

COASTAL CONSERVANCY

Staff Recommendation
May 26, 2016

**COCHRAN CREEK FISH PASSAGE AND CHANNEL RESTORATION:
PLANNING AND DESIGN**

Project No. 16-013-01
Project Manager: Su Corbaley

RECOMMENDED ACTION: Authorization to disburse up to \$250,000 to the Coastal Ecosystems Institute of Northern California to prepare construction design, environmental and permit application documents for the Cochran Creek Fish Passage and Channel Restoration project on Fay Slough.

LOCATION: Near the city of Eureka, Humboldt County

PROGRAM CATEGORY: Resource Enhancement

EXHIBITS

Exhibit 1: [Project Location Maps](#)

Exhibit 2: [Project Area Photographs](#)

Exhibit 3: [Conceptual Design Plan](#)

Exhibit 4: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31251-31270 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of up to two hundred fifty-thousand dollars (\$250,000) to the Coastal Ecosystems Institute of Northern California (CEI) to prepare construction design, environmental and permit application documents for the Cochran Creek Fish Passage and Channel Restoration project on Fay Slough in Humboldt County. This authorization is subject to the condition that prior to disbursement of any funds for the project, CEI shall submit for review and approval by the Conservancy’s Executive Officer a work plan, schedule, budget, and the names of any contractors or subcontractors to be retained for implementation of the project.”

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy

hereby finds that:

1. The proposed authorization is consistent with Chapter 6 of Division 21 of the Public Resources Code, regarding the enhancement of coastal resources.
 2. The proposed project is consistent with the current Conservancy Project Selection Criteria and Guidelines.
 3. The Coastal Ecosystems Institute of Northern California is a nonprofit organization existing under section 501(c)(3) of the U.S. Internal Revenue Code, and whose purposes are consistent with Division 21 of the Public Resources Code.”
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PROJECT SUMMARY:

Staff recommends the disbursement of up to \$250,000 to the Coastal Ecosystems Institute of Northern California (CEI) to prepare construction plans, an environmental document and permit applications for fish passage and channel restoration on lower Cochran Creek, which is located on 35 acres of private agricultural lands immediately west of Myrtle Avenue in Eureka (Exhibit 1). The goal of the project is to develop implementation-ready designs for restoration and enhancement activities that will improve critical habitat for threatened salmonids and other wildlife, restore fish passage between Cochran Creek and Humboldt Bay, and protect working lands from frequent flooding. Specifically, the project will plan, design and analyze enhancement of 1,000 feet of Cochran Creek and 2,100 feet of a small, historic slough channel (Quail Slough) which drains to Cochran Creek, and restoration of approximately 5 acres of tidal wetlands on agricultural land.

The lower reach of Cochran Creek where it flowed into Fay Slough was historically a transitional area from upstream freshwater aquatic habitats to brackish-water, estuarine habitat typical of low-lying areas along the Humboldt Bay bottomlands. However, due to residential, commercial (including timber) and ranching development in the upper watershed and around the bay, lower Cochran Creek has very little effective tidal connection to Humboldt Bay and now functions as agricultural grasslands with none of the historic salt marsh present. The lower 1,000 feet of Cochran Creek in the project area is channelized, has been straightened and pushed up against ranch levees, and has little to no riparian cover. Quail Slough is effectively disconnected from Cochran Creek; it is choked with vegetation and sediment which results in frequent flooding on the agricultural land (Exhibit 2).

The proposed project will deliver implementation ready construction plans to correct the following key legacy issues:

Fish Passage. The project will design a fish-friendly replacement/retrofit for the existing tide gate at the confluence of Cochran Creek and Fay Slough, which will remove a significant fish passage barrier for salmonids and other native fish species, such as lamprey and tidewater goby.

Rearing habitat quality/availability. The project will provide designs to enhance instream habitat complexity and create backwater-like habitat features for high flow refugia in lower Cochran Creek and Quail Slough.

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Riparian habitat quality. The project will provide for re-establishing functioning riparian corridors along Cochran Creek and Quail Slough, including creating complex riparian shade cover and removing invasive plants, and establishing adaptive management options to optimize agricultural uses compatible with restoration.

Sedimentation of freshwater habitats. The plans will address enhanced sediment routing within Cochran Creek and Quail Slough to decrease channel aggradation and restore tidal prism flushing and reduce flooding of working lands.

