Sebbas Creek Off Channel Habitat Planning Project | 2020

Introduction:

The proposed project area is one of the few places identified within the Sebbas watershed that exhibits potential high quality aquatic off-channel habitat adjacent to a coho bearing reach. Currently, salmonid access from Sebbas Creek into the oxbow channel is likely limited to the highest of high flow flood events, which is supported by the thick vegetation within the entrance and exit of the oxbow which does not show any signs of recent flooding. Regionally, recently accomplished projects similar in nature to this one have demonstrated benefits to coho salmon.

The goal of this project is to determine the most suitable options to expand or enhance the existing habitat within this stream reach of Sebbas Creek based on a detailed biologic and geomorphic characterization of the project area. The proposed project will develop a 100% design and include a monitoring plan that would cover both biologic response as well as revegetation success. The plans will be ready for implementation upon completion of this project that when implemented, will expand the available habitat for juvenile coho salmon in the area. Implementation of the design plans will accomplish Recovery Plan for Southern Oregon/Northern California Coast Coho Salmon (NOAA Final Sept 2014) SONCC task SFER.2.2.3.2: Identify potential sites to create refugia habitats.

The Eel River Watershed Improvement Group (Permitee) shall not proceed 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, Part VI.* (https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objective(s):

Design off-channel habitat for high flow refugia and winter rearing at an abandoned oxbow site on Sebbas Creek based on detailed characterization of existing biologic and geomorphic conditions. Determine site suitability, potential locations, and configuration for LWD cover structures to be added for additional habitat complexity. Complete 100% designs including construction methods, equipment access points, a detailed biological monitoring plan and cost estimates.

Project Description:

Location:

The site is located west of Piercy, in Mendocino County, CA at Township 05 South, Range 03 East, Section 31. The abandoned oxbow is on Sebbas Creek, tributary to Indian Creek, tributary to the South Fork Eel River in remote timberlands owned by Lost Coast Forestlands (LCF). The project site is on the left bank of Sebbas Creek approximately one (1) mile from its confluence with Indian Creek. Sebbas Creek confluences with Indian Creek approximately seven

(7) miles from the Indian/SF Eel confluence. The center of the Project coordinates are: 39.97587 North latitude and -123.88725 West longitude.

Project Set Up:

Permittee Personnel:
Executive Director: Tasks 1 & 6. Will draft invoices and progress reports, track project progress, communicate with partners, secure agreements, review/verify subcontractor invoicing, write reports and magage the grant.

Project Manager: Tasks 1, 2, & 6. Will oversee fieldwork and visit site as necessary. Will provide support to Executive Director.

Subcontractor Pacific Watershed Associates (PWA) Personnel:
Principal Geologist: Tasks 1, 2, 3, 4, 5 & 6. Provide technical expertise in developing design options, geologic and geomorphic investigations, and draft and final work plan review, editing and guidance for project scientists and engineer. Also in charge of final report technical editing and review.

Senior Engineer: Tasks 1, 2, 3, 4 & 5. Lead scientist for conducting site characterization, consideration of design options, hydrologic and hydraulic analyses, development of a grading plan, design of in-stream structures for geomorphic and habitat purposes, development of a comprehensive erosion control and revegetation plan, and developing a cost estimate that includes all plans and specifications for construction of the project.

Staff Engineer: Tasks 1, 2, 3, 4, & 5. Support for Senior Engineer for conducting site characterization, consideration of design options, hydrologic and hydraulic analyses, development of a grading plan, design of in-stream structures for geomorphic and habitat purposes, development of a comprehensive erosion control and revegetation plan, and developing a cost estimate that includes all plans and specifications for construction of the project.

Associate Scientist (Project Geologist): Tasks 1, 2, 3, & 4. In overall responsible charge of geologic and geomorphic characterization, Wolman pebble counts, well installations and characterization of subsurface hydrogeological conditions with the Project Engineer. Provides input on complex geologic and geomorphic issues. Provides input on instream structures for geomorphic and habitat purposes. Collaborates with the Senior Engineer on reporting. Ensures compliance with Geologist and Geophysicist Act (California Business and Professions Code 7800).

Watershed Scientist: Task 2. Provides project support by working with the engineer and geologist to collect field data, conduct field investigations and process data.

Aquatic Biologist: Tasks 1, 2, 3, 4, & 5. Responsible for the instream habitat evaluations, identifying current limiting factors, and surveys for species identification and validation within the project study reach. Provides species specific age biological input for the project design and instream habitat improvement structures working with the Project Engineers and Geologists. Develops the fish habitat and utilization monitoring study design for the final design and implementation of the final design.

