



Notice of Meeting
WILDLIFE CONSERVATION BOARD
Streamflow Enhancement Program
March 9, 2017, 9:00 a.m.
Natural Resources Building, First Floor Auditorium
1416 9th Street
Sacramento, California 95814

Final Agenda

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3. Developing Efficiencies for Instream Dedications Siskiyou County \$131,744	3

This proposal is to consider the allocation for a planning grant to The Nature Conservancy (TNC) for a cooperative project between Trout Unlimited (TU) and California Trout (CalTrout). TNC, TU, and CalTrout are together recognized as The California Salmon and Steelhead Coalition (Coalition). The objectives of this project are to develop an efficient process and model for water rights holders to dedicate water for instream flows in the Shasta River watershed, to provide information to practitioners via outreach, and to develop straightforward processes for analyzing consumptive use.

4. Weaver Creek Watershed Flow Enhancement Project **5**
Trinity County
\$171,355

This proposal is to consider the allocation for a planning grant to the Trinity County Resource Conservation District (RCD) for a cooperative project with the Bureau of Reclamation to plan and design invasive species removal, forest thinning, water use analysis, landowner outreach, and streamflow enhancement to extend the duration of summer surface flows in the Weaver Creek Watershed in Trinity County.

5. Outlet Creek Streamflow Enhancement Project **8**
Mendocino County
\$354,729

This proposal is to consider the allocation for a planning grant to Trout Unlimited, Inc. for a cooperative project with PG&E and Storesund Engineering to evaluate the feasibility and application of a number of tools to enhance streamflows including: (1) determining when and where streamflow conditions appear to be creating harmful conditions for salmonids in Ryan, Baechtel, and Broaddus creeks and where the most promising reaches for enhancing streamflows are located, (2) estimate the quantity of flow enhancement feasible in each reach; and identify the benefits that enhancements would provide to steelhead and salmon, and (3) work with landowners to identify opportunities whereby water users will agree to forgo or modify their summer water diversions, dedicate that water for instream uses through a 1707 dedication (or other applicable agreement), and implement water management practices such as conservation, efficiency, rainwater, or wet season storage to benefit wildlife.

6. Truckee River Flow Enhancement **10**
Nevada, Placer and Sierra
\$173,585

This proposal is to consider the allocation for a planning grant to the Truckee River Watershed Council to directly improve stream flows throughout the Truckee River system for the benefit of fish and wildlife by providing necessary data for successful implementation of the Truckee River Operating Agreement (TROA) in Nevada, Placer and Sierra Counties.

7. Flow Availability Analysis for Mark West Creek **13**
Sonoma County
\$363,418

This proposal is to consider the allocation for a planning grant to the Sonoma Resource Conservation District for a cooperative project with federal and local agencies, to develop a comprehensive model analyze the distribution and timing of stream flow of flow availability conditions relative to Coho habitat requirements to assist in identifying and prioritizing restoration efforts and developing strategies for enhancing summer streamflows in the Mark West Creek sub-basin to the Russian River, in Sonoma County.

8. Mill Creek Watershed Flow Enhancement Study **16**
Sonoma County
\$364,603

This proposal is to consider the allocation for a planning grant to the Sonoma Resource Conservation District (SRCD) for a cooperative project with the Natural Resources Conservation Service (NRCS), to address stream flow and Coho habitat issues through an integrated watershed model, and surface and groundwater monitoring on Mill Creek, within the Russian River watershed, in Sonoma County.

9. Studies to Support Coho in the Russian River Basin **19**
Sonoma County
\$958,512

This proposal is to consider the allocation for a planning grant to The Regents of the University of California (California Sea Grant) for a cooperative project with the National Oceanic and Atmospheric Administration, Trout Unlimited and the University of California, Berkeley, to collect field data and evaluate stream flow and Coho salmon survival studies to benefit endangered Coho salmon populations in Russian River tributaries. This study would continue to collect field data and analyze a six-year data set to determine which stream flow and related environmental metrics best predict summer survival.

10. Sierra Meadow Hydrology Monitoring Project **23**
Multiple Counties
\$763,771

This proposal is to consider the allocation for a planning grant to the Plumas Corporation for a cooperative project with the Department of Water Resources, California State University, Sacramento, and the United State Forest Service to implement a long term monitoring program that accurately quantifies the flow of water from mountain meadow landscapes to document the effectiveness of restoration efforts within Tulare, Fresno, Calaveras, El Dorado, Sierra, Plumas, and Lassen counties.

11. Green Gulch Creek Water Conservation **26**
Marin County
\$214,000

This proposal is to consider the allocation for a planning grant to the San Francisco Zen Center to perform a water use efficiency analysis on Green Gulch Farm, evaluate alternative water supplies and management strategies and their impacts on streamflow in Green Gulch Creek, develop a conceptual design for recommended alternative(s), all of which should ultimately result in future implementation of both short-term and long-term measures that will result in more reliable summer streamflow to mitigate changing climate conditions and the possibility of prolonged and future droughts on Green Gulch Creek, in Marin County.

- 12. Lagunitas Creek Floodplain Activation Flow Assessment** **28**
Marin County
\$157,742
- This proposal is to consider the allocation for a planning grant to the Salmon Protection and Watershed Network (SPAWN), for a cooperative project with University of California, Berkeley, to contribute to the implementation of increased overbank floodplain flows for Lagunitas Creek, which supports roughly 20 percent of the remaining population of critically endangered central California coast Coho salmon, located in the Lagunitas Creek Watershed in Marin County.
- 13. San Lorenzo Watershed Conjunctive Use Plan** **30**
Santa Cruz County
\$330,451
- This proposal is to consider the allocation for a planning grant to the County of Santa Cruz for a cooperative project with the San Lorenzo Valley Water District to develop an enhancement plan to improve water resource efficiency (Plan). The Plan will provide guidance for diverting excess winter surface flow in the San Lorenzo River Watershed to meet water supply needs, resting groundwater wells, and also providing active groundwater recharge. The Plan will be based on system modeling, operational procedures, and environmental analysis necessary to select the optimal management alternatives.
- 14. Scotts Creek Lagoon and Marsh Restoration Project** **32**
Santa Cruz County
\$435,000
- This proposal is to consider the allocation for a planning grant to the Resource Conservation District of Santa Cruz County for a cooperative project with California State Coastal Conservancy and Caltrans to develop scientifically supported decision making tools and create an ecological restoration design to optimize new transportation infrastructure that maximizes the resilience and ecological capacity of the system, and anticipates impacts of climate change, located in the Scotts Creek Watershed in Santa Cruz County.
- 15. Integrated Water Strategies to Enhance Flows** **35**
in Santa Barbara and Ventura Counties
\$581,141
- This proposal is to consider the allocation for a planning grant to Central Coast Salmon Enhancement (CCSE) for a cooperative project with the United States Forest Service, National Forest Foundation and Hick Law to assess, geographically identify, and prioritize water conservation and reduced consumptive use opportunities that promote the highest potential for instream flow contributions in five different watersheds in Santa Barbara and Ventura Counties. The study will assess a variety of acquisition and implementation project types that, in the aggregate, present a unique non-regulatory strategy to reduce surface and/or groundwater diversions and enhance flows for the long-term persistence of viable, self-sustaining, populations of anadromous steelhead.

