

Seiad Creek at Panther Gulch: Coho Habitat Enhancement Design Project

2020

Introduction:

The Mid Klamath Watershed Council (Permittee) will produce 100 % construction ready design plans for instream and off-channel habitat features, and diversion improvement in a half mile, 13 acres reach of Seiad Creek. The design plan will feature instream wood structures, reconnect the stream channel to the floodplain and create off channel habitat features. The project will ultimately address limiting factors to salmonids by restoring critical winter and summer refugia habitat, improve floodplain connectivity, instream structure complexity.

Seiad Creek is an important tributary to the Klamath River supporting Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), and steelhead trout (*Oncorhynchus mykiss*). Legacy mining, timber harvesting, and water diversion has degraded coho habitat by channelizing Seiad Creek, resulting in excessive flow velocities in winter months and reduced stream flows in the summer months.

This project will address the following recovery tasks:

1. Recovery Strategy for SO. Or/No. CA Coast Coho Salmon (NOAA Final Sept. 2004)
2. Recovery Plan for SONCC Coho Salmon, NOAA Fisheries tasks also addressed by this project are: SONCC – UKR.2.1.4.1: Assess habitat to determine beneficial location and amount of instream structure required.

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

Objective(s):

The objective of this project is to create a 100% construction ready design plan for a 0.5-mile reach of Seiad Creek near Panther Gulch. The fisheries restoration design will consider instream structures, off-channel features, diversion improvement, and floodplain grading as treatment options.

Project Description:

Location:

The project is located on Seiad Creek, approximately 5.5-miles upstream from its confluence with the Klamath River and approximately 2.5-miles upstream from its confluence with Canyon Creek. The upstream extent of the project area is Panther Gulch. The project area has one major water diversion. The project site

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is in Siskiyou County, California, near the town of Seiad Valley. Project coordinates are: Latitude: 41.872025, Longitude: -123.133588.

Project Set Up:

The project will be implemented by the following people/subcontractors: Mid Klamath Watershed Council (Permittee) Director I will be on the Technical Advisory Committee (TAC) (Task 1, 5), which includes participating in field trips and meetings to provide input at the startup meeting to discuss the project objectives, approach, roles and responsibilities, and schedule; a field meeting following submittal of conceptual (30 percent level) habitat enhancement alternatives and supporting analyses to discuss project elements and identify a preferred alternative for 65 percent design development: a conference call following submittal of the draft 65 percent design plan set and Draft Basis of Design Report (BODR), and a conference call following submittal of the draft 90 percent design plan set and Draft BODR.

Permittee's Director II will be on the Technical Advisory Committee (Task 1, 5) as well as do Project Management (Task 1 through 10).

Permittee's Project Coordinator will be on the TAC (Task 1, 5), will provide technical assistance to the Senior Field Technicians conducting Existing Conditions Assessment, and will work with Senior Field Technicians to collect stage and discharge measurements for (Task 3 and 4), Hydrology and hydraulics. The Project Coordinator will also oversee the digging of the test pits and the installation of the groundwater wells and piezometers. The Project Coordinator will work with the Plants Coordinator on the Invasive species prevention plan (Task 5,6) and the Revegetation plan. The Project Coordinator also will work with the Monitoring Coordinator to develop the Monitoring plan (Task 6 through 10). The Project Coordinator will coordinate all TAC meetings and field trips, take notes, and facilitate good communication between TAC members. The Project Coordinator also performs Project Management (Tasks 2 through 10).

Permittee's Senior Field Technicians will perform the fieldwork and data entry for Existing Conditions Assessment and, Hydrology and hydraulics.

Permittee's Plants Coordinator will create the Invasive species prevention plan and the Revegetation plan (Tasks 6 through 10).

Permittee's Monitoring Coordinator will write the Monitoring plan (Task 10) that will accompany the 100% design plan set.

Stillwater Sciences Inc. will participate in the TAC (Task 2 through 10), provide oversight to Tasks 2 through 10, Existing conditions assessment, Hydrology and

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hydraulics, will do all the hydraulic modeling, generate the hydrological inputs to the hydraulic model, will do Tasks 3 through Tasks 10, which includes the 100% design and the Final Basis of Design Report.

The Northern California Resource Center will perform the NEPA and CEQA compliance tasks.

The Backhoe operator will dig the test pits necessary to analyze the soil and location of groundwater of the site.