The need for this project is evident in Cochran Creek's past ability to rear fish year-round. This is documented by the Humboldt Fish Action Council's development of the "Cochran Creek Ponds" in 1969, and subsequent operation of the two pond fish-rearing facility that raised over 900,000 Chinook salmon, coho salmon, and steelhead fry from 1972-1990 for stocking into nearby Freshwater Creek. While historical records of fish species presence prior to the 1970s are lacking, several residents of the upper watershed have related anecdotal observations of unidentified adult salmon running up Cochran Creek during winter storm events during that time.

Although the current tide gate at the mouth of Cochran Creek is recognized as unsuitable for fish passage, Cochran Creek has supported limited and occasional spawning and rearing by anadromous fish in recent years. In late December 2001, after a landowner reported "two large fish" in upper Cochran Creek, California Department of Fish and Wildlife (CDFW) biologists observed one adult male coho salmon and a newly constructed redd. In 2003, CDFW surveyed Cochran Creek, capturing coho young-of-year (YOY) and unidentified "trout". In 2004-05, a landowner reported observing an adult salmonid spawning near the up-stream limit of anadromy, approximately 7,000 feet (1.3 miles) upstream of Myrtle Ave. And in June 2008, surveys by CDFW in lower Cochran Creek resulted in the capture of 5 YOY coho, 5 YOY and yearling steelhead, 9 yearling and older cutthroat trout, and other non-salmonid species, including anadromous lamprey. At present, multiple age-classes of cutthroat trout are regularly observed in upper Cochran Creek.

These recent observations of native-spawned coho salmon, steelhead, and cutthroat trout above the tide gate show that, if migratory access is provided on a regular basis, spawning populations of these species will re-establish themselves in the Cochran Creek watershed. The close proximity and hydraulic connectivity of Fay Slough to Freshwater Slough, a watershed that supports stable populations of Chinook, coho, and steelhead, bodes well for immediate re-colonization of the Cochran Creek watershed.

The time for this project to occur is now. As discussed in greater detail under "Project History", below, the project will complete a planning effort begun in 2005, which resulted in 30% concept restoration designs (Exhibit 3). Briefly, that effort, which endeavored to prepare restoration plans for a larger project area including Redmond Creek and Cochran Creek, was not fully realized due to exogenous factors including a change in ownership of the ranch in the project area. The new owners were unsure of the impacts increasing tidal flow may have to their new farm venture, and declined to allow planning efforts to proceed further. Those same owners recently expressed interest in reviving the project on their property. This represents an excellent window of opportunity to accomplish meaningful restoration of an anadromous-accessible tributary in the Humboldt Bay watershed, as well as help alleviate pasture flooding during high flow events. Further, once implemented, this work will provide momentum for several already-identified future restoration opportunities upstream of the project area.

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The proposed project will utilize – to the extent practicable – all work prepared previously, updating field data where necessary, particularly flow regime studies and review of permit constraints, with the goal of reaching 100% engineered construction designs that will be the subject of the environmental document and the permit applications. The designs will be informed by the work required to apply for the project approvals and permits, including the preparation of an environmental document analyzing the project under the California Environmental Quality Act (CEQA) and permit applications to the U.S. Army Corps of Engineers (ACOE), Humboldt County, North Coast Regional Water Quality Control Board (NCRWQCB), California Coastal Commission (CCC), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and United States Fish and Wildlife Service (FWS). CEI will convene a technical advisory committee for this effort, including these permitting agencies, the private landowner, and the Conservancy.

CEI and its select contractors will carry out the project. CEI is a non-profit organization whose mission is to develop, integrate and disseminate scientific information about coastal ecosystems, and to advance communication, collaboration, and activities that enhance ecosystem health (i.e. ecosystem-based management). CEI has worked with the Conservancy in 2012, when it conducted a bay-wide sea-level rise assessment using Conservancy funds. For efficiency, CEI anticipates contracting with many of the contractors involved in the previous planning efforts, who are seasoned and successful North Coast salmonid recovery project contractors.

Beyond creating additional salmonid habitat in the Humboldt Bay stream/estuary ecotone, future implementation of the project will increase resilience to climate change. It will protect the open space and riparian buffer necessary for ecological function from encroachment while also protecting the adjacent agricultural land from minor flooding. The riparian corridor will be planted with large trees that will sequester carbon, a major component of GHG. The trees will shade the stream channel, mitigating some of the increased temperature. Most importantly this project will restore continuous access to the upper Cochran Creek watershed for spawning and rearing, increasing the resilience of the Humboldt Bay salmonid populations.