- 16. Hart Ranch Instream Flow Enhancement** **37**
Siskiyou County
\$2,181,282
- This proposal is to consider the allocation for an implementation grant to California Trout (CalTrout) for a cooperative project with United States Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), The Nature Conservancy (TNC), and UC Davis Center for Watershed Sciences to dedicate instream, through a California Water Code section 1707 transfer, 1.5 cubic feet per second (cfs) of cold water to the Little Shasta River through a combination of on-farm efficiency savings and voluntary flow contributions, located on privately-owned land six miles east of Montague in Siskiyou County.
- 17. Hat Creek Enhancement Project** **41**
Shasta County
\$196,564
- This proposal is to consider the allocation for an implementation grant to the Fall River Resource Conservation District (RCD) for a project to enhance the natural hydrologic and biologic function of a 4000' segment of Hat Creek and restore approximately 27 acres of emergent riparian wetland in Shasta County. This restoration project will enhance Hat Creek's late-season streamflows.
- 18. McKee Creek Bedrock and Insert Floodplain Streamflow Enhancement** **44**
Humboldt County
\$135,720
- This proposal is to consider the allocation for an implementation grant to Sanctuary Forest Incorporated (SFI) for a cooperative project with the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service to restore geomorphic, hydrologic, and ecological processes in a 2,100 ft. reach of McKee Creek that will address the key constraints of low-to-no dry season streamflow, channel incision, disconnected floodplain, lack of off-channel habitat, and absence of instream wood.
- 19. McKee Creek Enhancement Project** **47**
Humboldt County
\$139,377
- This proposal is to consider the allocation for an implementation grant to Sanctuary Forest Inc. (SFI) for a cooperative project with the California Department of Fish and Wildlife and private foundations to enhance streamflows in McKee Creek. This project is on the McKee Creek and proposes to inundate an inset floodplain and adjoining hillslope during winter streamflows to enhance groundwater levels and summer streamflows which should enhance juvenile salmon rearing habitat. In addition, the project will enhance salmonid habitat by raising the streambed through a series of log and boulder step pools and by utilizing check dam techniques.

20. Deer Creek Streamflow Enhancement and Restoration **50**
Nevada County
\$137,940

This proposal is to consider the allocation for an implementation grant to Sierra Streams Institute (SSI) for a cooperative project with Lake Wildwood Association (LWA), a homeowner’s association, and the Sierra Nevada Alliance to enhance stream water quality and flows in Deer Creek by employing innovative practices to support integrated resource management.

21. Rancheria Creek Flow Enhancement and Restoration **54**
Sonoma County
\$3,467,000

This proposal is to consider the allocation for a grant to the Dry Creek Rancheria Band of Pomo Indians (Tribe) for a cooperative project with the Federal Highway Administration, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Bureau of Indian Affairs to implement 16 restoration actions. These actions, designed to enhance flows and improve ecological conditions and geomorphic processes, span a project area of 91± acres within the Dry Creek Rancheria, and will improve and restore habitat for endangered steelhead and Coho salmon in Rancheria Creek.

22. Pine Gulch Water Rights and Instream Flow Enhancement **57**
Marin County
\$406,917

This proposal is to consider the allocation for an implementation grant to the Marin Resource Conservation District for a cooperative project to assist three farms to modify storage ponds in order to enhance summer instream flows on Pine Gulch Creek (PGC). The four ponds are designed to store a total of 61.4 acre-feet by direct rainfall, sheet flow, and strict creek diversions limited to the winter months. These ponds will allow the farmers to completely relinquish their summer riparian water rights and dedicate them to instream flows under Section 1707 of the California Water Code. In return, the farmers have secured appropriate water rights for the winter months and limiting their riparian diversions in the spring.

23. Addressing Limiting Factors in the San Lorenzo River Lagoon **60**
Santa Cruz County
\$458,750

This proposal is to consider the allocation for an implementation grant to the City of Santa Cruz (City) for a cooperative project to address limiting factors in the San Lorenzo River estuary. Limiting factors will be addressed through the installation of a water level control structure, dedication of 0.5 cubic feet per second (cfs) of summer instream flows, and the installation of large wood structures to increase habitat complexity for steelhead, adjacent to the Santa Cruz Beach Boardwalk, within the San Lorenzo River in the City of Santa Cruz, Santa Cruz County.

24. San Ysidro Flow Enhancement and Water Conservation **63**
Santa Barbara County
\$940,601

This proposal is to consider the allocation for a grant to the Immaculate Heart Community/La Casa de Maria (LCDM) Retreat and Conference Center for a cooperative project with the National Oceanic and Atmospheric Administration (NOAA), American Tanks & Loomis Tanks, and the California Conservation Corps (CCC) to offset existing agricultural irrigation, landscaping, and non-potable domestic use through capture and reuse of up to 800,000 gallons of water through onsite rainwater reuse, storm water management and irrigation conservation. This will allow LCDM to forbear seasonal diversion and use of a riparian water right and dedicate approximately 7 million gallons of water annually to instream flow, thereby enhancing creek base flows and steelhead trout habitat on the San Ysidro Creek.

25. Southern California Coastal Watersheds Arundo Eradication **66**
Orange and San Diego Counties
\$2,307,585

This proposal is to consider the allocation for an implementation grant to the Mission Resource Conservation District (MRCD) for a cooperative project with the La Pata Mitigation Project, Integrated Regional Water Management, US Army Corps of Engineers (ACOE), and local agencies to control 98 acres of the invasive, non-native plant *Arundo donax* (Arundo) on 17.8 river miles over four watersheds in Southern California: San Juan, Santa Margarita, San Luis Rey, and San Diego watersheds in both Orange and San Diego Counties. This WCB project will fund activities that are part of watershed programs that already exist, and so will have benefits in terms of long-term success/follow-up, outreach, and a large-scale watershed based approach.

26. Rancho Cañada Carmel River Flow Enhancement **69**
Monterey County
\$4,520,000

This proposal is to consider the allocation for a grant to Monterey Peninsula Regional Parks District (MPRPD) for a cooperative project with the California Department of Fish and Wildlife, California State Coastal Conservancy, California Natural Resources Agency, Trust for Public Land, and California American Water Company, to acquire between 185± acres of private land and its associated water rights, located along the Carmel River approximately one mile east of Carmel-by-the-Sea in Monterey County.

