

Lindsay Creek Off-Channel Coho Habitat Improvement Project (Project ID: 1727892)

2022

Introduction:

The Pacific Coast Fish, Wildlife and Wetlands Restoration Association will implement the Lindsay Creek Off-Channel Coho Habitat Improvement Project. This project will reconfigure a mostly abandoned oxbow channel along the mainstem of Lindsay Creek to allow for more frequent and longer duration of high flow connectivity to the main channel. This project will also connect more extensive upland floodplain areas to the mainstem via the reconfigured oxbow channel. This project is expected to benefit coho salmon in arguably the most important watershed for coho recovery in the Mad River system.

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(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual*.

Does the project involve the construction of beaver analogs?

Yes or No

Is the project located in a tidally influenced [California coastal zone](#)?

Yes or No

Objectives:

The goal of this project is to make improvements to this off-channel habitat area for coho salmon within and alongside Lindsay Creek. The goal is to physically reconfigure a mostly abandoned oxbow to allow for more frequent and longer duration connectivity between the oxbow and mainstem channel during winter flow events. Habitat features composed of woody debris will be constructed throughout the project oxbow and in Lindsay Creek. The limbs of the oxbow will be modified to allow for a greater area of flooding and to ensure fish passage in and out of the oxbow. This project represents a relatively straightforward opportunity to improve salmonid habitat within the basin.

This project is necessary because various anthropogenic disturbances have contributed to significantly reducing the coho salmon populations in the Lindsay Creek watershed. This project, by reconfiguring the oxbow to allow for more frequent and longer duration flooding, begins to address one of the most obvious and damaging historic disturbances affecting salmonids; disconnection between the mainstem channel and its floodplain. Currently the mainstem of Lindsay Creek exhibits steep channel banks and shows evidence of manual straightening

in the form of several localized abandoned oxbows that indicate the channel used to be significantly more sinuous.

Project Description:

Location:

This project will include a segment of Lindsay Creek that straddles the boundary of forestlands owned and managed by Green Diamond Resource Company (GDRC) and the van Eck Forest Foundation (vEFF). The proposed off-channel segment is located approximately 3 miles upstream from the Lindsay Creek/Mad River confluence and just upstream from van Eck Creek intersection with Lindsay Creek.. Project coordinates are: 40.947920000000003 North, 124.041269 West.

Project Set Up:

PCFWWRA Project Manager (PM): The Project Manager oversees all aspects of the project. This includes coordination and problem solving with agencies, landowners, subcontractors and informal consultation with CA Native American Tribes. Permits, landowner agreements and grant agreements are the Manager's responsibility to make sure they are in place and that they are followed. The PM regularly reviews the progress of the project and completed work with respect to the approved budget, as well as working regularly with technical consultants to make sure it is being done to the required standards. Evaluating information developed during the project and identifying realistic permitting strategies for implementation will be a task for the Project Manager. The PM will also expend time on tasks for compliance with requirements contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project period. The PM is responsible for the review, editing, and submission of all invoices and reporting on projects. The Manager's time is split between the field, meetings, and the office.

Plant Ecologist: The Plant Ecologist performs botanical work. Tasks include performing a comprehensive floristic survey of the project site; inventorying and mapping any special status plants or sensitive natural communities found; photographing plants and habitats; conducting a jurisdictional wetland delineation; finalizing revegetation plan and invasive species management plan; and providing other supporting materials as needed for permit acquisition. The Plant Ecologist's time is split between the field and office.

GIS Specialist: Tasks include supporting field collection of botanical data and analyzing geospatial data. The GIS Specialist will prepare special status plants and natural communities maps, wetland maps, and other maps needed for reporting and permitting.

Field Support Labor: The laborer will be responsible for helping the scientific specialists in all field tasks including rare plant surveys for CEQA, wetland delineations and characterizations for the 401/404 permit applications.

ENGINEERING AND GEOLOGIC SUBCONTRACTOR PACIFIC WATERSHED ASSOCIATES, INC. (PWA), Personnel will support PCFWWRA with heavy equipment contractor selection, project implementation, construction oversight/management & will perform the required pre/post-construction monitoring and as-built topographic surveys for the replacement of culverts and channel reconstruction and restoration activities. In addition, PWA will provide PCFWWRA with assistance in bid document development technical engineering oversight of contractor activities during construction, evaluation and selection of construction materials, & conduct summary, annual and final reporting pursuant to FRGP contract deliverables.

PWA Senior Scientist (Paleontologist): Conducts pre-construction paleontological survey for CEQA.

PWA NR Specialist (Fisheries Biologist/Aquatic Ecologist): Conducts water quality compliance monitoring before, during and after all construction and dewatering activities; conducts CEQA pre-construction presence/absence survey for species of special concern, including foothill yellow-legged frogs (*Rana boylei*) and other amphibians; conducts amphibian removal before and during construction; assists with fish removal/relocation for dewatering; conducts lamprey species capture and relocation for ammocoetes during fish removal and as emerging from fine sediments during and after dewatering; conducts the First Winter Observations Summary; conducts functional use surveys for biological utilization for coho, the target species, other salmonids, and lamprey species to include post-construction surveys for flow testing within the range of the design flows, and water quality monitoring during the first and second post construction seasons. Provides weekly water quality monitoring results to the Grant Manager. Provides results from amphibian survey and capture/relocation during construction, lamprey capture and relocation from the dewatering efforts, the first winter observation summary report, post-construction functional use and flow surveys with water quality monitoring results for the final report and the monitoring report. Collects and enters field data into electronic database(s) to include reporting to BIOS, as necessary. Develops reports of field survey results. Reports directly to Project Manager.

PWA Staff Scientists: Will help specialist professionals with all field tasks. These will include staking, surveying, flagging, spoils management, monitoring, and construction management.

PWA GIS/CAD Staff: Provides project support through development of GIS/CAD maps and products, database interfaces, and GPS data organization and

analysis. Produces field maps in support of construction, monitoring and required final report maps.

ARCHEOLOGICAL CEQA SUBCONTRACTOR, WILLIAM RICH AND ASSOCIATES (WRA): This subcontractor will be responsible for performing sensitive cultural resource surveys prior to construction. WILDFILE BIOLOGIST CEQA SUBCONTRACTOR (WBCS):. A qualified biologist will be selected to perform spotted owl, willow flycatcher, and/or any other sensitive bird surveys, if necessary, prior to construction.

FISHERIES BIOLOGIST SUBCONTRACTOR, ROSS TAYLOR & ASSOCIATES (RTA): Principal Investigator & Field Staff are available to assist construction contractors with fisheries & amphibian relocation services associated with fish passage improvement projects or any streamside projects that require relocation of fish prior to dewatering of stream segments. Services include coordination with state & federal fishery agencies, capture & relocation of fish & amphibians, & completion of required state & federal reporting.

PACIFIC FOREST TRUST - VAN ECK FOREST FOUNDATION (vEFF, Landowner/Forester, Match): The vEFF will provide staff to facilitate implementation of the proposed project. The vEFF will be represented by their property manager and their forestry consultant (RPF #2826). The vEFF staff will help identify trees for donation to the project, participate in construction team meetings, assure compliance with their conservation easement, and provide input on any adaptive management decisions as they relate to the construction process. The vEFF will also provide logs and trees to the project. GDRC (Landowner, Match): GDRC will provide logs to the project.