Botanical Ecologist/Botanist: Tasks 2, & 5. Responsible for conducting botanical surveys to identify rare plants and to classify the riparian vegetation community within the project area and any areas proposed to be disturbed in the final design. Develops arare plant survey report, a riparian revegetation plan, and a post - implementation revegetation and monitoring plan for the final design.

GIS/CAD Drafting Staff: Tasks 2, 3, 4 & 5. Provides project support through technical drafting of design plans, development of GIS/CAD maps and products, and produces field maps in support of site characterization.

Clerical Staff: All Tasks. Provides clerical support to Subcontractor PWA.

Materials:

Piezometer/monitoring well materials will include one or two inch diameter blank and slotted poly-vinyl- chloride well casing, clean kiln-dried #30 sand suitable for use in a potable water well, non-shrinking grout for an annular seal at the top of the well, 1½ polycarbonate core barrel sleeves, and well caps. Local organic materials will be used to camouflage the casings to reduce the chance of tampering and improve the site aesthetics.

Field supplies procured by PWA subcontractor will include t-posts with graduated markings or standard staff plates, batteries for time lapse cameras, total station rental, rental of pressure transducers and data loggers for hydrologic and hydraulic analysis, paper towels to clean the instruments, 100 meter tape, stadia rod, underwater camera, waders/wading boots/dry suit/mask and snorkel, flagging, and stakes. Office and field supplies will be used to complete the project include: photographic supplies, field maps, mylar overlays for field maps, flagging, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, email, and postage. Mapping and design drawings.

Permittee Printing Cost & Office Supplies: Necesary to print out design plans and BOD report, necessary for reporting activties.

Permittee Mileage: For travel to and from project site, will adhere to California State Reimbursement Rates.

Tasks & Deliverables:

Task 1: Meetings and Project Management:

Deliverables: Subcontractor Agreements, Access Agreements, Invoices, Invoice Progress Reports and Meeting Notes.
Start Date: 04/15/2021
End Date: 03/31/2024

Subtask 1.1 Project Management:

Description of Activities: Project management includes grant management, contracting oversight and administration, scheduling, landowner and agency communication, landowner access agreements, subcontracting, ongoing coordination with the various stakeholders and members of the project design team, preparing invoices and progress reports, tracking project costs and accomplishments and assisting with final report preparation. All reporting and billing will be pursuant to grant and regulatory guidelines.

Subtask 1.2 Project Scoping Meeting:

Description of Activities: A project meeting will be held with a technical review team composed of LCF, PWA, CDFW, Permittee and other potential stakeholders. This meeting will occur after completion of the project survey and initiation of water level data monitoring within the project area. The meeting is designed to help identify or refine project objectives and constraints, discuss different potential design options to be considered, and agree on the approach that should be used in developing the 30% design.

Subtask 1.3 30% Design Review Meeting:

Description of Activities: A project meeting will be held with the technical review team and other potential stakeholders to review the conceptual level design developed by the project team along with the findings from the site characterizations and supporting analysis.

Subtask 1.4 Additional Meetings:

Description of Activities: It is assumed that there will be up to two additional in-person meetings necessary between 30% and 100% design iteration. These meetings will review the 65% and 90% designs with the technical review team. These meetings will include other stakeholders that have provided input throughout the design process.

Task 2: Site Characterizations:

Deliverables: Draft topographic base map of the project area with 1' contours. Draft geologic report to be incorporated into the basis of design report including: subsurface geologic and hydrogeological conditions, a geomorphic map of the project area, water-level monitoring results and their constraints on the project design, an assessment of aquatic biological conditions to inform engineered designs, a plant and wetland survey, to be incorporated into the BOD to provide avoidance measures and monitoring plan. An analysis of frequency and duration of various creek stages under expected hydrologic and climactic conditions to be included in the basis of design report.
Start Date: 06/15/2021
End Date: 11/15/2022

Subtask 2.1 Subsurface investigation:

Description of Activities: To support engineering design, a limited number (up to six) of hand-augured or gouge core borings will be completed to characterize the geology and hydrogeological conditions along the preferred off-channel pond alignment(s) and/or between the existing channel and mainstem of Sebbas Creek. Where appropriate, piezometers and/or monitoring wells will be installed in the test pits and boreholes so that the groundwater levels adjacent to the existing channel and potential off-channel pond(s) can be monitored and evaluated for their hydrogeological connectivity to the mainstem channel and to determine summertime water table elevations. For the purposes of this study, a minimum of four shallow (4-10 ft. BGS) monitoring wells will be installed where appropriate and as field conditions dictate.