27. WCB Program **72**
Informational

The proposed projects will be funded through the California Stream Flow Enhancement Program and these projects meet the goal of providing enhanced stream flow benefiting fish and wildlife. Projects are consistent with the following goals outlined in the WCB Strategic Plan.

California Stream Flow Enhancement Program FY16/17

The future of California's water supply faces many uncertainties. To address these uncertainties, the California Water Action Plan (CWAP) was developed as a framework for sustainable water management, to enhance the resilience of the water resource system, and restore important species and habitat. The Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) authorized the Legislature to appropriate funds to address these challenges. A total of \$200 million was allocated to the Wildlife Conservation Board (WCB) for projects that enhance stream flow.

A total of \$38.4 million, including \$5 million designated for planning projects, was allocated to WCB for expenditure in FY 2016/17 for the California Stream Flow Enhancement Program (SFEP) through a competitive grant process, in coordination with the California Department of Fish and Wildlife (CDFW), State Water Resources Control Board (SWRCB) and other partners. An additional \$18,243,722 of remaining funds from FY 2015/16 is also available. Guided by the CWAP, funding is focused on projects that will lead to a direct and measurable enhancement to the amount, timing and/or quality of water, for anadromous fish; special status, threatened, endangered or at risk species; or to provide resilience to climate change.

WCB released the 2016 SFEP Solicitation Package (PSN) on July 1, 2016. This PSN closed on August 31, 2016, with a total of 66 proposals received, and \$58,115,904.75 in requested funds. Proposals were reviewed through a multi-tiered process. First, submissions were required to pass an administrative review, where applications were evaluated on adherence to the SFEP's guidelines and completeness. Proposals that passed the administrative phase were then scored by a minimum of three reviewers, consisting of a CDFW regional specialist, SFEP staff, and SWRCB staff and other technical experts. Scoring was based on the scoring criteria and standards delineated in the PSN. Projects receiving scores of 75 or higher were presented to a Selection Panel for further assessment and discussion. The Selection Panel was made up of managers and staff from CDFW, WCB, and SWRCB. The Selection Panel met on January 5, and January 12, 2017, and developed a recommended list of projects based on numerous factors, including the following: scoring, feasibility, durability and how projects supported the specific goals of the SFEP Solicitation Package. Projects recommended for funding by the Selection Panel were reviewed by the WCB Executive Director, in preparation for the March 9, 2017, Board meeting.

The fund allocation summary of recommended SFEP projects for FY 2016/17 is presented on the following page (Table 1).

Projects recommended for funding are presented in the following links: [Table 2: Wildlife Conservation Board Stream Flow Enhancement Program FY 2016/17, Projects Recommended for Funding \(pdf\)](#), and an overview of all proposals received can be found in [Table 3: Wildlife Conservation Board Stream Flow Enhancement Program FY 2016/17, Project Summaries \(pdf\)](#).

Table 1: Fund allocation summary for Wildlife Conservation Board, California Stream Flow Enhancement Program FY 2016/17

	WCB Prop 1 Funds Available for FY 2016/17	Number of Projects Received	Requested Funds	Number of Projects Recommended for Funding	Funds to be Allocated for Recommended Projects
Planning	\$5,000,000.00	38	\$13,117,251.37	13	\$5,000,000.00
Implementation	\$33,400,000.00 ²	24	\$32,983,187.38	10	\$10,371,736.00
Acquisition ¹		4	\$12,015,466.00	1	\$4,520,000.00
FY 15/16 Remaining Funds	18,243,722.00				
<i>Totals</i>	\$56,643,722.00	66	\$58,115,904.75	25	\$19,891,787.00

¹ Appraisals for acquisition projects will be reviewed and approved by the Department of General Services.

² Combined total funds for Implementation and Acquisition.

3. Developing Efficiencies for Instream Dedications

Siskiyou County

\$131,744

This proposal is to consider the allocation for a planning grant to The Nature Conservancy (TNC) for a cooperative project between Trout Unlimited (TU) and California Trout (CalTrout). TNC, TU, and CalTrout are together recognized as The California Salmon and Steelhead Coalition (Coalition). The objectives of this project are to develop an efficient process and model for water rights holders to dedicate water for instream flows in the Shasta River watershed, to provide information to practitioners via outreach, and to develop straightforward processes for analyzing consumptive use.

LOCATION

The project is located within the Shasta River watershed which is approximately 6 miles southwest of the city of Grenada and 15 miles southwest of Yreka, within Siskiyou County. The project proposes to directly enhance the Shasta River. The Shasta River was named one of the most ecologically important tributaries in the entire Klamath River watershed for potential prime salmon and steelhead habitat.

PROJECT DESCRIPTION

Unique among salmon bearing streams along the Pacific Coast, hydrology in the Shasta River is driven by springs whose water originates from the slopes of a 14,000 foot volcano. The cold springs bubbling out of the ground year-round provide relatively cold temperatures and constant flows to the Shasta River, which has made the Shasta River the largest salmon-producing tributary to the Klamath. Historically, Chinook salmon runs in the Shasta exceeded 50,000 adult fish. At present, salmon runs in the Shasta range from less than 1,000 to 11,000 adults.

The agriculture community in the Shasta River watershed is reliant on the water provided by these spring sources to maintain production and economic viability. Dominated largely by small cow-calf operations, water is diverted to flood irrigate pastures and for stock-water. The State and federal listing of Coho salmon, coupled with the recent drought, has brought to the forefront the need to develop voluntary approaches to secure flow instream while at the same time continuing to support working landscapes.

Challenge:

Currently, water rights which do not legally have fish and wildlife preservation and enhancement listed as a beneficial use cannot be left instream without risk of diversion by other water users. The petition to change the allowable use of a water right to instream uses is known as a California Water Code (CWC) § 1707 transfer. CWC § 1707 provides that the purpose of use of all or a portion of a water right can be for instream uses. Until recently, only a small number of CWC § 1707 petitions have been approved by the State Water Resources Control Board (Water Board). Due in part to the fact that the petition process can be both lengthy and costly, few petitions have been successfully completed. Another issue arising in the context of instream flow dedications is the fact that California law prohibits a water right holder who may be seeking to dedicate or transfer a water right instream using

CWC § 1707 from injuring or unreasonably affecting any legal user of water. Finally water users can have minimal knowledge of their water rights and responsibilities in regards to water dedications and, as a result of this lack of knowledge, oftentimes do not pursue a CWC § 1707 instream flow dedication when they otherwise might.