HEAVY EQUIPMENT & LABOR CONTRACTOR: Implementation. The equipment and labor contractor will construct the project. Additionally, the equipment contractor will maintain temporary fish barriers & flow diversion during construction. Personnel categories include excavator, dozer, loader, dump truck, water truck & compactor operators, & laborers. The Heavy Equipment and Labor Contractor will only be considered for the project if they are a State licensed General Engineering Contractor with demonstrated successful experience on projects of a similar nature. The contractor will be determined through a rigorous, competitive selection process after the grant contract is signed.

WIYOT AREA TRIBES: This subcontractor will be providing input on Tribal cultural perspective and concerns throughout the project. The applicant will consult and collaborate with California Native American tribes indigenous to the project area in order to support the development and implementation of the best possible project. Their designated Cultural Resources personnel will act as tribal representatives to review project information, attend a pre-project review meeting and provide for project site visits if needed.

Materials:

Rock armor- Rock rip rap will be used to anchor LWM, for RSP at culvert inlet and outlets, and for creating complexity within the newly installed culverts that drain the oxbow.

Erosion Control Materials Includes straw and seed, geo-textile fabric, wire, and other small hand tools. Straw will be used to provide interim erosion control at areas of ground disturbance. Other materials will help construct silt fences. This is necessary to protect water quality.

Water Diversion Materials Includes flex pipe, water pumps (water quality management), sandbags, sand, plastic sheeting, tape, wire, and other small hand tools. Materials will help construct the water bypass diversion system. This is necessary to protect water quality.

Small Equipment rental Includes chainsaw (for managing LWM), heavy-duty drill (Hole Hawg) with timber bit for drilling through LWM structure logs prior to anchoring, generator and impact driver to cinch down the nuts and washers, and water trailer to manage dirty water at the site.

Log tongs- Log tong excavator attachments will be used to grapple logs and install the large wood features within the project area.

Revegetation Materials - Trees, shrubs, plants, and seed - will be used to re-plant the disturbed project areas to facilitate re-growth of the vegetation community proximal to the proposed project.

Survey gear rental and materials- A total station and associated tools will be used to set and check grading boundaries for the proposed excavation and will also be used to establish baseline post construction geometries for physical monitoring of the project performance. Stakes, spikes, paint, and flagging will be purchased as reference points and markers for grading extents.

Fuel - Gasoline and diesel fuel will be required to run the heavy equipment and to provide transportation to the project site. Procured by subcontractor. Biological survey gear rental includes the rental of waders and wading boots for conducting cold weather flow surveys and water quality sampling; the rental of dry suit, mask and snorkel, and minnow traps for conducting the functional use biological surveys per the FRGP Guidelines for this project type; and rite-in-the-rain paper for recording data and making field notes on observations.

Water quality sampling equipment rental and related materials Includes the rental of hand-held water quality meters designed for field applications that conform to and utilize a USEPA-approved algorithm/method for the sample readings. Water quality monitoring is required to collect base-line data, monitor water quality

during dewatering and pre-construction activities, to document water quality post-construction and during re-watering of the construction site once natural flows are re-established, and to monitor water quality during habitat feature construction and all other in-water work. Water quality sampling for the required first and second post-construction seasons monitoring requirements as per the FRGP Guidelines. Documentation of water quality parameter results will be recorded on the required Daily Water Quality Sample Form as provided in the FRGP Guidelines. Rite-in-the-rain paper for the required daily water quality sampling form and pencils. Procured by subcontractor. See Water Quality Sampling Plan attached in the Supplemental Documents.

Tasks:

Task 1: Pre-Construction

Pre-construction walkthrough with PCFWWRA, vEFF, GDRC, and all PWA staff who will perform various construction oversight and monitoring requirements. This will be done to re-familiarize the project proponents with the goals of the project and to identify any changes to the existing conditions at the project site.

Pre-construction meeting with the Project Engineer, Project Geologist, Project Biologist, selected subcontractor and landowner representatives to go over their proposed construction sequencing, dewatering plan and to address questions prior to construction.

Task 2: Permit Development

PCFWWRA will submit the necessary permit applications including but not limited to: wetland delineation, CDFW LSAA, ACOE 404 Permit, SWRCB 401 Certification, NOAA BO, Humboldt County grading permit, SWRCB Construction General Permit, associated Storm Water Pollution Prevention Plan (SWPPP), and will submit all data needed to meet CEQA requirements. CDFW's FRGP may include programmatic coverage for the 404 and SWRCB 401 Certification under their Regional General Permit.

The PWA NR Specialists, PWA Senior Scientist, the ARCHEOLOGICAL CEQA SUBCONTRACTOR, and PCFWWRA Botanist will conduct the necessary paleontological, archeological, wildlife, botanical, and wetland surveys. This data will be provided to PCFWWRA to incorporate into the necessary permit applications and CEQA submittal requirements.

Task 2.1: CEQA Surveys

The PCFWWRA Plant Ecologist, PWA NR Specialists, PWA Senior Scientist, Wildlife Biologist CEQA subcontractor, and the Archeological CEQA subcontractor will conduct the necessary botanical, paleontological, archeological, and wildlife surveys. PCFWWRA plant ecologist will conduct pre-project botanical surveys for special status plants and sensitive natural communities following CDFW (2018) protocol. All sensitive botanical resources

found will be inventoried and mapped, and California Native Plant Society (CNPS) field survey forms will be completed. This data will be provided to PCFWWRA to incorporate into the necessary permit applications and CEQA submittal requirements. The Archeologist and Paleontologist will perform all pre-project cultural resource and Paleontological surveys prior to construction. The qualified wildlife biologist subcontractor will perform spotted owl, willow flycatcher, &/or any other sensitive bird surveys, if necessary, prior to construction. This data will be incorporated into the necessary permit applications prepared by PCWWRA for CEQA submittal requirements. The CEQA Specialty subcontractors will, at a minimum, complete the following subtasks within the designated project area: (a) Identify and document significant occurrences of sensitive species/artifacts/fossils. (b) Suggest preliminary significance of these resources. (c) Evaluate potential impacts on these resources resulting from implementation of proposed activities. (d) Present recommendations designed to protect resources and/or identify areas of avoidance. (e) Produce documentation of services and Report of Findings that will be utilized to secure environmental documents and permits required to implement the project.

Task 2.2: Wetland Assessment

PCFWWRA plant ecologist will perform a jurisdictional wetland delineation based on hydrology, vegetation, and soils, following ACOE protocol (Environmental Laboratory 1987). All wetlands found will be mapped and ACOE wetland determination forms will be completed. These data will be used for the ACOE 404 Permit and SWRCB 401 Certification.