Site Description: Cochran Creek watershed, located in the larger Freshwater Creek watershed east of Humboldt Bay, is 1.5 square miles (960 acres) and has 3.1 miles of blue-line stream that flows generally east to west from an elevation of approximately, 800 feet to sea level where it drains to Humboldt Bay through Fay and Eureka Sloughs (Exhibit 1). The upper watershed has steep slopes that are primarily vegetated with mature redwood forests, with some limited residential development. The lower portion of the watershed is comprised primarily of agricultural land which was converted from historic salt and brackish marshes.

The project area in the lower reach of the watershed is located west of Myrtle Avenue and encompasses approximately 35 acres of privately-owned agricultural land that includes 1,000 feet of Cochran Creek and 2,100 feet of Quail Slough, which flows to Cochran Creek. Cochran Creek is a perennially flowing tributary to Fay Slough, which flows into Eureka Slough, and then drains to Humboldt Bay. Quail Slough drains freshwater runoff from the east. Cochran Creek enters the project area through a culvert passing under Myrtle Avenue, and then flows in an artificially confined channel first northerly along the west side of Myrtle Avenue, and then westerly along the toe of a levee at the edge of the agricultural land and enters Fay Slough through a single-opening large wood-flap tide gate.

Due to the anthropogenic changes to channel morphology that began in the early 1900s, Cochran Creek, within the project area, provides poor quality fish habitats. There is poor connectivity to

the larger Fay Slough/Humboldt Bay tidal system, and the channels lack shade canopy, habitat diversity and complexity, stream flood-plain connectivity and are primarily slow-moving and vegetation-choked, with short, steep riffles, and embedded pools with sparse willow and alder encroaching into the channel. The north-south running segment of Cochran Creek downstream of Myrtle Avenue has been straightened and channelized, with the creek pushed up against the levee on the north side of the pasture and into a ditch on the west side of Myrtle Ave. Simple riparian shade vegetation exists only on the north side of the channel exposing the stream to full sun. The straight east-west running segment of Cochran is fringed by riparian vegetation along the north bank on the face of the dike, but has no riparian corridor, floodplain, or levee/dike along the entire south bank of the creek. In addition, the Cochran Creek channel is undersized and confined along the right bank which forces most flood flows to go out-of-bank and flow west across pastures towards nearby Redmond Creek (which is not currently hydraulically connected to Cochran Creek, thus flood water cannot reenter the channel).

Quail Slough drains the southern portion of the project area pasture and a small sub-watershed east of Myrtle Ave in the area around Quail Lane (Exhibit 1). Quail Slough is not a blue line stream, but has a total stream length of 0.9 miles, with 0.4 miles of stream between Myrtle Avenue and Cochran Creek (inside the project area). The majority of existing Quail Slough habitat is predominantly choked by vegetation and sediment, and is completely lacking any riparian canopy cover (Exhibit 2). The lowermost 300 feet (before confluence with Cochran Creek) provides marginal aquatic habitat, varying in width from 2 to 6 feet with depths of 1 to 3 feet. Exhibit 3 provides photos of the conditions of the project area.

Fay Slough still maintains a full tidal connection to Humboldt Bay via Eureka Slough, which would extend up Cochran Creek when the plans developed under this project are implemented.

Project History: The Conservancy was joined by other state agencies in 2002 in authorizing watershed scale planning for the stream systems that constitute the Humboldt Bay watershed. The Department of Fish and Wildlife, the Regional Water Quality Control Board and the University of California Cooperative Extension Sea Grant program each contributed to the assessment which was funded in large part by the Conservancy. The plan was developed and facilitated by Redwood Community Action Agency (RCAA) under the guidance of the Humboldt Bay Watershed Advisory Committee (HBWAC), a multi-stakeholder collaborative watershed-based working group. The plan's centerpiece, the *Salmon and Steelhead Conservation Plan* (SSCP), was accompanied by technical information, detailed profiles, and conceptual plans for restoring salmonid habitat in the bay's four primary subwatersheds: Jacoby Creek, Freshwater Creek, Elk River, and Salmon River.