Objective:

The primary focus of this proposal is on batching CWC § 1707 petitions for change to instream flow purposes – as opposed to filing individual petitions -- on the upper Shasta River. The project has three elements: 1) conduct a pilot program that will batch petitions for change for three water rights under California Water Code Section 1707 on the upper Shasta River; 2) for some types of 1707 changes, the amount of water that can be dedicated to instream flow is limited to the amount of water that would have been consumptively used, this project will survey other states and professionals in California to develop recommendations for conducting consumptive use analyses for instream flow transactions in California; and 3) developing a concise guide to water rights and compliance for water users in coastal streams. Through this proposed project it is anticipated that an efficient process and a model will be developed for water rights holders to follow to dedicate water for instream flows. In addition, this project will help practitioners to work with agencies to more efficiently analyze consumptive use.

PROJECT COST

The proposed funding breakdown for the project is as follows:

Item	WCB	Applicant	Totals
Personnel Services	37,362	73,071	110,433
Operating Expenses	7,472	50,779	58,251
Contract(s)	86,910	39,500	126,410
<i>Totals</i>	<i>\$131,744</i>	<i>\$163,350</i>	<i>\$295,094</i>

Project costs will be for: establishment of technical workgroups, due diligence for CWC 1707, and outreach plans. Contractual work will provide services necessary to implement CWC §1707 change petitions including engineering, water right legal expertise, and graphic design.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff also recommends that the Board approve this project as proposed; allocate \$131,744.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

4. Weaver Creek Watershed Flow Enhancement Project

Trinity County

\$171,355

This proposal is to consider the allocation for a planning grant to the Trinity County Resource Conservation District (RCD) for a cooperative project with the Bureau of Reclamation to plan and design invasive species removal, forest thinning, water use analysis, landowner outreach, and streamflow enhancement to extend the duration of summer surface flows in the Weaver Creek Watershed in Trinity County.

LOCATION

The project area is located approximately 40 miles northwest of Redding near the town of Weaverville, and the project area includes three miles on West Weaver Creek, and four miles on Little Brown's Creek. The Weaver Creek Watershed includes the town of Weaverville, the largest population center in Trinity County is a sub-basin of the Trinity River Watershed in Northern California. Weaver Creek is one of two major tributaries to the Trinity River between Lewiston Dam and Douglas City. Weaver Creek flows from its headwaters on the southern slopes of Monument Peak in the Trinity Alps to its confluence with the Trinity River at Douglas City.

PROJECT DESCRIPTION

Challenge:

National Oceanic and Atmospheric Administration Fisheries, within its responsibilities for stewardship of ocean resources, also develops and implements recovery plans for threatened and endangered species. The Recovery Plan for Southern Oregon/Northern California Coast Coho salmon identified altered hydraulic function as a "very high" ranking threat for fry and juvenile Coho in Weaver Creek. Historic hydraulic mining from the gold rush era, through the early part of the last century, reshaped the landscape and dredged all the major streams, with piles of mining tailings now a ubiquitous feature on the landscape. Dredger mining continued in the county through the early 1970's. These disturbed riparian areas are perfect nurseries for invasive weed species, with Himalayan blackberry, yellow star thistle, and scotch broom being the most abundant in the Weaver Creek Watershed. Timber harvest during the middle of the last century created a spider web of eroding roads and trails that slough off red sediment into the waterways after major rain events. Thirty years of watershed work on roads has reduced sediment delivery to waterways, although the entire Trinity River watershed is still listed as a Water Quality Limited Segment under section 303, subdivision (d) of the Clean Water Act for sediment delivery. Additionally, this watershed is rated at High and Very High State Responsibility Area (SRA) Fire Hazard Severity Zone by CalFire. Fire exclusion over the last 35 years, combined with the recent drought, created high and dangerous fuel loads. Reducing fuel loads is critical to avoiding catastrophic fire and the resulting environmental degradation.

Despite ecological degradation in the watershed, resident and anadromous fish species that have been observed in West Weaver Creek include Coho, steelhead, brown trout, speckled dace, threespine stickleback, and Klamath smallscale sucker. The low temperature and high water quality found in the headwaters are ideal for supporting Coho and steelhead. As climate change drives future temperatures in Northern California higher, cold headwater inputs will become increasingly vital to supporting threatened fish populations, namely threatened anadromous species such as Coho salmon.

Objective:

This planning proposal will lay the ground work for future implementation projects that will support threatened anadromous fish by increasing healthy habitat and stream flow in the Weaver Creek Watershed through weed removal, fuel reduction, water conservation and channel rehabilitation. The RCD will map of invasive weeds in riparian corridors and create a plan for forest thinning to benefit oaks within the West Weaver sub-watershed. This design would also reduce the risk of catastrophic wildfire. Permits and environmental documentation for the implementation phase will also be completed. Additionally, the RCD will conduct an analysis of current water usage by private property owners on Little Brown's and West Weaver Creeks, with the objective of creating a plan that will allow these private property owners to reduce surface water use through conservation, connection to municipal supply, surface storage and/or other methods such as forbearance. This will be completed with direct input from stakeholders through outreach and existing watershed coordination programs and will include completing the necessary environmental documents to allow for future implementation. Finally, the RCD will complete design and environmental documentation to rehabilitate 800 feet of Little Brown's Creek, a tributary to Weaver Creek, with the goal of prolonging summer surface flows.

PROJECT FUNDING

Item	WCB	BOR WaterSmart	BOR Trinity River Watershed Coordination	RCD	Total
Personnel Services	72,920				72,920
Operating Expenses	17,807				17,807
Contract(s)	73,628				73,628
Contingency	7,000				7,000
Total Cost Share	0	66,566	\$22,189	3,040	91,795
<i>Totals</i>	<i>\$171,355</i>	<i>\$66,566</i>	<i>\$22,189</i>	<i>\$3,040</i>	<i>\$263,150</i>

Project costs will be for data collection, analysis, approved environmental documentation, mapping, design documents, and all related materials.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$171,355.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the Department of Fish and Wildlife to proceed substantially as planned.

5. Outlet Creek Streamflow Enhancement Project
Mendocino County
\$354,729

This proposal is to consider the allocation for a planning grant to Trout Unlimited, Inc. for a cooperative project with PG&E and Storesund Engineering to evaluate the feasibility and application of a number of tools to enhance streamflows including: (1) determining when and where streamflow conditions appear to be creating harmful conditions for salmonids in Ryan, Baechtel, and Broaddus creeks and where the most promising reaches for enhancing streamflows are located, (2) estimate the quantity of flow enhancement feasible in each reach; and identify the benefits that enhancements would provide to steelhead and salmon, and (3) work with landowners to identify opportunities whereby water users will agree to forgo or modify their summer water diversions, dedicate that water for instream uses through a 1707 dedication (or other applicable agreement), and implement water management practices such as conservation, efficiency, rainwater, or wet season storage to benefit wildlife.