Task 2.3: SWRCB General Construction Permit and SWPPP Development

Prepare all required Permit Registration Document (PRDs) and submit them into the SMARTS database as required by CGP Order # 2009-0009-DWQ as amended by Order # 2012-0006 DWQ. These PRDs include: 1) Notice of Intent (NOI), 2) project specific Stormwater Pollution Prevention Plan (SWPPP), 3) Risk Assessment Site Map and 4) Certification. Submittal of the PRDs will be a combined effort between PCFWWRA and PWA. The total area of the grading limits is more than 1 acre, but less than 5 acres, and the intent is for all project construction to occur within a single summer season before the likely onset of winter rains and within a low-risk watershed. Thus, the project may qualify for the EPA's Small Construction Rainfall Erosivity Waiver. However, it is possible that the project will require a full SWPPP.

Task 2.4: Additional Permit Development

PCFWWRA shall complete the necessary vegetation mapping for and prepare and submit the applications for the following permits: CDFW LSAA 1602, ACOE 404 Permit, SWRCB 401 Certification, Humboldt County Grading Permit and Streamside Management Permit. PWA shall provide supporting documentation, such as maps and figures and a grading plan package for these permits, as needed. CDFW's FRGP may include programmatic coverage for the ACOE 404 and SWRCB 401 Certification under their Regional General Permit.

Task 3: Fish and Amphibian Relocation

Ross Taylor and Associates will conduct all pre-project fish and amphibian relocation activities. These include: a pre-construction site walk; stream draw down; fish and amphibian relocation; and reporting. The Principal Investigator will also be available for calls on an as needed basis during construction.

Task 3.1: Survey, Stakeout and Layout

PWA will provide construction layout/stakeout for the project. The stakeout will include establishment of elevation control and placement of stakes to denote the location and stationing of the proposed centerline of the oxbow and left/right streambank configurations, LWD structure locations, and culvert locations. Finally, once grading operations are completed revegetation locations will delineated for plant placement by PCFWWRA staff. Once staking is complete, it will be the obligation of the contractor to maintain the stake locations and to determine locations of non-staked items. PWA Associate Scientist, Staff Engineer, and Staff Scientist will layout the temporary construction access, define the stockpile locations and establish the limits of disturbance for the contractor utilizing flagging and/or paint. Additionally, at this time PWA will work with vEFF staff and their forester to identify, procure, and stage trees to donate to the project for the final construction of habitat elements within the graded area.

Task 4: Construction Oversight

All earthwork; erosion, sediment, and water pollution controls; stream dewatering; instream structure construction; and revegetation will conform to the 100% Design Submittal Plans and Special Provisions detailed in the Lindsay Creek Off-Channel Coho Habitat Improvement Design Project. Any deviations from these Plans and Special Provisions MUST have written approval from the PWA Senior Engineer and PCFWWRA prior to taking place. It is expected that earthen channel reconstruction, culvert installation, off-channel feature construction, site stabilization and revegetation efforts including temporary access for construction will take several weeks. Heavy equipment (e.g., excavator, bull dozer, dump truck(s)) and labor are required to complete these tasks; other materials include large woody debris, rock, plants, and erosion control supplies. All project contractors and personnel will adhere to CDFW invasive species prevention and equipment decontamination protocols. When applicable, all heavy equipment, survey and field gear will abide by the protocols outlined by CDFW (see Supplementary Documents). Moreover, all mitigation measures described in the CDFW Regional General Permit will be followed and all other required permit provisions will be followed by the Contractor. Additionally, all the requirements of the SWRCB General Construction Permit and/or EPA Small Project Rainfall Erosivity Waiver shall be met for construction of the off-channel feature.

PWA Associate Scientist, Senior, Associate, and Staff Engineers, Principal, and Staff Scientists will coordinate to provide daily construction operations management and oversight to ensure timeliness, completion, and conformance with the Plans and land management goals of the landowner, the project, and to resolve contractual issues. A PWA Associate Scientist (Geologist) and Senior/Associate Engineer will evaluate and select suitable salvaged backfill material for streambank and floodplain construction, and ensure the materials are compacted to design standards if required. A PWA Associate Scientist (Project Manager) will notify PCFWWRA to order and schedule for delivery required rock and materials. PWA Project Manager and Scientific and Engineering Staff will oversee materials stockpiling and evaluate and maintain the effectiveness of erosion control efforts throughout construction. PWA will perform oversight during the implementation phase to oversee grading operations, culvert and embedment installation, and installation of simple and complex large wood structures in the restored channel and off-channel feature. During construction, PWA will check the constructed grades of the restored channel and be available to clarify the intent of the design plans, when necessary. PWA shall also be available for fit-in-the-field installation of large wood structures and verification of buoyancy calculations for all complex large wood structures.

Construction Closeout: Punch list walkthrough: When the project is near completion, PWA, PCFWWRA, the Owners representative, the CDFW Grant Manager, and Contractor will walk the site and identify any items needing modification or completion. A Punch list will be generated identifying any unfinished work.

Final walkthrough: Following substantial completion, PWA, PCFWWRA, the Owner, and the Contractor will walk the site for the final inspection. Recommendations for changes will be made to the Contractor or project will be approved.

Task 5: SWPPP Monitoring

This task includes completing all monitoring and reporting requirements necessary to comply with the SWRCB's General Construction Permit as necessary for this project.

Task 5.1: Pre/Post Construction Monitoring and Reporting

This task includes as-built drawings of the constructed features, pre- and post-project longitudinal survey of the modified channel (off-channel off mainstem Lindsay Creek), pre- and post-project cross-sections and flow surveys of the inlets and outlets of the off-channel feature and replaced culverts, pre- and post-project photo monitoring, construction water quality monitoring reports and removal/rescue/mitigation efforts by species and activity, the monitoring report on the functional use by the target species, flow surveys of the inlet and outlet, and

water quality monitoring for the first and second post-construction seasons, and the and First Winter Observations of the complex wood structures.

Task 5.2: As-Built Survey

PWA will prepare as-built drawings using the construction drawings with red-line markups of the construction documents of any changes that occurred during construction. Final elevations of the channel, if they differ from the design drawings, will be noted on the as-built drawings. These as-built surveys and drawings will be used to meet final reporting requirements.

Task 5.3: Physical Monitoring and Reporting

Physical monitoring will be conducted in the Lindsay Creek Off-Channel Coho Habitat Improvement Design Project area. The monitoring plan will cover pre- and post-construction conditions for the off-channel feature and First Winter Observations for the complex large wood structures. The physical monitoring plan will be composed of the following components:

Photographic monitoring - (PWA) Pre- and post-construction photographs will be taken at established photo point monitoring stations for up to 10 features to capture site conditions before, during and after implementation and, for the first and second post-construction required monitoring, and as part of the First Winter Observations. The intent of the photographic monitoring is to visually evaluate project components including excavated features, hydraulic structures and seasonal flow conveyance fluctuations through the inlet and outlet. We intend to place time-lapse cameras and stadia rods within the oxbow inlets to help determine the timing and river stage during inundation events.

FIRST WINTER OBSERVATIONS: PWA will complete post-project monitoring of the complex wood structures following the first winter after construction. This shall include inspecting the structures for changes such as storm damage, missing key pieces, and counts of both large and small wood pieces accumulated on the structure. Photo observations shall also be included.