The SSCP compiled information and detailed results from numerous assessments to determine current watershed conditions and limiting factors in each sub-watershed. A Technical Advisory Team prioritized SSCP goals by analyzing the factors that would lead to long-term sustainability of functional salmonid habitat, and were focused on treating the causes of habitat degradation rather than on their effects, resulting in a hierarchy of recommended actions which place high value on protecting and restoring high quality riparian areas and correcting road-related erosion and fish passage barriers.

In 2005, CDFW awarded a grant of \$47,388 to RCAA to fund the initial planning effort in Fay Slough, including the project area and Redmond Creek. RCAA developed a conceptual estuary rehabilitation plan to restore fish access, muted tidal hydrology, and salmonid rearing habitat in approximately 1.75 miles of second-order channels upstream of Fay Slough on Redmond and

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Cochran Creeks. In late 2005, the Conservancy awarded a grant of \$245,000 to RCAA to convene a technical team and complete the designs. Following development of initial engineering designs with CDFW, FWS and other agencies, several agency staff were changed in 2007/8. This resulted in additional extensive technical meetings and consultations with state and federal resource agencies, and technical staff new to that effort required a higher level of precision in the designs than was advised at the outset of the 2005 project. This resulted in a protraction of the design process by over a year. Most of the escalated level of engineering was required for the Redmond Creek area of the 2005 project, and a majority of the funds were expended on Redmond Creek, not on designs for Cochran Creek.

During this time, the ownership of the property comprising the Cochran Creek project area changed. The new owners were wary of proceeding with restoration due to concerns over what were, to them, uncertain outcomes and effects to their farm. Several meetings and site visits were held to educate the owners about the extent of the project and to demonstrate the benefits for flood control. After several months, the owners decided not to participate in the project. As a result of these delays, the owner of the Redmond Creek property became frustrated and withdrew his participation, and the whole project stalled. Compounding this, the state budget crisis in 2009 caused the cessation of project spending for several months. Due to these issues, Conservancy staff decided to prepare 30% design documents for Redmond and Cochran Creek restoration, prepare a limited regulatory constraints analysis, complete cultural resources and biological reviews, and compile all this information into a report in hopes of a future project opportunity. In 2011, RCAA submitted the *Fay Slough Enhancement Project: Redmond and Cochran Creeks, 30% Design* report to the Conservancy, which was kept on the shelf and available in anticipation of this current project opportunity.

In late 2014, the 2008 landowner re-engaged with local biologists to discuss how fish restoration could be compatible with improving drainage from their agricultural lands. Following several meetings, the owners agreed that, if project funding were secured, they would make their lands available for restoration. As a show of commitment, the owners prepared a letter of support for Conservancy funding (Exhibit 4). Further, nearby landowners also indicated support for the project effort (Also see Exhibit 4).

This proposed project's history demonstrates that there is a critical need to secure Conservancy funding in order to advance restoration goals and objectives which were first identified by local environmental scientists and the Conservancy more than ten years ago.

PROJECT FINANCING

Coastal Conservancy	\$250,000
Calif. Dept. of Fish and Wildlife (proposal in review)	\$65,000
Project Total	\$315,000

The expected source of Conservancy funds for the planning and design phase of the Cochran Creek Fish Passage and Channel Restoration project is the fiscal year 2015/16 appropriation to the Conservancy from the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1, Water Code § 79700 et seq.). Funds appropriated to the Conservancy derive from

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Chapter 6 (commencing with § 79730) and may be used “for multi-benefit water quality, water supply, and watershed protection and restoration projects for the watersheds of the state” (Section 79731). Section 79732 identifies specific purposes of Chapter 6. The proposed project will achieve several of those purposes, including the following: (1) protect and increase the economic benefits arising from healthy watersheds, fishery resources and in-stream flow; (2) implement watershed adaptation projects for which grantee has consulted with the state and local conservation corps and included their services if feasible; (4) protect and restore aquatic, wetland and migratory bird ecosystems including fish and wildlife corridors and the acquisition of water rights for in-stream flow; (6) remove barriers to fish passage; (7) collaborate with federal agencies in the protection of fish native to California and wetlands in the central valley of California; (9) protect and restore rural and urban watershed health to improve watershed storage capacity, forest health, protection of life and property, storm water resource management, and greenhouse gas reduction; (10) protect and restore coastal watersheds including but not limited to, bays, marine estuaries, and near shore ecosystems; and (12) assist in the recovery of endangered, threatened, or migratory species by improving watershed health, in-stream flows, fish passage, coastal or inland wetland restoration, or other means, such as natural community conservation plan and habitat conservation plan implementation.