The Water rights attorney (Matt Clifford, Trout Unlimited) will research all aspects of the permitting associated with moving the main point of diversion (Task 2) from the present location on Forest Service property downstream to the place of use, and will prepare applications for the necessary approvals, ready for submission to the agencies. This will include: Investigate the current water management regime at the property in relation to the three water rights, and advise the right holder regarding any recommended changes to how diversion and use are currently being reported. Work with the right holder and Stillwater Sciences to prepare a Petition for Change and supporting materials seeking approval to move the POD for A026833 approximately 0.5-miles downstream, and to add instream use for fish and wildlife downstream of the existing POD as a purpose and place of use of water under the right pursuant to Water Code § 1707. Based on the results of the water rights investigation, file similar Petitions for Change for A10630 and/ or A023447 if necessary to implement the project. Work with the right holder to consult with CDFW to determine whether a Lake/ Streambed Alteration Agreement (LSAA) is needed for diversion of water at the property, and if so prepare an LSAA notification package for submission to CDFW.

Materials:

All materials will be purchased by the Permittee. The following is a list of materials that will be used for this project: 1) six groundwater monitoring wells, to house the level loggers which will allow for the measurement of groundwater. Understanding groundwater/surface water relationships will inform the design. 2) six level loggers, to measure groundwater and surface water. In addition to understanding the groundwater/surface water relationship, these loggers will be measuring the elevation of the creek, informing the hydrology of the site. 3) miscellaneous field supplies like t-posts, pvc pipe, u-bolts, flagging, field notebooks, markers, and rite in the rain paper. These miscellaneous field supplies will be used to collect data at the project site.

Tasks:

Task 1 – Project Management and Administration

Permittee Director, Project Manager and Program Coordinators will provide technical and administrative services associated with performing and completing the work for this Project, including managing this Agreement, delivering the final landowner access agreement, administering subcontracts, invoicing and payments, drafting and finalizing progress and final reports, and data management.

Task 2 - Site Characterizations

Complete physical and existing conditions surveys to develop beneficial fishery habitat design plan. This includes characterizing the site topography, geomorphology, shallow subsurface geology, hydrology, surface and groundwater interactions, water quality conditions, river hydraulics, sediment size and mobility, existing vegetation, and fisheries use. These characterizations will be obtained through the following assessments.

Existing Conditions Assessments: Assessments will be conducted by Licensed Engineer, Licensed Geologist and Permittee by using historic ground and aerial photos, maps, and documents for characterizing channel changes in response to past disturbances, such as floods and land use. This information will provide an understanding of possible geomorphic responses, project risks and expected longevity for different design alternatives, and help guide selection of a preferred project.

The analysis will focus on flood events, historic landslides in the direct vicinity of the project area and anthropogenic activities (i.e., mining, road construction, etc.) that may impact potential project designs. The results of the aerial photo analysis will be reported within the geologic technical memorandum.

Topographic Mapping: Topographic surveys will be completed to characterize channel bed, bank, and floodplain topography and bathymetry. The Permittee will use LiDAR data and total station surveying equipment to develop a digital terrain model (DTM) for field mapping, hydraulic modeling, feasibility analysis, and project design.

The survey will be conducted on the same horizontal and vertical datum as the LiDAR. The topographic survey data will be used to create:

1. Full topographic and bathymetric surveys of Seiad Creek from diversion take out (POD) to proposed new diversion POD. The survey will include thalweg, active channel width, toes and tops of banks, trees greater than 1 foot in diameter within 10 feet of the top of bank.

2. Develop detailed project base map with two (2) foot contours from topographic and bathymetric data. An aerial image will be included with the base map.

Geomorphic Mapping and Sediment Characterizations: Licensed professional geomorphologist will conduct geomorphic analysis to evaluate risk and sustainability of project features. The geomorphic assessment will identify existing channel morphology, hydraulic controls, characterize channel bed substrate material and stratigraphy soils within the excavated pits for groundwater monitoring well.

Subsurface Hydrology and Stream Hydraulic Characterization: Install up to five (5) shallow (8 to 14 feet deep) monitoring wells and two (2) pressure transducers in Seiad Creek upstream and downstream of the project area.

A two-dimensional hydraulic model (e.g., HEC-RAS 5.0 or equivalent) will be developed to simulate water surface elevations, flow depths and velocities, and shear stresses in the Seiad Creek channel and floodplain areas under existing and various proposed conditions. The model will be used to estimate bed-mobilizing flows and potential forces that will act on proposed large wood design structures, and generally inform the design team about the locations and relative magnitude of potential erosion and/or sedimentation. The hydraulic model will be generated using the DTM developed in Task 2 and will be calibrated with observations from flow monitoring at the project site.