LOCATION

The project area is located in the Outlet Creek Basin (Basin) approximately 25 miles northwest of Ukiah, within the town of Willits in Mendocino County. The Basin is an important headwater watershed of the Eel River. The Basin is 95% privately owned and has one of the longest records of timber harvest and ranching activities dating back to the mid-1800s and these activities are still active today. The watershed supports Coho salmon and steelhead trout. Ryan, Baechtel, and Broaddus Creeks are within the Basin which has a Mediterranean climate characterized by cool, wet winters with high runoff and streamflows and dry warm summers with low flow conditions ranging from approximately 2 to 0.01 cubic feet per second, with some reaches becoming disconnected in dry years.

PROJECT DESCRIPTION

Challenge

The National Marine Fisheries Service's Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon identifies low dry season streamflow as a major limiting factor for Coho in tributaries to Outlet Creek, and calls for the development and implementation of a forbearance program to reduce summer diversion as a high priority recovery action.

Objective:

This project will work in the Ryan, Baechtel, and Broaddus Creeks, tributaries of Outlet Creek, to establish the first on-the-ground water storage program to reduce summer diversions and improve dry season streamflows for the benefit of Coho salmon and steelhead trout. Objectives include collecting streamflow data, quantifying existing human water use, identifying alternative sources of water such as wintertime diversion to storage and rainwater harvesting, identifying priority stream reaches, identifying the most promising project types and locations for increasing streamflows, analyzing the necessary permits and approvals for those projects, and forming the necessary relationships with willing

landowners. Trout Unlimited will install and operate streamflow gauges at three to five locations in each creek through the project period to identify where streamflow is most significantly impaired, and then link measured flow impairments to causes upstream activities.

In the event that no large impairments are identified, these streamflow measurements will be coupled with spatial analyses of water demand to identify where cumulative impacts of small diversions are likely to have the greatest effects on streamflow through the summer. These evaluations will be made by reviewing aerial photographs to identify sources of water demand (such as houses and gardens) and assigning a daily water demand value to each. These evaluations should answer key uncertainties about how much, where, when, and how water management practices affect streamflow and what opportunities exist to benefit flow in the Basin.

The information from this study will provide the data and knowledge needed to move forward with final design, permitting, and implementation of projects to enhance dry season streamflows to improve conditions for salmon and steelhead in Ryan, Baechtel, and Broaddus creeks.

PROJECT FUNDING

Item	WCB	Trout Unlimited	Storesund Engineering	PG&E	Total
Personnel Services	161,128				161,128
Operating Expenses	57,086	1,500		5,000	63,586
Contract(s)	136,515		49,000		185,515
<i>Totals</i>	<i>\$354,729</i>	<i>\$1,500</i>	<i>\$49,000</i>	<i>\$5,000</i>	<i>\$410,229</i>

Project costs will be for project management, streamflow measurement, water use analysis, and streamflow enhancement project development, design, and permitting.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3) Section 15262, Planning and Feasibility Studies for possible future actions. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$354,729.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

**6. Truckee River Flow Enhancement
Nevada, Placer and Sierra
\$173,585**

This proposal is to consider the allocation for a planning grant to the Truckee River Watershed Council to directly improve stream flows throughout the Truckee River system for the benefit of fish and wildlife by providing necessary data for successful implementation of the Truckee River Operating Agreement (TROA) in Nevada, Placer and Sierra Counties.

LOCATION

The property (Property) is located in and around the town of Truckee, within the Truckee River Basin. The Truckee River Basin is within both California and Nevada and includes the Truckee River, Little Truckee River, Donner Creek, Prosser Creek and Independence Creek.

PROJECT DESCRIPTION

The Truckee River Flow Enhancement Project (Project) will directly improve stream flows throughout the Truckee River system for the benefit of fish and wildlife by providing necessary data for successful implementation of TROA in a manner which will benefit California's fish and wildlife resources.

A negotiated Truckee River Operating Agreement was federally mandated as a part of Public Law 101-618. TROA went into effect in December of 2015 and is the legal framework for water storage and delivery in the Truckee River system California's interests in TROA are managed by the Department of Water Resource (DWR) staff from the North Central Region Office and their efforts include coordinating with the major signatories of TROA, state and local agencies and local stakeholders. The parties involved are California, Nevada, TROA Administrator, Bureau of Reclamation, the Pyramid Lake Paiute Tribe, Truckee Meadows Water Authority and other interested parties. TROA provides for the protection of water rights while allowing some water rights holders to engage in water credit transactions to meet environmental and recreational demands in California that have historically been unrecognized.

Under TROA, DWR has two different mechanisms for influencing flows in the Truckee River watershed. TROA allows for the establishment of Fish Credit Water and Environmental Credit Water for the State of California. This water is then directly controlled by DWR and can be released or stored to improve flows for environmental or recreational reasons. The other mechanism by which California can influence flows is through the "California Guidelines," submitted annually to the TROA Administrator. These guidelines include desired flows during times of the year, and requests for ramping rates (the rate at which flows are changed coming out of a reservoir). When moving other TROA parties' water around the Truckee River System, the Administrator takes the Guidelines into account. In reality though, the complexity of the system is such that DWR needs to work directly with other TROA parties to improve stream flows for fish and wildlife. It is incumbent upon DWR to provide direct recommendations for specific water transactions that would provide environmental benefits to California streams without harming any water rights.

To accommodate desired flow requests which benefit fish and wildlife DWR needs comprehensive and current data. In its first year of TROA operations, this need for more robust biological data became apparent. DWR has been very successful in obtaining some beneficial water transactions. With better data, DWR will be more successful in attaining real

instream flow benefits for fish and wildlife under TROA. This project will provide the data needed to make these types of recommendations to support fish and wildlife.

Under TROA, DWR is committed to providing staff support and technical expertise to negotiate for California. DWR has proven to be extremely capable of doing the necessary modeling to identify opportunities for improved flows in California, and then successfully negotiating with other parties to attain the flows. However, DWR is hampered by the lack of basic data for the Truckee River system, and by the lack of water under California's control. By completing this project, DWR will be able to use this enhanced knowledge long after the grant period to improve streamflow throughout the Truckee River watershed.

Challenge:

This proposal will directly address the lack of data to support flow requests, the lack of water under California's control, and promote local stakeholder coordination.

Lack of data: Recommendations for preferred, minimum, and maximum flows under TROA are provided by the California Department of Fish and Wildlife (CDFW) to DWR. However, the flow-habitat relationship data the recommendations are based on are from a 1996 study completed by CDFW and are now over 20 years old.

Lack of water under direct control: As previously mentioned, DWR can directly control two types of water under TROA: Fish Credit Water and California Environmental Credit Water. Fish Credit Water is established under rules specified in TROA, but additional water rights could be acquired and designated as California Environmental Credit Water. Identifying these rights, understanding the current water rights market, and determining how to assign these water rights has proven to be an impediment to obtaining additional water for beneficial uses.