As required by Proposition 1, the proposed project provides multiple benefits. The design will provide for a project that will: improve drainage, and reduce maintenance of flood control structures for agricultural land owners; increase the flood confinement and flood conveyance of Cochran Creek and Quail Slough channels through excavation of wider and deeper channels with more cross sectional area; improve sediment routing from adjacent agricultural pastures to Cochran Creek and Quail Slough, through Fay Slough and Eureka Slough, and ultimately to Humboldt Bay; continue to foster working relationships with resource agencies and agricultural landowners to advance essential work on private lands in historic estuarine areas around Humboldt Bay; and provide resilience against climate change-induced loss of anadromous fish rearing habitat. Finally, this project advances previous Conservancy-funded planning efforts to restore anadromous habitats in Cochran Creek.

In accordance with Section 79707(b) which requires agencies to prioritize “projects that leverage private, federal, or local funding or produce the greatest public benefit”, this project leverages local in-kind contributions. CEI will provide significant in-kind contributions of staff time, and the value of these in-kind contributions is expected to be over \$35,000. CEI has applied to CDFW for a grant of matching funds of \$65,000.

The project was reviewed and subsequently recommended for funding through a competitive grant process under the Conservancy’s *Proposition 1 Grant Program Guidelines* adopted in June 2015 (Prop 1 Guidelines) (See § 79706(a)). The proposed project meets each of the evaluation criteria in the Prop 1 Guidelines as described in further detail in this “Project Financing” section, the “Project Summary” section and in the “Consistency with Conservancy’s Project Selection Criteria & Guidelines” section of this staff recommendation.

CONSISTENCY WITH CONSERVANCY’S ENABLING LEGISLATION:

The proposed project would be undertaken pursuant to Chapter 6 of the Conservancy’s enabling legislation, Public Resource Code Sections 31251-31270, as follows:

Pursuant to § 31251, the Conservancy may award grants to nonprofit organizations for the

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purpose of enhancement of coastal resources which, because of human-induced events, or incompatible land uses, have suffered loss of natural and scenic values. This project will produce designs to restore the tidal flow and function to Cochran Creek above Fay Slough which has been altered by failing tide gates and narrowed creek channel.

As provided in § 31252, the proposed project is consistent with the County of Humboldt's Local Coastal Program, as described in the "Consistency with Local Coastal Program Policies" section below.

Pursuant to § 31253, the Conservancy may provide up to the total of the cost of any coastal resource enhancement project taking into consideration the total cost of the project, the fiscal resources of the grantee, the urgency of the project and other factors as determined by the Conservancy. Consistent with this section the amount of funding recommended for the proposed project is based on the total amount of funding available for coastal resource enhancement projects, the fiscal resources of the applicant, and the urgency of the project relative to other eligible coastal resource enhancement projects.

Additionally, as provided in § 31111, the Conservancy may award grants to nonprofit organizations to undertake plans and feasibility studies for purposes consistent with Division 21. CEI is a nonprofit organization undertaking planning for habitat restoration, which is consistent with the purposes of Division 21.

**CONSISTENCY WITH CONSERVANCY'S 2013 STRATEGIC PLAN
GOAL(S) & OBJECTIVE(S), AS REVISED JUNE 25, 2015:**

Consistent with **Goal 5, Objective A** of the Conservancy's 2013-2018 Strategic Plan, the proposed project will develop a plan for the restoration and enhancement of coastal habitats, including coastal wetlands and intertidal areas.

Consistent with **Goal 5, Objective C** of the Conservancy's 2013-2018 Strategic Plan, the proposed project will develop a plan that will preserve and enhance a coastal floodplain.

Consistent with **Goal 6, Objective A** of the Conservancy's 2013-2018 Strategic Plan, the proposed project will develop a plan that will foster long-term viability of a coastal working land.

**CONSISTENCY WITH CONSERVANCY'S
PROJECT SELECTION CRITERIA & GUIDELINES:**

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines, last updated on October 2, 2014, in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.