Results of the hydrologic and hydraulic analysis will be included in the Draft Basis of Design Report at the 30 percent design submittal.

NEPA Clearance for Monitoring Wells Installation:

Installation of the monitoring wells and test pits along the connecting channel alignment from Seiad Creek will require minor ground disturbance. As a result, the project will require NEPA clearance. The USFS will be the lead agency but supporting documentation for the process will be prepared by Permittee due to limited USFS staff time availability. Items for consideration may include hydrology, geology, archaeology, and fisheries.

Water Level, Water Quality, Vegetation and Fisheries Monitoring:

Water Level and Water Quality Monitoring: Licensed Engineer will install water level loggers in each of the groundwater monitoring wells. In addition to the groundwater monitoring wells, Licensed Engineer will install water level loggers in Seiad Creek near the upstream and downstream limits of the project. An additional data logger will be installed to collect atmospheric pressure and air temperature for use in processing water level monitoring.

Water level fluctuations (stream and groundwater) will be regularly measured to identify relations among surface water, groundwater, and stratigraphy. Permittee staff will download water levels and water temperature data on a monthly basis, or more frequently if needed. When the data loggers are downloaded, Permittee will also take spot measurements of water level, water temperature, and dissolved oxygen. Water quality measurements will also be taken within the project area during each visit. At the completion of monitoring Permittee will remove the monitoring equipment. Water quality measurements, including temperature and dissolved oxygen, will be collected intensively for the first year of the project and will continue monthly as feasible throughout the duration of the project to increase the robustness of the data.

Permittee will provide water level and water quality data to Licensed Engineer for processing and for use in the design development for the project. Licensed Engineer will use the results of the summer groundwater monitoring to develop a DTM of the elevation of groundwater table. This information will be used to determine the depth of excavations for potential side channels, ponds, and alcoves on the bar, and for development of the revegetation plan.

Water Temperature and Quality Analysis: Water temperature and water quality data will be collected for analysis. A quantitative summary of the data collected to date will be provided in the basis of design report.

Water Rights:

The existing water right and the feasibility of moving the Point of Diversion to benefit salmon will be investigated by Trout Unlimited Water Rights Attorney Matt Clifford.

Stream Inventory and Vegetation Mapping: A stream channel inventory and aquatic habitat assessment will be conducted using the Level 4 CDFW protocol. Collecting data on the morphological stream characteristics, such as pool depth and frequency and large wood loading, will provide the baseline data needed to determine what habitat modifications and structures are appropriate for Seiad Creek. Permittee will lead the aquatic habitat assessment, with support from Licensed Engineer. Recommendations developed with these data will guide restoration planning and designs of habitat enhancement features.

Riparian vegetation map will include the extent and condition of the existing riparian corridor, riparian vegetation species, invasive species, and wetland habitats within the project area. The field effort for riparian mapping will be conducted in conjunction with topographic surveys. Permittee's qualified Botanist will lead the riparian habitat assessment, with support from Licensed Engineer. The methods and results of the riparian assessment will be included in the Draft Basis of Design Report at the 30 percent design submittal.

Task 3 - Hydrologic Analysis

Licensed Engineer will prepare a flow duration and flow frequency analysis of the site to better understand the frequency and duration of different magnitude flows. The analyses will be conducted for annual flows, as well as seasonal periods.

Task 4 – Hydraulic Analysis

Licensed Engineer will use the collected data in Task 2 to perform hydraulic analyses for use in evaluating and selecting design options for the project sites and for design development throughout the various stages of the project. Both existing and proposed conditions hydraulic models will be developed for this project. The models may be developed as steady state HEC-RAS or using a two-dimensional hydrodynamic model.

The hydraulic models will be used to evaluate existing conditions and analyze hydraulics associated with different design options. Specifically, the models will be used to predict flow hydraulics in the river and on the river bars, the flow in which existing side channels become activated, and to determine the elevations to which any side channel should be graded to increase the frequency of their activation.

Additionally, the model results will be used to determine the extents of backwatering into proposed alcoves at the downstream ends of the side channels, hydraulic forces that may be imposed on any large wood structures placed within the project area, and for predicting scour and depositional zones.

The hydraulic models and computations will be generated from the base map of the project area prepared as part of Task 2. Proposed conditions will be modeled as part of the preliminary (30%) development and design refinements will be analyzed as part of the intermediate (65%) plan development (Task 6).