Local stakeholder coordination: TRWC has been providing staff support to the Truckee River Basin Water Group (TRBWG), which is the entity that addresses TROA and flow-related issues in the California portion of the Truckee River Basin. TRWC and Trout Unlimited (TU) also participate in TROA "Fish Team" meetings with DWR and CDFW staff to provide local knowledge of the fishery and stream habitat. TRWC and TU do not have any secured funding for this important stakeholder coordination work. Because of the complexity of TROA, the numerous local interests, and the stream miles affected by TROA, these coordination efforts are crucial and time intensive for the first several years of TROA. Dedicated funding for meeting coordination and participation is necessary for these critical early years of TROA implementation.

Objective:

The Project will provide valuable data that will allow for enhanced streamflows under the Truckee River Operating Agreement (TROA). The project aims to: (1) Update flow recommendations in the California Guidelines with current habitat suitability data for key dam-controlled tributaries in the Truckee River watershed, (2) determine optimum rates of flow changes (ramping) to protect biological resources on dam-controlled tributaries in the Truckee River system and include these ramping recommendations in the California Guidelines, (3) complete hydraulic modeling to determine optimum flows to improve biological conditions through weed management and sediment transport in appropriate stream reaches, (4) increase California's ability to directly control water to be used for

beneficial uses through the acquisition of water rights and designating them as California Environmental Credit Water, and (5) increase local stakeholder knowledge and capacity. The information provided by this project would be incorporated into the California Guidelines, developed annually by DWR with input from CDFW and local stakeholders. DWR will readily incorporate the new data on preferred flows and ramping rates into the Guidelines and will actively work with other TROA parties to achieve desired conditions.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	Applicant	DWR	TRBWG	USFS	Total
Personnel Services	82,110					82,110
Operating Expenses	28,788	72,000				100,788
Contract(s)	62,687		175,000	4,050	4,200	245,937
<i>Totals</i>	<i>\$173,585</i>	<i>\$72,000</i>	<i>\$175,000</i>	<i>\$4,050</i>	<i>\$4,200</i>	<i>\$428,835</i>

Project costs will be for project management and coordination, monitoring, data analysis, and reporting. Contracts will provide services related to habitat suitability data collection, flow mapping, flow recommendations, hydraulic studies and analysis, and water rights acquisition legal review.

CEQA

As lead agency, the Department of Water Resources has prepared the Truckee River Operating Agreement Environmental Impact Statement/Environmental Impact Report pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff has considered the Final EIS/EIR and prepared proposed, written findings documenting WCB's compliance with CEQA. Subject to the Board's approval of the project, staff will file a Notice of Determination with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$173,585.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

**7. Flow Availability Analysis for Mark West Creek
Sonoma County
\$363,418**

This proposal is to consider the allocation for a planning grant to the Sonoma Resource Conservation District for a cooperative project with federal and local agencies, to develop a comprehensive model analyze the distribution and timing of stream flow of flow availability conditions relative to Coho habitat requirements to assist in identifying and prioritizing restoration efforts and developing strategies for enhancing summer streamflows in the Mark West Creek sub-basin to the Russian River, in Sonoma County.

LOCATION

The project aims to gather data and model Mark West Creek, Porter Creek, Mill Creek, Weeks Creek, Van Buren Creek, and all other tributaries in the Mark West Creek watershed. The property (Property) is located approximately 6 miles north of the City of Santa Rosa on Mark West Creek, in Sonoma County. Mark West Creek is a tributary to the Laguna de Santa Rosa, which is tributary to the Russian River. National Marine Fisheries Service's Central California Coast Coho Recovery Plan identifies Mark West Creek as a Core Area for habitat protection and restoration. The Mark West Creek sub-basin provides some of the best remaining summer rearing habitat in the Russian River watershed.

PROJECT DESCRIPTION

Challenge:

The Mark West Creek watershed's streamflow impairment is the result of many factors, including the watershed's Mediterranean climate, increasing demand for water over time, hydrologic modification due to agricultural and rural development, and the effects of climate change and prolonged drought. These factors have resulted in insufficient summer baseflows, lack of high quality pool habitat, lack of winter refugia, and stream temperature which have all been identified as limiting factors for steelhead trout (threatened) and Coho salmon (endangered) throughout the watershed.

Objective:

The project will focus on the development and application of a detailed integrated hydrologic model of the Mark West Creek watershed. Streamflow monitoring stations have been established in the watershed through the Russian River Coho Water Resources Partnership and National Marine Fisheries Service. These stations will provide measurements of stream flow conditions at discrete locations, and the hydrologic model will allow these point-based observations to be leveraged into a comprehensive understanding of stream flow conditions throughout the watersheds. Low flows are generally controlled by groundwater discharges in this region, and the proposed model was selected specifically because of its capacity to simulate groundwater flow dynamics and the interactions between groundwater and surface water.

Once calibrated, the model will provide the basis for describing spatial and temporal variations in hydrologic conditions throughout the watershed. Reaches will be delineated based on flow availability conditions as they relate to Coho habitat requirements. Simulated water depths will be compared to passage requirements and reaches where pools become

disconnected will be identified and classified based on duration of disconnection which has been shown to relate closely to Coho survival rates. These outputs will provide the basis for generating restoration prioritization maps that identify reaches that provide the most optimal habitat conditions where restoration projects aimed at ensuring optimal pool habitat should be focused, and reaches where flow are limiting but still providing some habitat value where flow enhancement projects would be most beneficial. Additionally, a series of future condition scenarios will be developed based on projections of future increases in population and agricultural development in combination with future climate projections. Each of these scenarios will be evaluated in terms of the effects to groundwater recharge, streamflow, and the distribution of flow-based Coho habitat suitability conditions.

In addition to generating these outputs for existing conditions, the models will be used to assist in flow enhancement planning by evaluating the effects of intentional flow releases, changes in the timing and/or locations of streamflow diversions and groundwater abstractions, and stormwater management/groundwater recharge enhancement projects. Conceptual design plans (30% project design) will be developed for a series of specific flow enhancement projects located at strategic locations (selected based on simulated hydrologic conditions and anticipated effectiveness) on protected lands in the watershed including the Pepperwood Preserve and the properties planned for the Mark West Regional Park. In addition, the project will support The Sonoma Resource Conservation District's and the Russian River Coho Water Resource Partnership's ongoing efforts to develop flow enhancement projects on private lands in the watershed. Design of these projects will be a highly collaborative process including current landowners, the Sonoma County Water Agency, members of the Coho Water Resources Partnership, the Friends of the Mark West Watershed, and cooperating private land owners.