OFF-CHANNEL FEATURE MONITORING: PWA will conduct pre-and-post construction photographic monitoring, collect cross-sections, and conduct a flow survey of the constructed inlet of the off-channel pond, and other critical hydraulic features. Additionally, PWA will provide a written description stating if and/or when the off-channel features became active by using staff plates tied to the relative project elevations and time stamped time-lapse cameras to document river stages.

Water quality monitoring and Reporting - (PWA): Pre-, during- and post-construction water quality monitoring will be conducted within the project area. A monitoring site array will be established and will include but is not limited to, sampling control in situ locations upstream and outside the influence of the construction activities within the mainstem Lindsay Creek above the oxbow inlet and in the first order tributary should it be conveying surface water; downstream

sampling locations will include sites 300 feet downstream from the project outlet and if the tributary has surface flow, any effluent from diverted tributary (clean water) water, and 300 feet downstream from the point of discharge. Water quality sampling will also be conducted within the oxbow prior to construction and dewatering, and after construction during rewatering. All activities within Lindsay Creek or live channels of the inlet and outlet will be monitored during construction and post construction, upstream and out of the influence of the construction activities and 300 feet downstream from the construction activities.

Water quality monitoring will be taken a minimum of three times daily; before construction begins, during construction, and at the end of the day or when construction is complete. Turbidity, dissolved oxygen, pH, and temperature will be monitored at a minimum. Please see the Water Quality Monitoring Plan (supplemental documents) for a more detailed description of the sampling locations, spatial and temporal sampling scales for the different construction activities, minimum water quality parameters to be monitored and meters, and reporting. Hand-held water quality meters designed for field applications that conform to and utilize a USEPA-approved algorithm/method for the sample readings will be used for all water quality monitoring. Water quality monitoring will also be conducted for the off-channel monitoring requirements for the first and second post-construction season monitoring efforts as per the FRGP Guidelines. For these water quality monitoring efforts, replicate sampling will occur at the established sampling locations and at new locations within the oxbow to detect changes in parameters at varying water depth and proximity to the inlet and the outlet channels. Sampling will occur primarily during the target season, winter, but water quality samples will also be taken when back-flooding from Lindsay Creek is initiated and as flows recede into the summer when disconnection timing is most probable, if it were to occur. Results from the water quality sampling efforts will be summarized within the Monitoring Report that will also include the other monitoring parameter requirements. Hopefully, the two post-construction seasons of monitoring will contribute to the data pool for the broader scale monitoring needed to facilitate a better understanding of the merits for a project type considered to be experimental and relatively new to California.

Task 5.4: Biological Surveying and Reporting

As per the monitoring requirements within the FRGP Guidelines for off-channel features, biological surveying for functional use of the constructed habitats will be conducted for juvenile coho salmon (target species and target life stage) and other salmonid juveniles, primarily once the rainy season has begun through to when the flows begin to recede as summer begins (anticipated time of use). Direct underwater observations through snorkeling will be the primary survey technique. This is the best suited method for determining functional habitat use by species at age within lentic and lotic systems, as habitat utilization can be watched and behaviors can be identified with little effort expressed as time observing at one site or in making a pass through the oxbow. Visibility can be a confounding factor during the winter. When visibility is limited, minnow trapping

will be used for presence/absence within the oxbow at different locations near the constructed LWM habitat features and other physical features of the oxbow. This biological surveying will begin the first season, after construction has been completed, and be continued through the second post-construction season until declining late spring/summer flows develop. The biological survey results will include all species observed and will be summarized with in the Monitoring Report that will also include the other monitoring parameter requirements. Hopefully, the two post-construction seasons of monitoring will contribute to the data pool for the broader scale monitoring needed to facilitate a better understand of the merits for what is an experimental project type and relatively new to California.

All physical and biological monitoring will be summarized into one comprehensive report. This will primarily be comprised of the first and second post-construction season monitoring required for off-channel habitat features within the FRGP Guidelines which include: A) Pre- and post-project monitoring, B) Pre- and post-construction and design flows surveys at the inlet and outlet, and any other critical hydraulic feature, C) Describing if and when the inlet and outlet become inundated or become dewatered, D) The functional use of the target species at age during the expected time frame of use, and E) Water quality monitoring. The First Winter Observations Summer will also be included and any other physical and/or biological surveys and/or observations will be included with the intent to contribute to the broader scale monitoring to evaluate the merits of these new project types.

Task 6: Contingency Plan If Project Maintenance Is Needed

The proposed project is designed to be self-maintaining; it will be physically and biologically monitored for two seasons post-construction for achieving and maintaining the intended goal for all the constructed elements to include being self-maintaining, and to provide quantitative and qualitative data to help inform and make this determination. However, in the unlikely event post-project conditions exceed monitoring thresholds, maintenance may be necessary. PCFWWRA and PWA will attend meetings with the appropriate resource agencies, including CDFW, to determine if a maintenance action is warranted and what that action would be. If action is warranted, PWA will provide construction oversight. PCFWWRA will coordinate all permitting and project coordination, and the contractor responsible for replanting will provide additional plants and services.

Deliverables:

Completed reconfiguration of the oxbow channel and adjacent floodplain, Large wood habitat structures installed within project area, Construction logs, meeting notes, punch list and final inspection outcome.

Pre/Post Construction Monitoring and Reporting

As-built drawings, pre- and- post-construction monitoring of the off-channel feature and replaced culverts, report describing the connectivity of the off-channel feature with the mainstem, before and after photos of up to 10 features, construction water quality monitoring reports and removal/rescue/mitigation efforts by species and activity, the monitoring report on the functional use by the target species, flow surveys of the inlet and outlet, and water quality monitoring for the first and second post-construction seasons, and the First Winter Observations Summary.

Timelines:

Permit Development will be from 06/01/2023 to 06/15/2024. Surveys including Fish and Amphibian relocation and Survey, stakeout and layout are from 7/15/2023 to 10/30/2024. SWPPP monitoring is from 08/15/2024 to 10/30/2025. Construction is from 08/15/2024 to 10/30/2025. As-built survey will be completed 12/30/2025 and final monitoring and reports will be completed by 03/25/2027.

Additional Requirements:

The Permittee 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 Salmonids Stream Habitat Restoration Manual*, Volume I and Volume II.