Task 5 – Design Meetings

Alternatives Scoping Meeting: Permittee will convene a project design meeting with, Licensed Engineer staff, Licensed Geologist, Tribal biologists, CDFW, United States Forest Service (USFS) and other stakeholders. The field meeting will be used to present findings from the site characterizations in Task 2, identify any information gaps and means to fill them, establish project objectives and constraints, discuss the various restoration options and their site suitability and select the preferred project for development to the preliminary (30%) level. This will be an opportunity for the design team to receive comments and answer questions. Written comments will also be accepted.

30% Design Review Meeting - Following submittal of the 30% plans and Project Restoration Scoping Report, a project field meeting will be held with stakeholders. The design team will step the group through the provided design drawings and supporting analysis and discuss the various project elements and

how they are anticipated to function. This will be an opportunity for the design team to receive comments and answer questions. Written comments will also be accepted.

65% Design Review Meeting - Following submittal of the 65% plans and updated report, a meeting will be scheduled with all stakeholders to discuss the proposed project and receive comments. This meeting could be a field meeting if necessary. Written comments will also be accepted.

NEPA/CEQA Kick-off Meeting - The project ID Team will meet their USFS/CEQA lead liaisons at an in-person meeting to kick-off the NEPA/CEQA planning process.

NEPA/CEQA Public Comment Period Onsite - The Permittee and USFS will host an on-site at the project site open to the public where ID team members will be available to answer questions from the public. This will also be an opportunity for the public to submit comments during the NEPA/CEQA planning process.

Task 6 – 30% Design Development

Conceptual design, options analysis, and 30 percent Draft Basis of Design Report.

The Permittee and Licensed Engineer will evaluate site opportunities and constraints and identify potential design options for creating and enhancing salmonid habitat in the project reach. These analyses will be based on the site conditions identified through the geomorphic, hydrologic, and hydraulic analyses conducted in Tasks 2 through 5.

The alternatives analyses will assess the feasibility of relocating the existing surface water diversion to a new point of diversion near the downstream end of the reach and the type of appurtenances and other infrastructure that would be needed to support a new system (e.g., dam or weir; headgate, pump, or other water intake structure; ditch or pipe conveying water to the point of use).

A minimum of two design alternatives will be developed for the project reach. We expect that these alternatives will include a combination of multi-purpose instream wood structures, levee removal, side channel enhancement, alcove construction, riparian planting, and diversion relocation. Design alternatives will be developed to the 30 percent level, including schematic concept plan views, thalweg longitudinal profiles, and typical cross sections of the design alternatives. Hydraulic modeling of proposed conditions will be performed, and planning level cost estimates will be developed for each alternative and summarized in a 30 percent Draft Basis of Design Report. These products will be discussed at the first TAC meeting and review by the TAC will guide selection of a preferred alternative.

Task 7 - Schematic (30%) Drawings for Restoration Components:

Licensed Engineer will prepare schematic drawings to a 30% level necessary to convey the intent of each project component. These drawings will include plan overviews and may include profiles and typical sections when needed to convey the design intent and functionally of the restoration component. If suitable, alternative project components will be developed for specific areas. Licensed Engineer will prepare schematic drawings to a 30% level necessary to convey the intent of design alternative.

Task 8 - Intermediate (65%) Design:

Preliminary 30% design developed to the 65% level. The Permittee will distribute preliminary design for review to project stakeholders and CDFW. 65% design will include construction cost analysis, basis of design report, memorandum summarizing engineering calculations.

Design Refinement: Design development includes developing layout, grading, and spoil placement areas, developing project details, and performing additional hydraulic analysis. Stability computations will be performed for large wood structures that include moment-based computations that consider buoyancy, drag, lift, overturning, ballast, and anchoring methods as necessary. Scour analyses and pile skin-friction computations will also be performed as necessary to ensure that the large wood structure design meets a suitable factor of safety.

Prepare 65% Design Plans: The plan set will include at a minimum:

- Title Sheet
- General and Technical Notes.
- Existing and proposed condition plan views showing limits of disturbance, new construction, and instream structure locations
- Channel profiles along construction alignments.
- Typical and Detail Drawings.
- Water Management Plan.
- Erosion and Sediment Control Plan.
- Sequence of Construction.
- Construction Cost Analysis

Draft Project Design Report: A Draft Project Design Report (PDR) will be prepared that includes a detailed project description, applied design criteria and standards, summary of findings from various analysis, and summary of approach

for stability calculations for large wood structures. Calculations will be provided as an appendix. Sections of the Project Restoration Scoping Report will be incorporated into this report to provide a single document that summarizes the project development.