In addition to the technical components of the study, the proposed project includes public outreach and education. The outreach component is designed to involve stakeholders in the project to assist with watershed characterization, foster community support and acceptance of the study, and ensure that project findings are fully integrated into ongoing restoration efforts in the watersheds. The identified and conceptually designed projects on protected lands in the watershed will be used as learning opportunities for all stakeholders in the watershed via collaborative outreach and education. A Technical Advisory Committee (TAC) will be assembled to provide periodic peer review and guidance throughout the project.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	NRCS	Sonoma County Water Agency	Coast Range Watershed Institute	Friends of Mark West Watershed	Sonoma County Regional Parks	Total
Personnel Services	41,346						41,346
Operating Expenses	8,861						8,861
Contract(s)	313,211						313,211
Total Cost Share		50,000	10,000	34,957	12,700	3,000	110,657
<i>Totals</i>	<i>\$363,418</i>	<i>\$50,000</i>	<i>\$10,000</i>	<i>\$34,957</i>	<i>\$12,700</i>	<i>\$3,000</i>	<i>\$474,075</i>

Project costs will be for data collection and verification, model development and calibration, analysis, and flow enhancement project development and design.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$363,418.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

8. Mill Creek Watershed Flow Enhancement Study
Sonoma County
\$364,603

This proposal is to consider the allocation for a planning grant to the Sonoma Resource Conservation District (SRCD) for a cooperative project with the Natural Resources Conservation Service (NRCS), to address stream flow and Coho habitat issues through an integrated watershed model, and surface and groundwater monitoring on Mill Creek, within the Russian River watershed, in Sonoma County.

LOCATION

The project area is located approximately seventeen miles northwest of Santa Rosa and two miles south of Healdsburg in the Mill Creek watershed, which is part of the Russian River watershed, in Sonoma County. Mill Creek has been identified by state and federal fisheries agencies as providing some of the best remaining habitat for endangered Coho salmon in the Russian River Watershed with National Marine Fisheries Service's (NMFS) Central California Coast Coho Recovery Plan (Coho Plan) identifying it as a Core Area for protection and restoration.

PROJECT DESCRIPTION

The project (Project) will develop a Mill Creek watershed-wide integrated hydrologic model that will provide crucial information that will advance future on-the-ground projects to meaningfully improve the amount, timing and quality of water throughout the Mill Creek watershed and SRCD will also conduct a reach-specific surface water/groundwater study with a particular focus on Lower Mill Creek. The Project supports special status, anadromous fish (endangered Coho salmon and threatened steelhead trout), and contributes to climate change resilience by modeling for climate change scenarios in order to plan for streamflow enhancement projects that will be able to respond to anticipated future conditions.

Challenge:

NMFS' Coho Plan identifies Mill Creek as a Core Area for protection and restoration. The watershed provides some of the best remaining summer rearing habitat in the Russian River watershed. However, insufficient summer streamflow is considered a limiting factor and pools can become disconnected, especially during drier water years, potentially leading to fish mortality due to the elevated temperature and low dissolved oxygen conditions that can develop in these disconnected pools. Identifying ways to increase summer stream flows can be a means of increasing available summer rearing habitat for Coho salmon and steelhead trout populations. Furthermore, agricultural properties adjacent to this reach obtain the majority of their water for irrigation from shallow groundwater wells on the banks of the Mill Creek. Landowners report that this reach goes completely dry in some years, has isolated pools in wetter-than-normal years, and year round streamflow in very wet years. However, reports on flow conditions through the reach are based on informal landowner observations, and have not been consistently documented, or compared with groundwater elevation data in order to characterize groundwater-surface water interactions.

Objective:

The first component of this project is the development of a comprehensive integrated hydrologic model of the Mill Creek watershed by the Coast Range Watershed Institute. This model will provide a framework for addressing a wide variety of land, water, and habitat management issues and as such is expected to provide a diverse set of benefits consistent with the intent of Proposition 1 and the California Water Action Plan. By quantifying the spatial and temporal variations in streamflow and groundwater conditions, the project will identify stream reaches in the Mill Creek watershed that provide the most significant habitat benefits and portions of the watershed most critical for generating groundwater recharge. This information is vital for informing efforts aimed at restoring fisheries habitat as well as efforts aimed at preserving the most sensitive portions of the watershed that are significant for sustaining groundwater resources.

By simulating the effects of drought and climate change, the project will help identify stream reaches and portions of the watershed most sensitive to the effects of drought and climate change and the expected future changes in habitat and water supply conditions. This information is critical for drought and climate change adaptation planning efforts. By gaining an understanding of where sensitive areas are located and the magnitude of expected changes, efforts can be made to minimize or offset these impacts through targeted water conservation and flow augmentation efforts. The improved understanding of hydrologic conditions and flow augmentation recommendations resulting from this project should lead directly to the implementation of more effective streamflow enhancement projects.

The second part of the proposed project will develop fine-scale information on Lower Mill Creek, a reach that has been identified as a key area for Coho salmon and steelhead trout but where hydrology is not understood. Due to the current lack of hydrologic understanding, the reach has not been targeted by organizations and government agencies working on streamflow enhancement and other habitat restoration projects in the watershed. However, biologists from CA Sea Grant/UC Cooperative Extension reported that the majority of Coho salmon and steelhead trout that spawn in Mill Creek spawn in this lower reach. Biologists believe this lower reach is critical for juvenile rearing, and the lack of streamflow in the reach is having detrimental impacts to fish survival. By analyzing the amount and timing of surface water flow, and its interaction with groundwater, the proposed project will allow the Coho Partnership and other organizations to identify which types of projects could most effectively enhance streamflow and other habitat parameters for Coho salmon in Lower Mill Creek. In particular, SRCD will use the output of the proposed project, along with water use information from local landowners, to select and apply for funding for high priority water storage or other streamflow enhancement projects that will reduce landowners' need to pump water during the summer months and result in an increase to both groundwater levels and streamflow in Mill Creek.

In three consecutive dry seasons, Trout Unlimited and SRCD will chart the presence of surface water through the reach to determine where and how long pools are present and will also record groundwater levels at four wells (located adjacent to the channel) approximately

every six weeks. This data will illuminate the relationship between surface and groundwater levels through each dry season. Additionally, two streamflow gauges will quantify streamflow monthly to determine when and where Lower Mill Creek is gaining or losing water due to soil and aquifer hydraulic conductivities. All of the data collected in Lower Mill Creek will be used to inform and calibrate the flow availability model.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	NFWF	NRCS RCPP	Trout Unlimited	Coast Range Watershed Institute	Sonoma County Water Agency	Total
Personnel Services	51,054						51,054
Operating Expenses	11,867						11,867
Contract(s)	301,682						301,682
Total Cost Share	0	10,000	50,000	5,626	6,315	8,000	79,941
<i>Totals</i>	<i>\$364,603</i>	<i>\$10,000</i>	<i>\$50,000</i>	<i>\$5,626</i>	<i>\$6,315</i>	<i>\$8,000</i>	<i>\$444,544</i>

Project costs will be for project management, landowner and project coordination, gauge installation and monitoring, data analysis, and reporting.