The Permittee shall notify the CDFW 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 CDFW 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 Permittee will implement the following measures to minimize harm and mortality to listed salmonids:

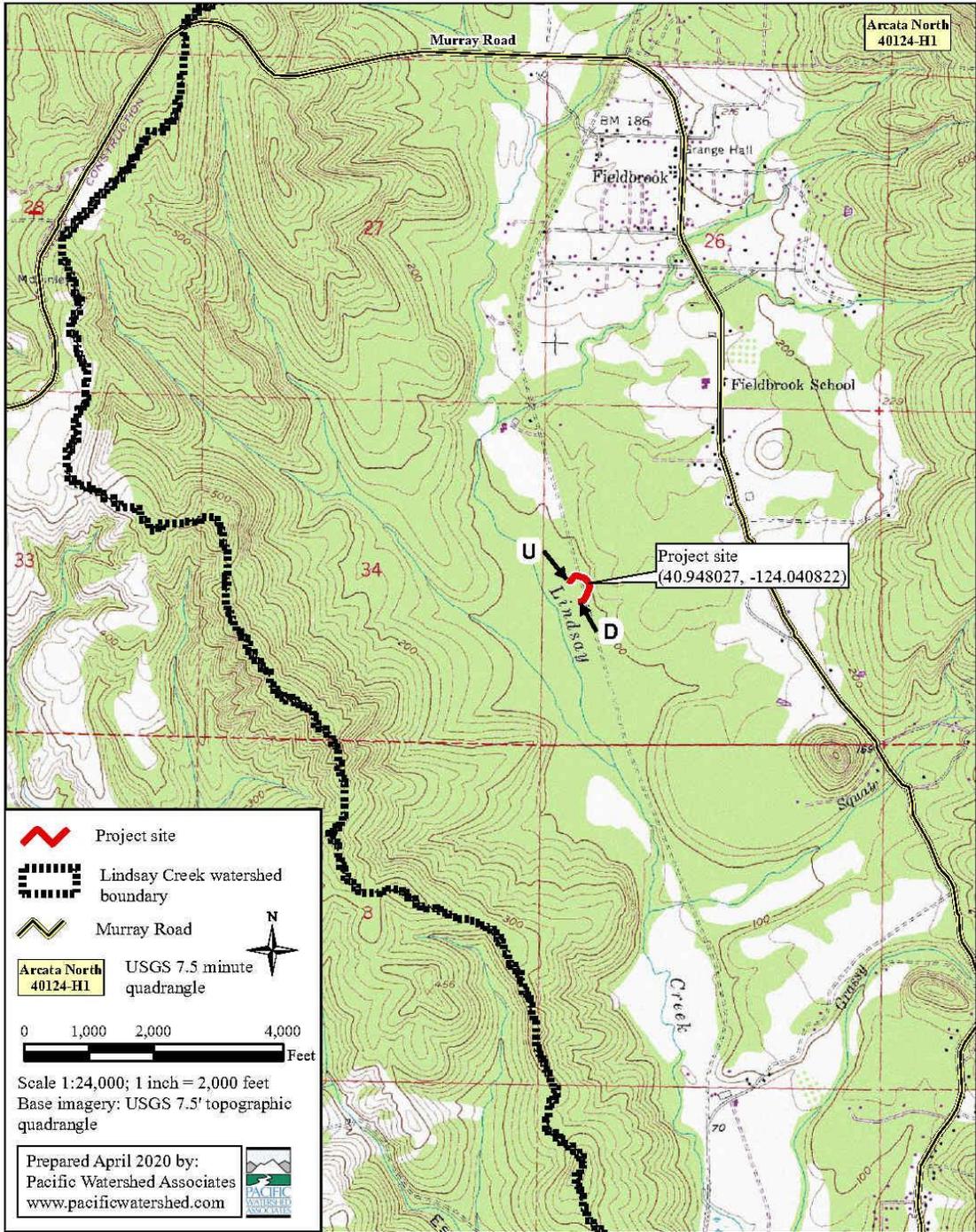
- a. Fish dewatering and relocation activities shall only occur between June 15 and October 31 of each year.
- b. Additional measures to minimize injury and mortality of salmonids during fish relocation and dewatering activities shall be implemented as described in Part IX, pages 52 and 53 of the *California Salmonid Stream Habitat Restoration Manual*.
- c. The Grantee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW Grant Manager and pursuant to conditions in the USACE Regional General Permit and National Marine Fisheries Service (NMFS) Biological Opinion.
- d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the NMFS, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.
- e. USFWS Approved fisheries biologists will provide fish relocation data via the Permittee to the CDFW personnel on a form provided by CDFW.

The bridge (culvert) design and installation will meet flow carrying capacity required for a 100-year flood event as identified by specifications determined by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the 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 CDFW engineers prior to commencement of work.

The Permittee/landowner will maintain the new crossing, inspect the crossing in a timely manner and remove debris as necessary during the storm season.

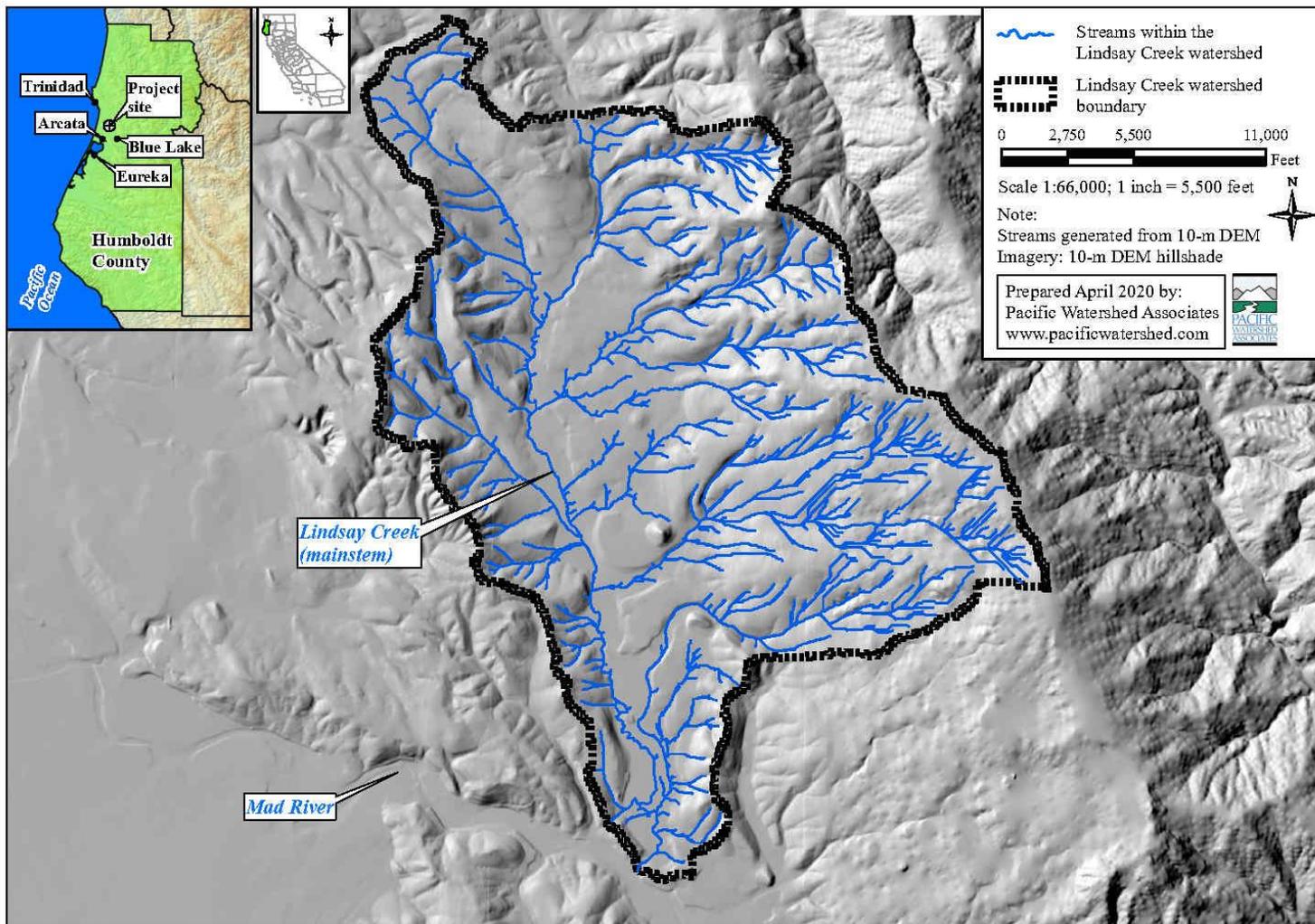
Final structure design and placement will be determined by field consultation between the Permittee and the CDFW Personnel.