Task 9 - 90 percent plan set, specifications, and Draft Basis of Design Report:

The 65 percent design will be advanced to the 90 percent level to make it fully construction-ready with all necessary details and specifications. 90 percent plans and construction specifications will be submitted to the TAC for review and comment.

Task 10 - Final Design 100 percent plan set, specifications, and Final Basis of Design Report:

The final plan (100%) set shall include survey data of cross sections, channel profile, implementation detail, construction map, site locations and construction notes. Construction plans will be signed and stamped by a Registered Civil Engineer. The Permittee will submit three hard copies and one digital copy of the final design plan set.

The Final Design Plan Set will include:

- Invasive Species Prevention Plan
- Revegetation Plan
- Project Monitoring Plan
- Dewatering and Exclusion/Relocation Plan

Deliverables:

- Pre and Post project survey and assessment data.
- Site Characterization/Geologic Technical Report
- Hydrologic Analysis
- Hydraulic Analysis
- Basis of Design Report
- Schematic (30%) Drawings for Restoration Components
- Intermediate (65%) Design
- 90% Design Plan
- Final 100% Design Plan set
- Quarterly, Annual, Draft and Final Reports

Timelines:

1. Project Implementation- April 2021, June 2023
The Permittee will facilitate a Technical Advisory Committee (TAC) composed of technical staff from the California Department of Fish and Wildlife (CDFW) and

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NOAA Restoration Center (NOAA RC), MKWC, Stillwater Sciences, US Forest Service, and other stakeholders to guide technical review and decision criteria for each step of the design process. Four TAC meetings to be held at key project milestones



2. Site Characterization/Geologic Technical Report- April 2021, October 2021
The Permittee will compile existing information related to hydrology, water quality (e.g., temperature and dissolved oxygen), fisheries, land ownership, maps, aerial and ground photos, and existing reports.
3. Hydrologic/Hydraulic Analysis- August 2021, December 2021
Complete hydrologic analysis for the project area, including a review of existing and historical nearby gaging stations, FEMA Flood Insurance Studies, and USGS Streamstats. The hydrologic analysis will complete flow duration and flow frequency analyses using regional regression equations and historical flow records
4. Design Meetings- September 2021, September 2022
Present investigations from the site characterizations, select the preferred project design for development to the preliminary (30%) level.
5. 30% Conceptual Design- September 2021, January 2022
Design alternatives will be developed to the 30 percent level, including schematic concept plan views
6. 65% Plan Set and Draft Basis of Design Report- February 2022, August 2022.
65 percent plans and a draft Basis of Design Report of the preferred alternative design. including a plan view, all proposed features, grading plan, cross sections, profiles along construction alignments, typical construction detail drawings The 65 percent design will be advanced to the 90 percent level to make it fully construction-ready with all necessary details and specifications.
7. 90% Plan Set, Construction Specification/Costs, Draft Basis of Design Report- September 2022, November 2022

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8. Final Design/Construction Ready Completed Plan Set- December 2022, April 2023
9. Draft Final Report- April 2023
10. Final Report- May 2023

Seiad Creek at Panther Gulch: Coho Habitat Enhancement Design Project (#1723432) Project Location Map