3. **Promotion and implementation of state plans and policies:** The proposed project is consistent with several state plans and policies, as follows:

The proposed project is consistent with the goal of the *California @ 50 Million: The Environmental Goals and Policy Report* to Steward and Protect Natural and Working Landscapes by supporting landscape-scale approaches to conservation and mitigation that account for multiple benefits. The restoration designs will include consideration of multiple ecosystem benefits such as disturbance regimes, species habitat and protection, and impacts on air and water quality; the effects of management actions on upstream and downstream communities and ecosystems; and the quality of mitigation measures.

The project will help implement priorities in the *2014 California Water Action Plan* Action 4: Protect and Restore Important Ecosystems. The project will implement this action by restoring tidal flow to a disconnected wetland/stream channel, and reconnecting fish habitat between important upstream spawning and estuary rearing habitat.

The project is consistent with the *CA Climate Adaptation Strategy/Safeguarding California: Reducing Climate Risk Plan*, Strategy 2-Management of Watersheds, Habitat, and Vulnerable Species. Specifically, the project will help carry out Strategy S2.D: Field Restoration and Protection, which states that [m]anagers of conservation lands, including working landscapes, should seek resources and expertise that will help them expand capacity to reduce environmental stressors, improve watershed conditions and restore ecosystem functioning on priority lands. The planning proposed for the project will seek to reduce stressors by eliminating or controlling invasive species; restoring natural processes as appropriate; maintaining natural disturbance regimes; reduce unnatural sediment flows by improving drainage and maintenance of unpaved roads; and remove barriers to terrestrial and aquatic species movement.

Further, the project will also help carry out Strategy S2.E: Restore Aquatic Habitat to prioritize conservation and management actions on aquatic systems (including but not limited to associated floodplains, riparian zones, springs, and marshes) for monitoring and restoration efforts that will reduce stress on species resulting from events associated with climate change (i.e., increased sedimentation from flooding events). The project will address management actions to assist in reducing existing stressors include, maintain/enhance habitat complexity; connect river/streams and floodplains; and restore estuaries, sloughs and marshes.

The project is consistent with statewide conservation strategies for anadromous fish species identified in the *CA Wildlife Action Plan* in that it will help to address In-River Spawning and Rearing Habitat by promoting restoration actions that focus on ecological processes and climate change resilience (e.g.: removing barriers to migration, expanding riparian corridors) and Wetland Habitats by restoring marsh and riparian habitat associated with anadromous fish species. The project is also consistent with the following identified “north coast” conservation strategies for anadromous fish species for coastal estuaries: Restore and enhance estuarine habitats, connectivity, and ecological processes essential for anadromous fish species, and establish estuary function and structure that will allow anadromous migration and be responsive to climate change.

The project will help implement five priority recovery actions for recovery of coho in Humboldt Bay tributaries (HBT) identified in the *SONCC Coho Recovery Plan* prepared by

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NMFS in 2014, including: HBT 1.1.5.1 to assess feasibility /develop a plan to remove or set back levees and dikes to restore the natural channel form and floodplain connectivity; HBT 1.2.40.1 to identify parameters to assess condition of estuary and tidal wetland habitat; HBT2.1.1 to assess habitat to determine beneficial location and amount of instream structure needed; HBT 2.2.2.1 to identify potential sites to create refugia habitats; and HBT 7.1.46.1 to assess tidal marshlands, shrublands, and forestlands and develop a plan for riparian restoration.

Restoration of estuarine processes and salmonid access to estuary habitat has been identified as a high priority in the *Recovery Strategy for California Coho Salmon*, prepared by CDFW in 2004. The project will help implement several goals for the Eureka Plain Hydrologic Unit (EP-HU), SONCC ESU in that the project seeks to restore estuarine and associated wetland ecosystems by working with agencies and landowners to re-establish estuarine function and reconfigure channelized streams to benefit coho salmon (EP-HU-2); identifying impacted reaches where a functioning flood plain could be re-established including developing site specific project objectives to protect and restore naturally functioning channel and flood plain conditions where feasible (EP-HU-6); and cooperating with willing landowners to restore and maintain historical tidal areas, backwater channels and salt marsh (EP-HU-10).