Planting of tree seedlings will take place after December 1 or when sufficient rainfall has occurred to insure the best chance of survival of the seedlings.



Map 1. Project location topographic map for the Lindsay Creek Off-Channel Habitat Improvement Project, Humboldt County, California. Grantee: Pacific Coast Fish, Wildlife and Wetlands Restoration Association.

Grantee: Pacific Coast Fish, Wildlife and Wetlands Restoration Association



Map 2. Watershed map for the Lindsay Creek Off-Channel Habitat Improvement Project, Humboldt County, California. Grantee: Pacific Coast Fish, Wildlife and Wetlands Restoration Association.

CALIFORNIA DEPARTMENT OF
FISH and WILDLIFE *RareFind*

Query Summary:

Quad IS (Arcata North (4012481) OR Tyee City (4012482) OR Blue Lake (4012388) OR Trinidad (4112412) OR Crannell (4112411) OR Panther Creek (4112318) OR Eureka (4012472) OR Arcata South (4012471) OR Korbel (4012378))

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CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	Dicots	PDNYC010N4	61	15	None	None	G4G5T2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal dunes
<i>Accipiter cooperii</i>	Cooper's hawk	Birds	ABNKC12040	118	1	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest
<i>Acipenser medirostris</i> pop. 1	green sturgeon - southern DPS	Fish	AFCAA01031	14	1	Threatened	None	G2T1	S1	null	AFS_VU-Vulnerable, IUCN_NT-Near Threatened	Aquatic, Estuary, Marine bay, Sacramento/San Joaquin flowing waters
<i>Anodonta californiensis</i>	California floater	Mollusks	IMBIV04220	6	1	None	None	G3Q	S2?	null	USFS_S-Sensitive	Aquatic
<i>Aplodontia rufa humboldtiana</i>	Humboldt mountain beaver	Mammals	AMAF01017	28	17	None	None	G5TNR	SNR	null	null	Coastal scrub, Redwood, Riparian forest
<i>Arborimus albipes</i>	white-footed vole	Mammals	AMAFF23010	3	3	None	None	G3G4	S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	North coast coniferous forest, Redwood, Riparian forest
<i>Arborimus pomio</i>	Sonoma tree vole	Mammals	AMAFF23030	222	22	None	None	G3	S3	null	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	North coast coniferous forest, Oldgrowth, Redwood
<i>Ardea alba</i>	great egret	Birds	ABNGA04040	43	2	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
<i>Ardea herodias</i>	great blue heron	Birds	ABNGA04010	156	8	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
<i>Ascaphus truei</i>	Pacific tailed frog	Amphibians	AAABA01010	491	62	None	None	G4	S3S4	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Aquatic, Klamath/North coast flowing waters, Lower montane coniferous forest, North coast coniferous forest, Redwood, Riparian forest
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	Dicots	PDFAB0F7B2	24	1	None	None	G2T2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Coastal dunes, Coastal scrub, Marsh & swamp, Wetland
<i>Bombus caliginosus</i>	obscure bumble bee	Insects	IIHYM24380	181	10	None	None	G2G3	S1S2	null	IUCN_VU-Vulnerable	null
<i>Bombus crotchii</i>	Crotch bumble bee	Insects	IIHYM24480	437	1	None	None	G2	S1S2	null	null	null

Bombus occidentalis	western bumble bee	Insects	IIHYM24250	306	8	None	None	G2G3	S1	null	USFS_S-Sensitive	null
Cardamine angulata	seaside bittercress	Dicots	PDBRA0K010	38	1	None	None	G4G5	S3	2B.1	null	Lower montane coniferous forest, North coast coniferous forest, Wetland
Carex arcta	northern clustered sedge	Monocots	PMCYP030X0	13	2	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Bog & fen, North coast coniferous forest, Wetland
Carex lenticularis var. limnophila	lagoon sedge	Monocots	PMCYP037A7	4	1	None	None	G5T5	S1	2B.2	null	Bog & fen, Marsh & swamp, North coast coniferous forest
Carex leptalea	bristle-stalked sedge	Monocots	PMCYP037E0	8	4	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Bog & fen, Freshwater marsh, Marsh & swamp, Meadow & seep, Wetland
Carex lyngbyei	Lyngbye's sedge	Monocots	PMCYP037Y0	37	17	None	None	G5	S3	2B.2	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Carex praticola	northern meadow sedge	Monocots	PMCYP03B20	14	1	None	None	G5	S2	2B.2	null	Meadow & seep, Wetland
Carex viridula ssp. viridula	green yellow sedge	Monocots	PMCYP03EM5	8	1	None	None	G5T5	S2	2B.3	null	Bog & fen, Marsh & swamp, North coast coniferous forest, Wetland
Castilleja ambigua var. humboldtiensis	Humboldt Bay owl's-clover	Dicots	PDSCR0D402	31	18	None	None	G4T2	S2	1B.2	BLM_S-Sensitive	Marsh & swamp, Salt marsh, Wetland
Castilleja litoralis	Oregon coast paintbrush	Dicots	PDSCR0D012	44	9	None	None	G3	S3	2B.2	null	Coastal bluff scrub, Coastal dunes, Coastal scrub
Castilleja mendocinensis	Mendocino Coast paintbrush	Dicots	PDSCR0D3N0	52	1	None	None	G2	S2	1B.2	BLM_S-Sensitive	Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub
Cerorhinca monocerata	rhinoceros auklet	Birds	ABNNN11010	10	2	None	None	G5	S3	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	null
Charadrius montanus	mountain plover	Birds	ABNNB03100	90	2	None	None	G3	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Chenopod scrub, Valley & foothill grassland
Charadrius nivosus nivosus	western snowy plover	Birds	ABNNB03031	138	6	Threatened	None	G3T3	S2	null	CDFW_SSC-Species of Special Concern, NABCI_RWL-Red Watch List	Great Basin standing waters, Sand shore, Wetland
Chloropyron maritimum ssp. palustre	Point Reyes salty bird's-beak	Dicots	PDSCR0J0C3	80	13	None	None	G4?T2	S2	1B.2	BLM_S-Sensitive	Marsh & swamp, Salt marsh, Wetland
Cicindela hirticollis gravida	sandy beach tiger beetle	Insects	IICOL02101	34	1	None	None	G5T2	S2	null	null	Coastal dunes
Circus hudsonius	northern harrier	Birds	ABNKC11011	54	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal scrub, Great Basin grassland, Marsh & swamp, Riparian scrub, Valley & foothill grassland, Wetland
Collinsia corymbosa	round-headed Chinese-houses	Dicots	PDSCR0H060	13	1	None	None	G1	S1	1B.2	null	Coastal dunes
Coptis laciniata	Oregon goldthread	Dicots	PDRAN0A020	122	11	None	None	G4?	S3?	4.2	null	Meadow & seep, North coast coniferous forest, Wetland
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	635	2	None	None	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-	Broadleaved upland forest,

												Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland
Coturnicops noveboracensis	yellow rail	Birds	ABNME01010	45	3	None	None	G4	S1S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, NABCI_RWL-Red Watch List, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Meadow & seep	
Discelium nudum	naked flag moss	Bryophytes	NBMUS2E010	2	1	None	None	G4G5	S1	2B.2	null	Coastal bluff scrub	
Egretta thula	snowy egret	Birds	ABNGA06030	20	2	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Meadow & seep, Riparian forest, Riparian woodland, Wetland	
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	184	3	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland	
Empetrum nigrum	black crowberry	Dicots	PDEMP03020	4	1	None	None	G5	S1?	2B.2	null	Coastal bluff scrub, Coastal prairie	
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1404	8	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland	
Entosphenus tridentatus	Pacific lamprey	Fish	AFBAA02100	9	4	None	None	G4	S3	null	AFS_VU-Vulnerable, BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters, South coast flowing waters	
Erethizon dorsatum	North American porcupine	Mammals	AMAFJ01010	523	8	None	None	G5	S3	null	IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Closed-cone coniferous forest, Lower montane coniferous	

													forest, North coast coniferous forest, Upper montane coniferous forest
<i>Erysimum menziesii</i>	Menzies' wallflower	Dicots	PDBRA160R0	19	5	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Coastal dunes	
<i>Erythronium oregonum</i>	giant fawn lily	Monocots	PMLIL0U0C0	37	2	None	None	G5	S2	2B.2	null	Cismontane woodland, Meadow & seep, Ultramafic	
<i>Erythronium revolutum</i>	coast fawn lily	Monocots	PMLIL0U0F0	172	12	None	None	G4G5	S3	2B.2	null	Bog & fen, Broadleaved upland forest, North coast coniferous forest, Wetland	
<i>Eucyclogobius newberryi</i>	tidewater goby	Fish	AFCQN04010	127	8	Endangered	None	G3	S3	null	AFS_EN-Endangered, IUCN_VU-Vulnerable	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters, South coast flowing waters	
<i>Eumetopias jubatus</i>	Steller sea lion	Mammals	AMAJC03010	38	5	Delisted	None	G3	S2	null	IUCN_EN-Endangered, MMC_SSC-Species of Special Concern	Marine intertidal & splash zone communities, Protected deepwater coastal communities, Rock shore	
<i>Falco peregrinus anatum</i>	American peregrine falcon	Birds	ABNKD06071	73	6	Delisted	Delisted	G4T4	S3S4	null	CDF_S-Sensitive, CDFW_FP-Fully Protected	null	
<i>Fissidens pauperculus</i>	minute pocket moss	Bryophytes	NBMUS2W0U0	22	3	None	None	G3?	S2	1B.2	USFS_S-Sensitive	North coast coniferous forest, Redwood	
<i>Fratercula cirrhata</i>	tufted puffin	Birds	ABNNN12010	17	6	None	None	G5	S1S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Protected deepwater coastal communities	
<i>Gilia capitata ssp. pacifica</i>	Pacific gilia	Dicots	PDPLM040B6	91	2	None	None	G5T3	S2	1B.2	null	Chaparral, Coastal bluff scrub, Coastal prairie, Valley & foothill grassland	
<i>Gilia millefoliata</i>	dark-eyed gilia	Dicots	PDPLM04130	54	13	None	None	G2	S2	1B.2	BLM_S-Sensitive	Coastal dunes	
<i>Haliaeetus leucocephalus</i>	bald eagle	Birds	ABNKC10010	332	3	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth	
<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	Dicots	PDASTE5011	72	4	None	None	G4T3	S3	1B.2	BLM_S-Sensitive	Coastal bluff scrub, Coastal dunes, Coastal prairie	
<i>Hydrobates furcatus</i>	fork-tailed storm-petrel	Birds	ABNDC04010	8	5	None	None	G5	S1	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Protected deepwater coastal communities	
<i>Iliamna latibracteata</i>	California globe mallow	Dicots	PDMAL0K040	40	1	None	None	G2G3	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, North coast coniferous forest, Riparian scrub	
<i>Juncus nevadensis</i> var. <i>inventus</i>	Sierra rush	Monocots	PMJUN011Z5	1	1	None	None	G5T3T4	S1	2B.2	null	Bog & fen, Wetland	
<i>Lampetra</i>	western brook	Fish	AFBAA02180	4	2	None	None	G4G5	S3S4	null	CDFW_SSC-	null	

richardsoni	lamprey											Species of Special Concern, USFS_S-Sensitive	
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	Dicots	PDAST5L0C5	59	1	None	None	G3T2	S2	1B.2	BLM_S-Sensitive	Coastal bluff scrub, Coastal dunes, Coastal scrub	
<i>Lathyrus japonicus</i>	seaside pea	Dicots	PDFAB250C0	24	5	None	None	G5	S2	2B.1	IUCN_LC-Least Concern	Coastal dunes	
<i>Lathyrus palustris</i>	marsh pea	Dicots	PDFAB250P0	13	3	None	None	G5	S2	2B.2	null	Bog & fen, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marsh & swamp, North coast coniferous forest, Wetland	
<i>Layia carnosa</i>	beach layia	Dicots	PDAST5N010	25	7	Threatened	Endangered	G2	S2	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Coastal dunes, Coastal scrub	
<i>Lilium occidentale</i>	western lily	Monocots	PMLIL1A0G0	16	3	Endangered	Endangered	G1G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Bog & fen, Coastal bluff scrub, Coastal prairie, Coastal scrub, Freshwater marsh, Marsh & swamp, North coast coniferous forest, Wetland	
<i>Lycopodiella inundata</i>	inundated bog-clubmoss	Ferns	PPLYC03060	3	1	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Bog & fen, Lower montane coniferous forest, Marsh & swamp, Wetland	
<i>Lycopodium clavatum</i>	running-pine	Ferns	PPLYC01080	120	76	None	None	G5	S3	4.1	null	Lower montane coniferous forest, Marsh & swamp, North coast coniferous forest, Wetland	
<i>Margaritifera falcata</i>	western pearlshell	Mollusks	IMBIV27020	78	1	None	None	G4G5	S1S2	null	null	Aquatic	
<i>Mitellastrca caulescens</i>	leafy-stemmed mitrewort	Dicots	PDSAX0N020	21	2	None	None	G5	S4	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep, North coast coniferous forest	
<i>Monotropa uniflora</i>	ghost-pipe	Dicots	PDMON03030	115	2	None	None	G5	S2	2B.2	null	Broadleaved upland forest, North coast coniferous forest	
<i>Montia howellii</i>	Howell's montia	Dicots	PDPOR05070	123	9	None	None	G3G4	S2	2B.2	null	Meadow & seep, North coast coniferous forest, Vernal pool, Wetland	
<i>Myotis evotis</i>	long-eared myotis	Mammals	AMACC01070	139	2	None	None	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, WBWG_M-Medium Priority	null	
<i>Nannopterum auritum</i>	double-crested cormorant	Birds	ABNFD01020	39	5	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland	
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	Marsh	CTT52110CA	53	7	None	None	G3	S3.2	null	null	Marsh & swamp, Wetland	
Northern Foredune Grassland	Northern Foredune Grassland	Dune	CTT21211CA	1	1	None	None	G1	S1.1	null	null	Coastal dunes	
<i>Nycticorax nycticorax</i>	black-crowned night heron	Birds	ABNGA11010	37	5	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Riparian forest, Riparian woodland, Wetland	
<i>Oenothera wolfii</i>	Wolf's evening-	Dicots	PDONA0C1K0	29	4	None	None	G2	S1	1B.1	SB_BerrySB-Berry Seed Bank	Coastal bluff scrub, Coastal	