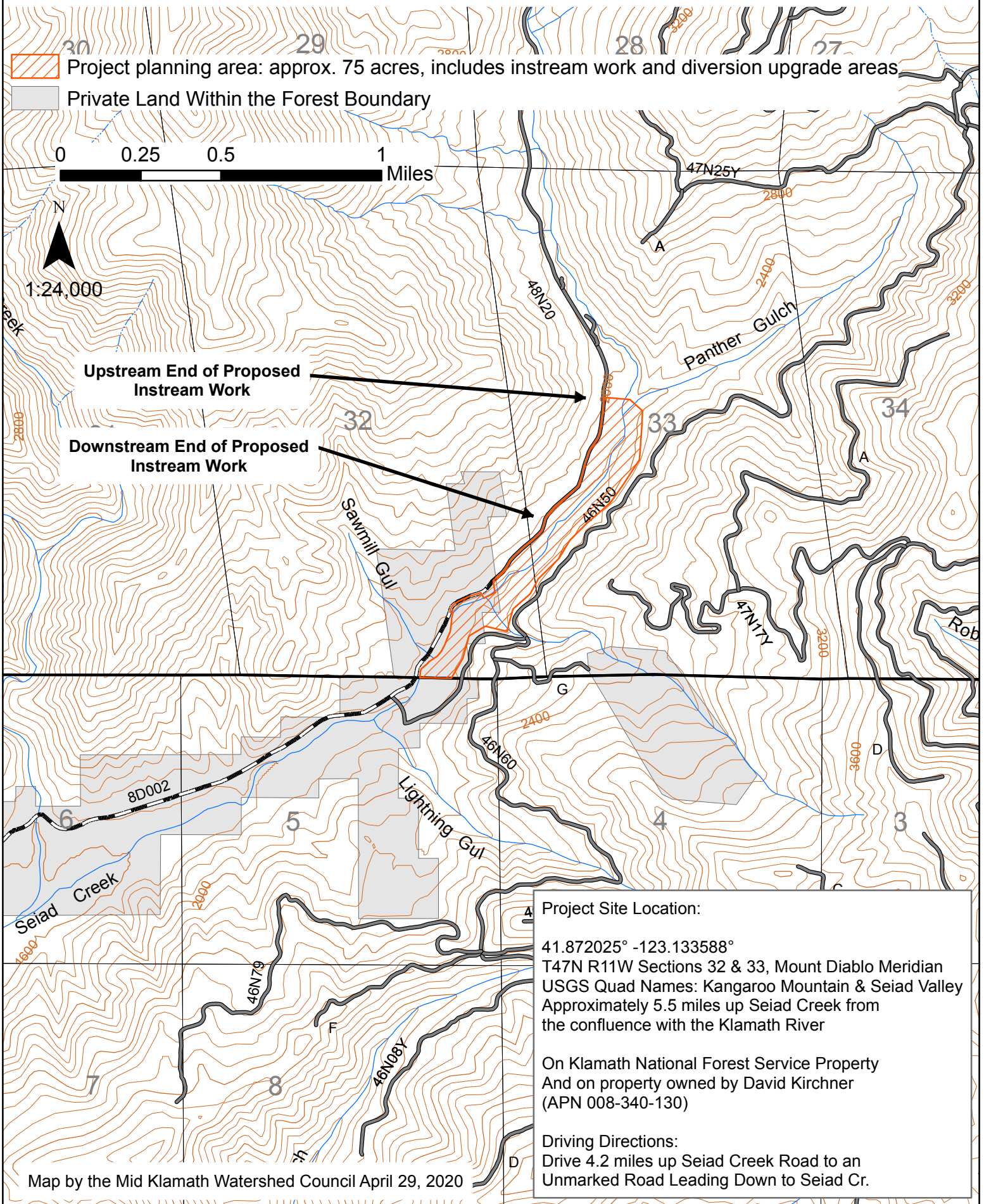
 Project planning area: approx. 75 acres, includes instream work and diversion upgrade areas
 Private Land Within the Forest Boundary

0 0.25 0.5 1 Miles

N
1:24,000

Upstream End of Proposed
Instream Work

Downstream End of Proposed
Instream Work



Project Site Location:

41.872025° -123.133588°
T47N R11W Sections 32 & 33, Mount Diablo Meridian
USGS Quad Names: Kangaroo Mountain & Seiad Valley
Approximately 5.5 miles up Seiad Creek from
the confluence with the Klamath River

On Klamath National Forest Service Property
And on property owned by David Kirchner
(APN 008-340-130)



Driving Directions:

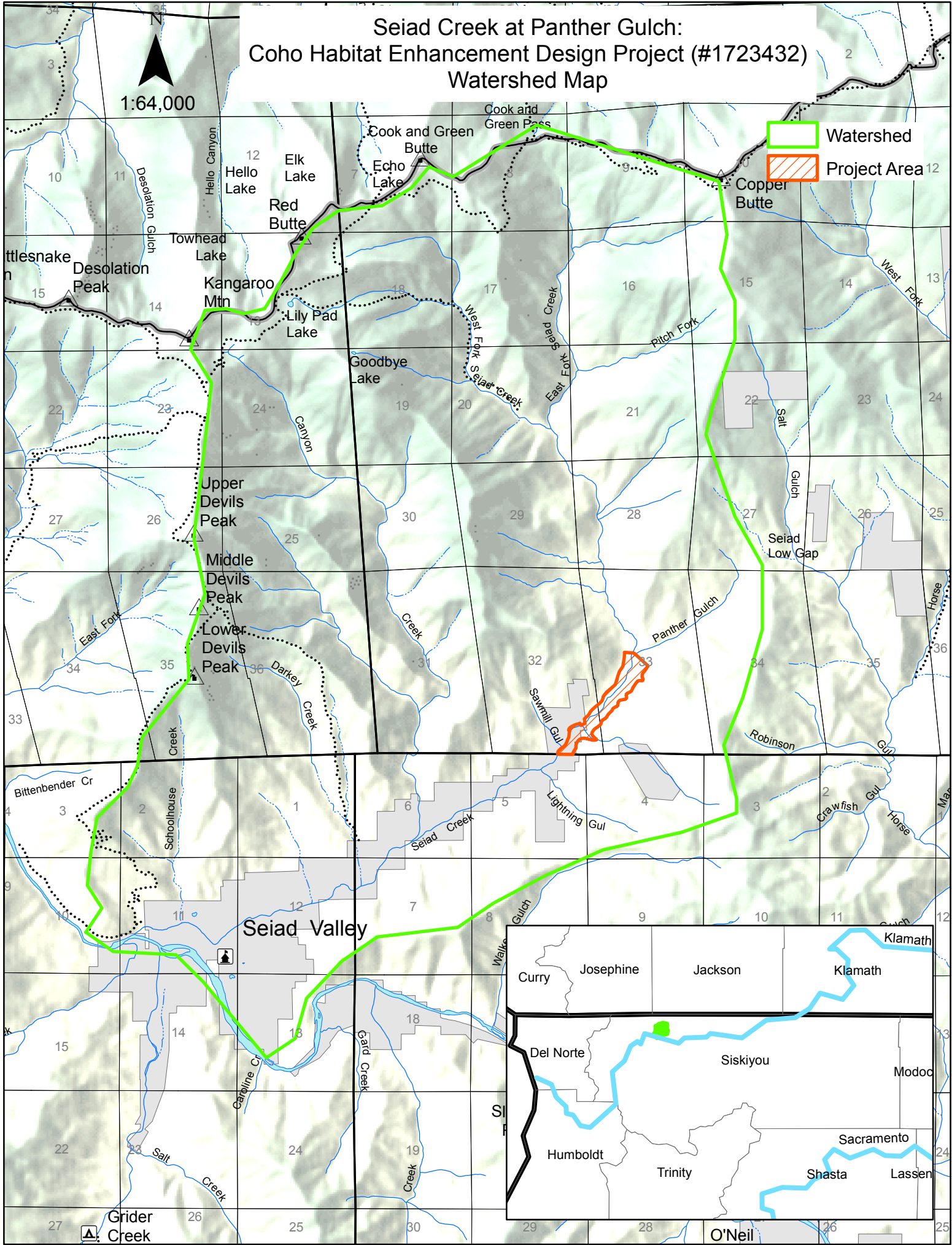
Drive 4.2 miles up Seiad Creek Road to an
Unmarked Road Leading Down to Seiad Cr.

Seiad Creek at Panther Gulch: Coho Habitat Enhancement Design Project (#1723432) Watershed Map

1:64,000



-  Watershed
-  Project Area



Grider Creek



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Seiad Valley (4112372) OR Grider Valley (4112362) OR Huckleberry Mtn. (4112363) OR Slater Butte (4112373) OR Figurehead Mtn. (4112383) OR Kangaroo Mtn. (4112382) OR Dutch Creek (4112381) OR Hamburg (4112371) OR Scott Bar (4112361))