Although this project will focus on restoration that benefits listed salmonids, multiple species benefits are expected to result from these efforts, including those for the federally endangered tidewater goby. Thus, the project will help implement several recovery actions (RA) identified in the *Final Recovery Plan for the Tidewater Goby* prepared by USFWS in 2005, including managing extant tidewater goby habitat (RA-1.2); monitoring tidewater goby population status, trends, and habitats (RA-1.2.8); and determining water quality parameters for tidewater goby habitats (RA-2.1).

The project is in alignment with the following goals and objectives of the *North Coast Integrated Regional Water Management Plan Phase III* (2014) including conserving, enhancing, and restoring watersheds and aquatic ecosystems, including functions, habitats, and elements that support biological diversity (Goal 3: Objective 5), and enhancing salmonid populations by conserving, improving, and/or restoring required habitats/watershed processes (Goal 3: Objective 6).

4. **Support of the public:** The need to restore fish passage and habitat in lower Freshwater Creek watershed, of which Cochran Creek is a sub-watershed, was originally conceived of in the 2005 Salmon and Steelhead Conservation Plan prepared through a public process by the Humboldt Bay Watershed Advisory Committee. The proposed project on Cochran Creek is supported by several agencies and the public. The project-site landowner supports the project, as do several adjacent and nearby watershed neighbors. See Exhibit 4 for Project Letters.
5. **Location:** The proposed project would be located within the coastal zone of Humboldt County.
6. **Need:** Without Coastal Conservancy funding, the project would not occur.
7. **Greater-than-local interest:** The proposed project will lead to the eventual restoration and expansion of critical salmon habitat on Cochran Creek that will benefit the northern California populations of coho, Chinook salmon and steelhead trout.

8. **Sea level rise vulnerability:** The Cochran Creek Fish Passage and Channel Restoration project adjoins the tidally influenced Fay Slough and includes the replacement of the tide gates at Cochran Creek and Quail Slough. The project is intended to produce a permanent upgrade of the tide gates to facilitate the passage of salmonids at both locations and a muted tidal cycle in Quail Slough. The project is encompassed by diked agricultural land. The project life-span will be permanent and as such will be subject to sea level rise (SLR) vulnerability. This planning and design phase will include consideration, design, and planning for SLR. In addition to providing salmonid habitat, passage, and restoring ecological function of the stream channels, modifications to the tide gates, dikes, and channels; the restoration will ameliorate current agricultural land drainage and minor flooding, enhancing the value of the agricultural land. An important consideration for both the land owner and the ecological function of the restoration will be impacts resulting from SLR. While it is possible to engineer protection from 55” of sea level rise, it is only desirable to do so in the context of the surrounding infrastructure. The entire Humboldt Bay shoreline is susceptible to SLR and substantial infrastructure exists between the project site and Humboldt Bay (e.g. Highway 101). Proposed members of the project team (Trinity Associates and Northern Hydrology and Engineering) are substantially involved in SLR vulnerability in the Humboldt Bay area and have the most knowledge concerning local impacts of SLR. The project will be designed to be functional for the highest SLR economically feasible given that adjacent land and infrastructure will influence the viability of additional measures. Trinity Associates predicts extensive failure of the current Humboldt Bay shoreline dike system after 2070 limiting the life-span of the proposed project to 55 years. If no improvements are made to the dikes in the Eureka Slough hydrologic unit, 2.4 miles of 15.3 miles of dike will overtop at the Mean Monthly Maximum tide (9.64 feet NAVD 88) predicted for 2050. The planning and design documentation will detail the impacts of multiple levels of SLR and provide adaptive management measures for the land owner for each level.

Additional Criteria

9. **Urgency:** Eight years after withdrawing their participation in the project, the landowner is supportive of restoration on their property. This presents a unique window of opportunity to restart the project and realize full restoration design for Cochran Creek. In order to complete designs, and leverage possible federal and other state funds for implementation, design efforts must begin immediately for completion to coincide with federal and other state funding cycles.
10. **Resolution of more than one issue:** The proposed work will address multiple resource enhancement objectives including fishery enhancement, wetland restoration, riparian corridor enhancement while at the same time improving conditions for agricultural operations.
11. **Leverage:** See the “Project Financing” section above.
12. **Conflict resolution:** As discussed earlier in “Project History”, due to a change in property ownership and subsequent concerns by the new landowner about the impacts of restoration to the economic viability of their farm, the opportunity to complete restoration planning for Cochran Creek was lost. However, with the landowner now agreeable to habitat restoration activities on their property, the proposed project can lead to alleviation of conditions adversely affecting fisheries and agriculture as well as restore trust and cooperation between resource agencies and private landowners.