Subtask 2.2 Topographic Surveying and Geomorphic Mapping:

Description of Activities: A topographic survey of the project site will be conducted. The survey will capture topography of the ground within the immediate vicinity of the potential off-channel habitat proximal to and within the abandoned oxbow. The survey will also map potential construction access routes and map large trees (>18in DBH) within the potential work area. During the surveying task, field mapping will be used to characterize existing geomorphic conditions within the project study area. This will include identification of stream morphology channel features in Sebbas Creek as well as any small channels feeding into the oxbow. Mapping will also include the adjacent hillside where appropriate and informative. Finally, Wolman pebble counts will be employed in two locations on the mainstem of Sebbas Creek to characterize the bed substrate. Assumed horizontal and vertical datums will be used. Control points will be established in the project area for use during the future implementation phase of the project. The topographic survey data will be reduced and a base map and surface (DTM) will be produced in AutoCAD Civil 3D. The base map will

have a one-foot contour interval in topographically mapped areas. Line work will be used to denote mapped areas.

Subtask 2.3 Water Level and Groundwater Monitoring:

Description of Activities: Water level fluctuations will be monitored in Sebbas Creek concurrent with groundwater well monitoring for at least one full 12-month season. Water level measurements will be collected with calibrated pressure transducers and data loggers. In wells where water levels will not be measured with pressure transducers, PWA technical staff will manually measure water levels such that the water levels in each well can be correlated to each other during the rising and falling limbs of the hydrograph during varying discharge events throughout the first year of the project when physically possible. Calibration measurements will occur on average at least quarterly, and more frequently as necessary to capture specific storm events.

Subtask 2.4 Frequency and Duration Analysis of Water Levels:

Description of Activities: Collected water levels at the mouth of the oxbow will be correlated with water levels at proximal USGS stream gauges. Based on these observations we will develop a unit hydrograph specific to the Sebbas Creek catchment. Developing this relationship will allow us to use the historical long-term stage record to predict the stage at the mouth of the oxbow. With this information, estimated frequency and duration curves will be constructed for water levels at the mouth of the channel. These will be used to evaluate inundation levels into the oxbow on a seasonal basis and evaluate the hydrologic stage- discharge relationship between the project oxbow channel and Sebbas Creek. Initial analysis will be conducted by detrending the available LiDAR dataset within one quarter mile of the project site. This will provide a first cut bathtub model of inundation and identify other proximal off-channel habitat enhancement locations proximal to the project site. Within and adjacent to the project area, hydraulic and/or inundation modeling will be completed using HECRAS or compatible modeling software. This analysis will help guide the design process.

Subtask 2.5 Assessment of Existing Aquatic Habitat Conditions:

Description of Activities: Along with the geomorphic mapping, a biologic assessment will be conducted by PWA to evaluate the existing aquatic habitat proximal to the project area. The team will conduct a level II habitat inventory, spawner surveys, and snorkel surveys to determine the use levels and habitat needs within the project area and to develop an aquatic biology monitoring plan. Additionally, the PWA NR Specialists will conduct plant and wetland surveys to develop avoidance measures and monitoring plans associated with the final design.

Task 3 Preliminary Design (30% Submittal):

Deliverables: Topographic base map site with 1-foot contours, Preliminary (30%) Design Drawings and Construction Cost Estimate Plans, A Basis of Design report to accompany the proposed engineering designs.
Start Date: 11/15/2022
End Date: 06/15/2023

Subtask 3.1 Consideration of Design Options:

Description of Activities: Following site investigations and characterizations, potential design options will be considered. Consideration will be given to various factors, including frequency, timing, and ease of access into and out of the channel for juvenile salmonids, impacts to existing habitat, geomorphic stability, self-sustainability, landowner constraints, environmental disturbance, and overall project cost and complexity. Considered options will be presented to the stakeholders, along with a summary of findings from the site characterization work performed in Task 2. Through stakeholder input and review, a preferred design option will be selected. If upon completion of the site investigations and characterizations no feasible design alternatives are identified, a recommendation will be made to terminate further design work.