Possible species within the Seiad Valley and surrounding quads for 1723432 - Seiad Creek at Panther Gulch: Coho Habitat Enhancement Design Project, Siskiyou County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Abies amabilis</i> Pacific silver fir	PGPIN01010	None	None	G5?	S2	2B.3
<i>Accipiter gentilis</i> northern goshawk	ABNKC12060	None	None	G5	S3	SSC
<i>Ancotrema voyanum</i> hooded lancetooth	IMGAS36130	None	None	G1G2	S1S2	
<i>Anemone multifida var. multifida</i> cut-leaf anemone	PDRAN040E6	None	None	G5T5	S1S2	2B.2
<i>Arabis aculeolata</i> Waldo rockcress	PDBRA06010	None	None	G4	S2	2B.2
<i>Ardea herodias</i> great blue heron	ABNGA04010	None	None	G5	S4	
<i>Ascaphus truei</i> Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
<i>Atractelmis wawona</i> Wawona riffle beetle	IICOL58010	None	None	G3	S1S2	
<i>Boechea koehleri</i> Koehler's stipitate rockcress	PDBRA060Z0	None	None	G3G4	S3	1B.3
<i>Boechea rollei</i> Rolle's rockcress	PDBRA064H0	None	None	G1	S1	1B.1
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus franklini</i> Franklin's bumble bee	IIHYM24010	Proposed Endangered	Candidate Endangered	G1	S1	
<i>Bombus morrisoni</i> Morrison bumble bee	IIHYM24460	None	None	G4G5	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
<i>Cottus klamathensis polyporus</i> Lower Klamath marbled sculpin	AFC4E02153	None	None	G4T2T4	S2S4	SSC
<i>Draba carnosula</i> Mt. Eddy draba	PDBRA112T0	None	None	G2	S2	1B.3
<i>Entosphenus similis</i> Klamath River lamprey	AFBAA02140	None	None	G3G4Q	S3	SSC



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



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Epilobium siskiyouense</i> Siskiyou fireweed	PDONA06100	None	None	G3	S3	1B.3
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Eriogonum diclinum</i> Jaynes Canyon buckwheat	PDPGN081S0	None	None	G3	S3	2B.3
<i>Eriogonum hirtellum</i> Klamath Mountain buckwheat	PDPGN082T0	None	None	G2G3	S2S3	1B.3
<i>Erythronium hendersonii</i> Henderson's fawn lily	PMLIL0U070	None	None	G4	S2	2B.3
<i>Falco peregrinus anatum</i> American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
<i>Gonidea angulata</i> western ridged mussel	IMBIV19010	None	None	G3	S1S2	
<i>Haliaeetus leucocephalus</i> bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
<i>Hemieva ranunculifolia</i> buttercup-leaf suksdorfia	PDSAX0W010	None	None	G5	S2	2B.2
<i>Juncus dudleyi</i> Dudley's rush	PMJUN01390	None	None	G5	S1	2B.3
<i>Lanx alta</i> highcap lanx	IMGASL7010	None	None	G2G3	S1S2	
<i>Lasionycteris noctivagans</i> silver-haired bat	AMACC02010	None	None	G5	S3S4	
<i>Lewisia cotyledon var. heckneri</i> Heckner's lewisia	PDPOR04052	None	None	G4T3	S3	1B.2
<i>Margaritifera falcata</i> western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
<i>Martes caurina humboldtensis</i> Humboldt marten	AMAJF01012	Proposed Threatened	Endangered	G5T1	S1	SSC
<i>Mitellastra caulescens</i> leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
<i>Monadenia callipeplus</i> downy sideband	IMGASC7110	None	None	G1?	S1S2	
<i>Oncorhynchus mykiss irideus pop. 36</i> summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
<i>Pandion haliaetus</i> osprey	ABNKC01010	None	None	G5	S4	WL
<i>Pekania pennanti</i> fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
<i>Piperia candida</i> white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2



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



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Plethodon asupak</i> Scott Bar salamander	AAAAD12560	None	Threatened	G1G2	S1S2	
<i>Plethodon elongatus</i> Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
<i>Plethodon stormi</i> Siskiyou Mountains salamander	AAAAD12180	None	Threatened	G3?	S1S2	
<i>Ptilidium californicum</i> Pacific fuzzwort	NBHEP2U010	None	None	G4G5	S3S4	4.3
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Rana cascadae</i> Cascades frog	AAABH01060	None	Candidate Endangered	G3G4	S3	SSC
<i>Rhyacotriton variegatus</i> southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
<i>Saussurea americana</i> American saw-wort	PDAST8B020	None	None	G5	S1	2B.2
<i>Sedum oblancoletum</i> Applegate stonecrop	PDCRA0A0T0	None	None	G3	S1	1B.1
<i>Smilax jamesii</i> English Peak greenbrier	PMSMI010D0	None	None	G3G4	S3S4	4.2
<i>Stachys pilosa</i> hairy marsh hedge-nettle	PDLAM1X1A0	None	None	G5	S3	2B.3
<i>Thermopsis robusta</i> robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
<i>Trilobopsis tehamana</i> Tehama chaparral	IMGASA2040	None	None	G2	S1	
<i>Triteleia hendersonii</i> Henderson's triteleia	PMLIL21070	None	None	G4	S1	2B.2
<i>Viola howellii</i> Howell's violet	PDVIO040U0	None	None	G4	S1	2B.2

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