.2
83	marsh sandwort *Arenaria paludicola*	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1
84	mimic tryonia (=California brackishwater snail) *Tryonia imitator*	IMGASJ7040			G2G3	S2S3	
85	moestan blister beetle *Lytta moesta*	IICOL4C020			G2	S2	
86	monarch butterfly *Danaus plexippus*	IILEPP2010			G5	S3	
87	northern curly-leaved monardella *Monardella sinuata ssp. nigrescens*	PDLAM18162			G3T2	S2	1B.2
88	osprey *Pandion haliaetus*	ABNKC01010			G5	S3	
89	pallid bat *Antrozous pallidus*	AMACC10010			G5	S3	SC
90	pine rose *Rosa pinetorum*	PDROS1J0W0			G2Q	S2.2	1B.2
91	robust spineflower *Chorizanthe robusta var. robusta*	PDPGN040Q2	Endangered		G2T1	S1	1B.1
92	round-leaved filaree *California macrophylla*	PDGER01070			G2	S2	1B.1
93	saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	ABPBX1201A			G5T2	S2	SC
94	sand-loving wallflower *Erysimum ammophilum*	PDBRA16010			G2	S2	1B.2

	Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
95	sandy beach tiger beetle *Cicindela hirticollis gravida*	IICOL02101			G5T2	S1	
96	short-leaved evax *Hesperevax sparsiflora var. brevifolia*	PDASTE5011			G4T2T3	S2S3	1B.2
97	slender silver moss *Anomobryum julaceum*	NBMUS80010			G4G5	S2	4.2
98	slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	PMPOT03091			G5T5	S3	2B.2
99	steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	AFCHA0209G	Threatened		G5T2Q	S2	
100	stinkbells *Fritillaria agrestis*	PMLIL0V010			G3	S3.2	4.2
101	swamp harebell *Campanula californica*	PDCAM02060			G3	S3	1B.2
102	tear drop moss *Dacryophyllum falcifolium*	NBMUS8Z010			G1	S1	1B.3
103	tidewater goby *Eucyclogobius newberryi*	AFCQN04010	Endangered		G3	S2S3	SC
104	tricolored blackbird *Agelaius tricolor*	ABPBXB0020			G2G3	S1S2	SC
105	unsilvered fritillary *Speyeria adiaste adiaste*	IILEPJ6143			G1G2T1	S1	
106	vaginulate grimmia *Grimmia vaginulata*	NBMUS32340			G2G3	S1	1B.1
107	western pearlshell *Margaritifera falcata*	IMBIV27020			G4G5	S1S2	
108	western pond turtle *Emys marmorata*	ARAAD02030			G3G4	S3	SC
109	western snowy plover *Charadrius alexandrinus nivosus*	ABNNB03031	Threatened		G3T3	S2	SC
110	white-flowered rein orchid *Piperia candida*	PMORC1X050			G3?	S2	1B.2
111	white-rayed pentachaeta *Pentachaeta bellidiflora*	PDAST6X030	Endangered	Endangered	G1	S1	1B.1
112	white-tailed kite *Elanus leucurus*	ABNKC06010			G5	S3	
113	woodland woollythreads *Monolopia gracilens*	PDAST6G010			G2G3	S2S3	1B.2

ATTACHMENT 1 – PROJECT LOCATION MAP