Subtask 3.2 Design Development and Analysis:

Description of Activities: Preliminary engineering designs (30%) will be developed for the selected design option. Design development will include establishing the general location of any activities and project elements, a summary of the alternatives analysis, preliminary design elevations for the pond(s) and or channel(s), preliminary design of wood structures and anchoring techniques in the channel(s) and or pond(s)/alcove(s), an analysis of identified project constraints, and a general grading and excavation plan for proposed improvements.

Subtask 3.3 Schematic Drawings:

Description of Activities: Schematic drawings will be developed for the selected design and shall indicate the proposed alignment and project footprint in plan. Typical cross sections and a profile will also be developed, where applicable. The drawings will be of sufficient detail to adequately convey the design concept.

A preliminary level estimate of construction cost will be developed. The estimate will include a 25% contingency to account for uncertainties associated with the project due to the preliminary stage of design and price volatility.

Subtask 3.4 Draft Basis of Design Memorandum:

Description of Activities: A Basis of Design Memorandum (BDM) will be prepared that summarizes activities and findings to-date, project goals, objectives and constraints, design options considered, justification for the selected design option, and a description of the proposed project. Supporting data and analysis will be provided as attachments.

Task 4 Intermediate Design (65% Submittal):

Deliverables: Intermediate (65%) Plan Set and Construction Cost Estimate. Cost estimate in electronic PDF format and MS Excel spreadsheet compatible format. Plans in electronic PDF format. Draft (65%) PS&E package. Cost estimate in electronic PDF format and MS Excel spreadsheet compatible format. Plans in electronic PDF format.
Start Date: 06/15/2023
End Date: 09/15/2023

Description of Activities: Following receipt of review comments on the preliminary design submittal (30%), the designs will be forwarded to the 65% completion phase.

Subtask 4.1 Design Development:

Description of Activities: The project design will be further developed and refined to a 65% level of completion. Input from the stakeholders will be incorporated into development of the design, as appropriate. Design development includes detailed plan views and profiles of any improvements, finalizing project layout and grading, developing project details, and performing additional 2D hydrologic/hydraulic analysis, if needed. Other design development activities may include developing large wood placement and anchoring details and construction access grading.

Subtask 4.2 Prepare 65% Design Plans:

Description of Activities: The 65% plan sets will be prepared in AutoCAD Civil 3D and provided in 11 x 17 format in both electronic and hard copy. The preliminary plan set will include: Title Sheet; General and Technical Notes; Existing and proposed condition plan views showing limits of disturbance, new construction, and limits of proposed grading; Profiles along construction alignment: Typical and Detail Drawings, Water Management Plan, Erosion and Sediment Control Plan, Sequence of Construction. An intermediate level estimate of construction cost will be developed. The estimate will include a 20% contingency to account for unforeseen conditions encountered during construction and cost uncertainties.

Subtask 4.3 Prepare Final Basis of Design Report:

Description of Activities: The draft Basis of Design Memorandum (from Task 3.4) will be updated based on comments and changes made to the preliminary design submittal.

Task 5 Develop Draft (90%) and Final (100%) Design Submittal:

Description of Activities: Following review and receipt of written and verbal comments on the 65% submittal, the plan set, specifications, and engineers cost estimate (PS&E) will be incorporated into the draft (90%) plans and then again for the final (100%) submittal. These plans will include replanting and monitoring plans associated with the design. Minor changes to the design will be made based on stakeholder comments on the 65% submittal. The design drawings will include: Title sheet; Symbol and abbreviation sheet; Existing and proposed condition plan view showing limits of proposed grading; Typical proposed cross sections with dimensions; Detailed grading cross sections; Construction details and material specifications; Construction access plan and sequence of construction; Water management plan; Erosion and sediment control plan Technical specifications as notes; The plans will be printed full size (11x17) sheets and provided in PDF format.

Deliverables: Draft and Final Design Report in electronic PDF format and two (2) hardcopies.
Start Date: 09/15/2023
End Date: 02/15/2024

Task 6 Project Reporting:

Description of Activities: PWA and Permittee staff will write and deliver yearly annual reports, and a draft and final report.