	primrose													dunes, Coastal prairie
Oncorhynchus clarkii clarkii	coast cutthroat trout	Fish	AFCHA0208A	45	23	None	None	G5T4	S3	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters		
Oncorhynchus kisutch pop. 2	coho salmon - southern Oregon / northern California ESU	Fish	AFCHA02032	10	5	Threatened	Threatened	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters		
Oncorhynchus mykiss irideus pop. 16	steelhead - northern California DPS	Fish	AFCHA0209Q	12	3	Threatened	None	G5T2T3Q	S2S3	null	AFS_TH-Threatened	Aquatic, Klamath/North coast flowing waters		
Oncorhynchus mykiss irideus pop. 36	summer-run steelhead trout	Fish	AFCHA0213B	20	1	None	Candidate Endangered	G5T4Q	S2	null	CDFW_SSC-Species of Special Concern	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters		
Packera bolanderi var. bolanderi	seacoast ragwort	Dicots	PDAST8H0H1	72	1	None	None	G4T4	S2S3	2B.2	null	Coastal scrub, North coast coniferous forest		
Pandion haliaetus	osprey	Birds	ABNKC01010	504	37	None	None	G5	S4	null	CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest		
Pekania pennanti	Fisher	Mammals	AMAJF01020	555	10	None	None	G5	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Riparian forest		
Piperia candida	white-flowered rein orchid	Monocots	PMORC1X050	222	1	None	None	G3?	S3	1B.2	null	Broadleaved upland forest, Lower montane coniferous forest, North coast coniferous forest, Ultramafic		
Plethodon elongatus	Del Norte salamander	Amphibians	AAAAD12050	151	10	None	None	G4	S3	null	CDFW_WL-Watch List, IUCN_NT-Near Threatened	Oldgrowth		
Polemonium carneum	Oregon polemonium	Dicots	PDPLM0E050	16	1	None	None	G3G4	S2	2B.2	null	Coastal prairie, Coastal scrub, Lower montane coniferous forest		
Rallus obsoletus obsoletus	California Ridgway's rail	Birds	ABNME05011	99	2	Endangered	Endangered	G3T1	S1	null	CDFW_FP-Fully Protected, NABCI_RWL-Red Watch List	Brackish marsh, Marsh & swamp, Salt marsh, Wetland		
Rana aurora	northern red-legged frog	Amphibians	AAABH01021	292	78	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Klamath/North coast flowing waters, Riparian forest, Riparian woodland		
Rana boylei	foothill yellow-legged frog	Amphibians	AAABH01050	2478	31	None	Endangered	G3	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive	Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow & seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters		
Rhyacotriton variegatus	southern torrent salamander	Amphibians	AAAAJ01020	416	92	None	None	G3G4	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth, Redwood, Riparian forest		
Riparia riparia	bank swallow	Birds	ABPAU08010	298	6	None	Threatened	G5	S2	null	BLM_S-Sensitive, IUCN_LC-Least	Riparian scrub, Riparian		

											Concern	woodland
Romanzoffia tracyi	Tracy's romanzoffia	Dicots	PDHYD0E030	9	5	None	None	G4	S2	2B.3	null	Coastal bluff scrub, Coastal scrub
Scaphinotus behrensi	Behrens' snail-eating beetle	Insects	IICOL4L070	4	1	None	None	G2G4	S2S4	null	null	North coast coniferous forest
Sidalcea malachroides	maple-leaved checkerbloom	Dicots	PDMAL110E0	136	24	None	None	G3	S3	4.2	null	Broadleaved upland forest, Coastal prairie, Coastal scrub, North coast coniferous forest, Riparian forest
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	Dicots	PDMAL110F9	60	7	None	None	G5T2	S2	1B.2	null	Coastal bluff scrub, Coastal prairie, North coast coniferous forest
Sidalcea oregana ssp. eximia	coast checkerbloom	Dicots	PDMAL110K9	19	2	None	None	G5T1	S1	1B.2	null	Lower montane coniferous forest, Meadow & seep, North coast coniferous forest, Wetland
Silene scouleri ssp. scouleri	Scouler's catchfly	Dicots	PDCAR0U1MC	23	2	None	None	G5T4T5	S2S3	2B.2	null	Coastal bluff scrub, Coastal prairie, Valley & foothill grassland
Sitka Spruce Forest	Sitka Spruce Forest	Forest	CTT82110CA	4	1	None	None	G1	S1.1	null	null	null
Spergularia canadensis var. occidentalis	western sand-spurrey	Dicots	PDCAR0W032	4	4	None	None	G5T4	S1	2B.1	null	Marsh & swamp, Wetland
Sphagnum Bog	Sphagnum Bog	Marsh	CTT51110CA	12	1	None	None	G3	S1.2	null	null	Bog & fen, Wetland
Spirinchus thaleichthys	longfin smelt	Fish	AFCHB03010	46	5	Candidate	Threatened	G5	S1	null	null	Aquatic, Estuary
Sulcaria spiralifera	twisted horsehair lichen	Lichens	NLT0042560	18	6	None	None	G3G4	S2	1B.2	BLM_S-Sensitive	Coastal dunes, North coast coniferous forest
Thaleichthys pacificus	eulachon	Fish	AFCHB04010	10	2	Threatened	None	G5	S2	null	null	Aquatic, Klamath/North coast flowing waters
Trichodon cylindricus	cylindrical trichodon	Bryophytes	NBMUS7N020	14	2	None	None	G4G5	S2	2B.2	null	Broadleaved upland forest, Meadow & seep, Upper montane coniferous forest
Usnea longissima	Methuselah's beard lichen	Lichens	NLLEC5P420	206	2	None	None	G4	S4	4.2	BLM_S-Sensitive	Broadleaved upland forest, North coast coniferous forest, Oldgrowth, Redwood
Viola palustris	alpine marsh violet	Dicots	PDVIO041G0	10	3	None	None	G5	S1S2	2B.2	null	Bog & fen, Coastal scrub, Wetland