13. **Innovation:** The tide gate that will replace the failed wooden flap-type tide gate is the “gold standard” for fish-friendly tide gates. This muted tidal regulator-fitted tide gate maximizes both quantity (longer time) and quality (lower velocities) of fish passage, improves interior water quality, restores the range of juvenile fish habitats in tidally influenced systems, and maintains agricultural land use while allowing maximum restoration values.
14. **Readiness:** The grantee is scheduled to begin data collection activities in summer 2016.
15. **Realization of prior Conservancy goals:** See “Project History” above.
16. **Return to Conservancy:** See the “Project Financing” section above.
17. **Cooperation:** The proposed project will convene technical advisory meetings with the local scientific community, federal, state and local resource agencies, and the Conservancy. Additionally, the landowner has been consulted and is supportive of the project.
18. **Vulnerability from climate change impacts other than sea level rise:** The primary expected stressors resulting from climate change to the northern California coastal salmonid populations, the primary beneficiary of this proposed restoration effort, are increased temperature and variations in precipitation. The best available science from the California state scientific and research community (<http://cal-adapt.org>) predicts that the temperature increase due to GHG emissions by 2100 will be between 3.0 and 5.3 degrees Fahrenheit (F), and that the average high temperature is forecast to increase from 67.6 to 75.0 degrees F with heat wave durations increasing from 4 to 50 days. While precipitation will continue in the Mediterranean seasonal pattern of dry summers and wet winters, the summers could be drier and the winters wetter. The proposed project will plan for habitat restoration that will provide winter rearing habitat safe from high flows, riparian cover and habitat that will keep stream temperatures cool, together safeguarding fish from anticipated climate changes.

This proposed restoration project will create additional salmonid habitat in the Humboldt Bay stream/estuary ecotone creating increased salmonid population resilience to climate change. It will protect the open space and riparian buffer necessary for ecological function from encroachment while also protecting the adjacent agricultural land from minor flooding. The riparian corridor will be planted with large trees that will sequester carbon, a major component of GHGs. The trees will shade the stream channel, mitigating some of the increased temperature. Most importantly this project will restore continuous access to the upper Cochran Creek watershed for spawning and rearing, increasing the resilience of the Humboldt Bay salmonid populations.
19. **Minimization of greenhouse gas emissions:** This phase of the Cochran Creek Fish Passage and Channel Restoration project entails only project planning and design and is unlikely to result in a measurable production of GHG emissions. However, CEI will ensure that its consultants utilize best management practices (BMPs) to reduce GHG emissions, if any, resulting from transportation associated with the planning and design aspects of this project, including: Carpooling to the restoration site, utilizing telecommunication technology for conferencing as opposed to driving to a location, and utilizing local personnel for fisheries surveys and water quality monitoring.

CONSISTENCY WITH LOCAL COASTAL PROGRAM POLICIES:

The project is consistent with the Humboldt Bay Area Plan of the Humboldt County Local Coastal Plan (Humboldt County General Plan, Volume II), (certified October 14, 1982). The Plan, and its supporting zoning regulations for the project area, contains policies to protect prime agricultural land, protect endangered species, and to preserve natural resource areas. Specifically, Chapter 3, Section 5(a) and its supporting maps designate much of the project area either as “Farmed Wetlands” or “Wetland Restoration Study Areas” and supports wetlands restoration “...when there is a willing seller and where the project will not interfere with adjacent agricultural operations.” The proposed project would lead to actions that would achieve gains both in habitat quality and agricultural productivity thus assisting Humboldt County in effectuating its Local Coastal Program and related Coastal Act policies.

COMPLIANCE WITH CEQA: The proposed project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the 14 Cal Code of Regs. section 15262, which exempts planning and feasibility studies for possible future actions. The project involves only the preparation of plans and information needed for environmental analyses and permit applications for habitat restoration for possible future actions that the Conservancy has not approved, adopted, or funded, and the project will consider environmental factors in its environmental analysis. The proposed project is also categorically exempt from CEQA pursuant to section 15306, which exempts basic data collection and research which will not result in a serious disturbance to an environmental resource. Staff will file a Notice of Exemption upon approval.