Deliverables: Annual reports, draft final report in electronic format, final report in electronic and hard copy formats.
Start Date: 03/01/2022
End Date: 03/31/2024

Additional Requirements:

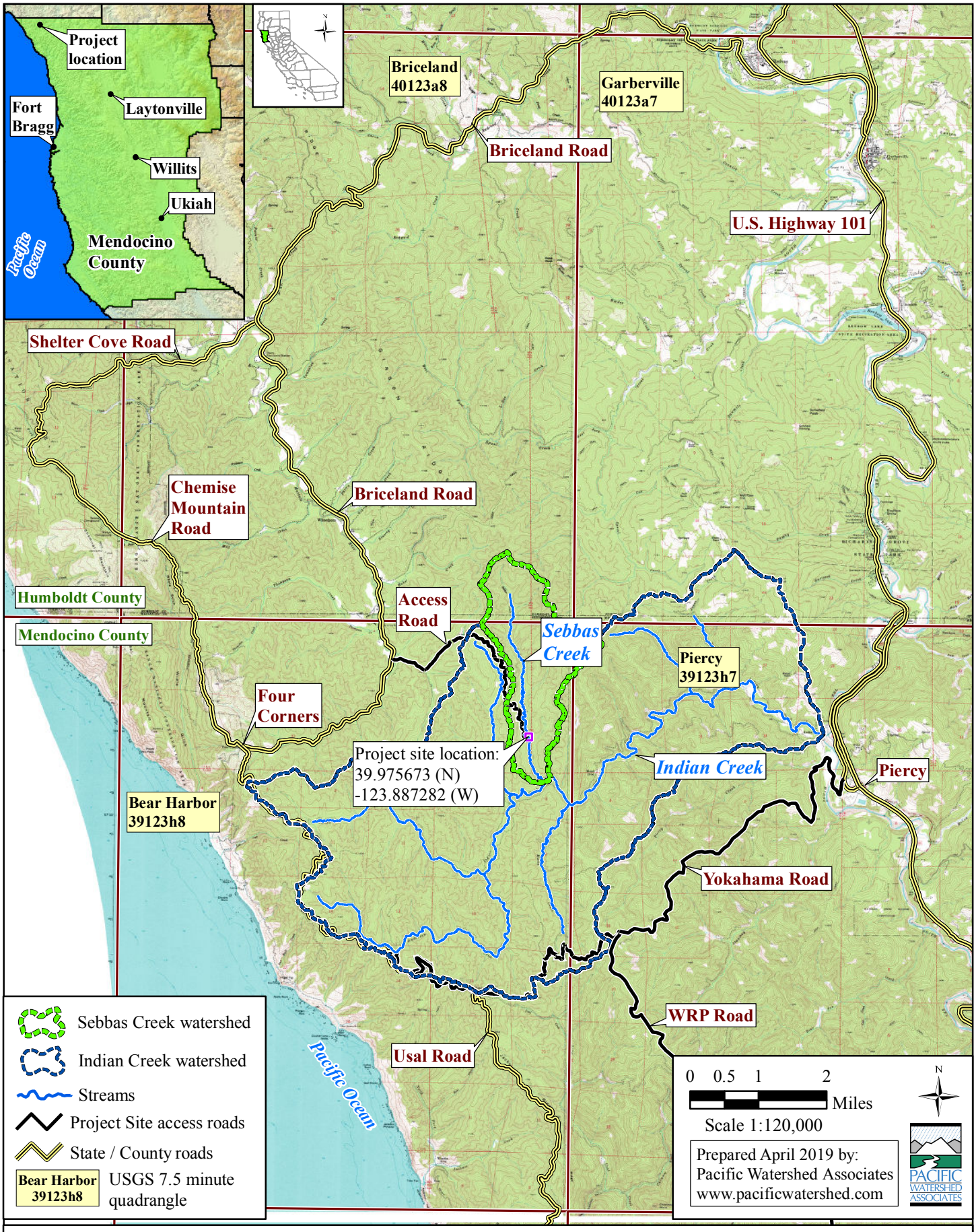
The Permitee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the United States Army Corp of Engineers (USACE) Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife (CDFW). No equipment maintenance will be performed within or near the stream channel where pollutants (such as petroleum products) from the equipment may enter the channel via rainfall or runoff. Appropriate spill containment devices (e.g., oil

absorbent pads, tarpaulins) will be used when refueling equipment. All equipment will be removed from the streambed and flood plain areas at the end of each workday.

All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out of the work area. All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW *Aquatic Invasive Species Decontamination Protocol*.

During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I and Volume II.



Map 1. Project location topographic map for the Sebbas Creek Off-Channel Design Project, Mendocino County, California. Grantee: Eel River Watershed Improvement Group

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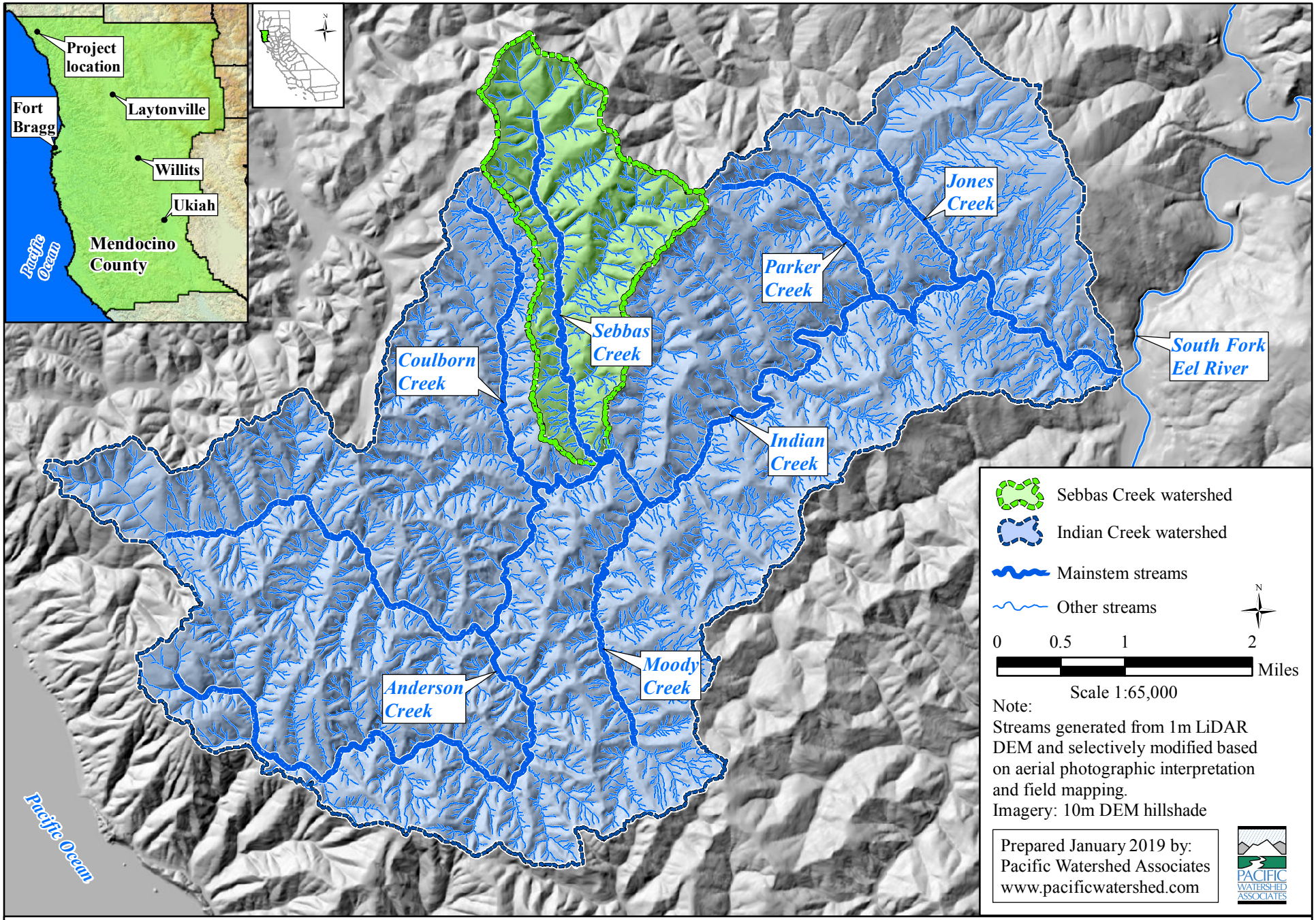

Map 2. Watershed map for the Sebbas Creek Off-Channel Design Project, Mendocino County, California.
Grantee: Eel River Watershed Improvement Group

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Bear Harbor (3912388) OR Mistake Point (3912378) OR Shelter Cove (4012411) OR Briceland (4012318) OR Garberville (4012317) OR Piercy (3912387) OR Hales Grove (3912377))

Possible species within the Bear Harbor and surrounding quads for 1723410 - Sebbas Creek Off Channel Habitat Planning Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eumetopias jubatus Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Hesperocyparis pygmaea pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
Horkelia marinensis Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Thermopsis robusta	PDFAB3Z0D0	None	None	G2	S2	1B.2
robust false lupine						
Usnea longissima	NLLEC5P420	None	None	G4	S4	4.2
Methuselah's beard lichen						

Record Count: 42