CEQA

The project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3) Section 15262, Planning and Feasibility Studies for possible future actions. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$364,603.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

**9. Studies to Support Coho in the Russian River Basin
Sonoma County
\$958,512**

This proposal is to consider the allocation for a planning grant to The Regents of the University of California (California Sea Grant) for a cooperative project with the National Oceanic and Atmospheric Administration, Trout Unlimited and the University of California, Berkeley, to collect field data and evaluate stream flow and Coho salmon survival studies to benefit endangered Coho salmon populations in Russian River tributaries. This study would continue to collect field data and analyze a six-year data set to determine which stream flow and related environmental metrics best predict summer survival.

LOCATION

The proposed research and monitoring will be carried out on streams that pass through a total of 318 parcels (Properties). This project will encompass Dutch Bill Creek, Green Valley Creek, and Mill Creek within the Russian River watershed in Sonoma County. Ninety-eight percent of the land adjacent to these creeks is privately owned and includes 245 individual landowners. California Sea Grant (CSG) program has been working in these watersheds, in partnership with other organizations, for more than a decade and has established relationships with hundreds of landowners.

PROJECT DESCRIPTION

Dutch Bill, Green Valley, and Mill creeks have been a focus of Central California Coast endangered Coho salmon (Coho) recovery efforts for many years. Millions of dollars have been invested in habitat enhancement and a conservation hatchery augmentation program to bring Russian River Coho populations back from the brink of extinction. In recent years, the CSG Salmon and Steelhead Monitoring Program has documented an increase in adult Coho returns to the Russian River watershed from less than 10 per year to a range of 313 to 536 per year over the past 5 years. However, survival of progeny during the summer season has been consistently poor in most stream reaches due to low flow conditions. The low flow conditions highlight a critical bottleneck to Coho recovery in most Russian River tributary streams, including Dutch Bill, Green Valley, and Mill creeks.

Challenge:

Dutch Bill, Green Valley, and Mill creeks have been identified by the California Department of Fish and Wildlife (CDFW) and NOAA Fisheries (NOAA) as flow-impaired streams that are critical for recovery of endangered Coho populations. Water diversions for rural residential and agricultural water use are widespread in the study streams, intensifying flow-related stressors to endangered Russian River Coho populations. Over the past decade, multiple efforts have been initiated to improve stream flow in order to benefit fish populations. For example, CDFW and NOAA initiated the California Voluntary Drought Initiative (VDI) Program, encouraging the development of voluntary agreements between CDFW, NOAA, and private individuals to provide instream flows for fish. Dutch Bill, Green Valley, and Mill creeks are three of four top priority streams for the VDI Program. CDFW also took emergency action by rescuing thousands of juvenile salmonids from drying pools throughout the Russian River watershed and relocating them to reaches with suitable flow. Given the substantial time and resources being invested in stream flow-related activities, there is a clear need for rigorous monitoring and scientific analysis to evaluate and improve the effectiveness of flow enhancement projects.

Objective:

CSG, in collaboration with the University of California, Berkeley (UC Berkeley), will conduct environmental monitoring, data analysis, and modeling that will directly aid resource managers in developing instream flow recommendations at the times and locations that will provide the most benefit to threatened and endangered salmonid populations. In addition, project outcomes will also assist with planning for emergency actions, and identifying, evaluating, and adaptively managing stream flow enhancement projects.

There are two main components to the proposed research and monitoring project:

1) Develop predictive models relating stream flow, environmental metrics, and juvenile Coho salmon survival in small coastal California streams.

Throughout California, there is a critical need to understand the low-flow thresholds for sustaining imperiled salmonids during the summer dry season. Pilot work conducted by CSG and UC Berkeley has shown that dissolved oxygen, wetted volume, and the length of time that pools are disconnected in the summer months have a strong influence on survival of juvenile salmonids; however, these relationships vary among, and even within, streams.

This project will utilize data collected by CSG over the past six years as well as new data collected during the proposed study period, to develop predictive models relating stream flow, environmental metrics, and juvenile Coho salmon survival in the three study streams. The project will incorporate a hydrogeological component to this analysis with the goal of explaining observed reach- and stream-level variation and develop models that can be applied to stream reaches beyond those in which the studies are conducted. Such information could be used to set flow targets, help identify, prioritize, and design flow enhancement projects, and inform decisions about when and how to execute emergency measures.

The Russian River and its tributaries are an ideal system for this study because there is a core monitoring program in place and an existing six-year dataset that can be utilized. There is a pressing need for state and federal agencies to develop instream flow recommendations, with priority attention given to the study streams, and to evaluate whether and how stream flow improvement projects are benefitting fish. Project results will have immediate utility in informing these efforts and contribute to the long-term success of flow-related fish recovery programs in the Russian River Basin.

2) Document and model wetted habitat conditions in Dutch Bill, Green Valley, and Mill creeks in relation to stream flow and fish distribution, and build a predictive model for surface water recession.

For three summers, beginning in 2017, the project will conduct sequential wet/dry mapping surveys between May and October to generate in-season maps that display wetted stream habitat available to fish. Data from these surveys will be joined with snorkeling and spawner survey data collected by the Coho Salmon Conservation Program (formerly the Russian River Coho Salmon Captive Broodstock Program) and the Coastal Monitoring Program whose monitoring efforts are focused on documenting in-stream survival of juvenile Coho, outmigration of smolts, and returns of adult fish. The data from the surveys will be used to generate maps displaying wetted habitat conditions in relation to fish distribution. Wetted habitat data will also be related to stream flow data collected by the Russian River Coho Water Resources Partnership (Coho Partnership) who have been collecting stream data within the project reaches since 2009 to help measure improvements to stream flow and increased water reliability. The maps will assist managers with understanding how wetted habitat conditions correspond to instream flow levels. Wetted habitat maps will quantify the

effects of stream flow improvement projects and will be provided to managers on a weekly basis to help guide their decisions regarding the appropriate timing and duration of flow augmentations, and to inform whether and when to take specific management actions such as fish relocations and conservation measures. A model to predict stream drying under variable rainfall/climatic scenarios will be developed using the wetted habitat data collected through this project, along with precipitation data, stream flow data, and hydrogeological metrics from Geographic Information Systems.

By providing resource agencies and Coho salmon recovery partners with critical information about the relationships between stream flow and fish, this project has the potential to improve summer low-flow management for the recovery of threatened and endangered anadromous fish populations. Tools developed from this work will enable resource agencies to effectively manage and restore stream flow in times of drought and prepare for the increasing likelihood of low stream flow conditions predicted with climate change. In partnership with public agencies, non-profit organizations, and private landowners working to implement stream flow enhancement projects, this research and monitoring can lead to increases in stream flow at times and in locations that will most benefit endangered Coho salmon and threatened steelhead populations.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	NOAA	Trout Unlimited / NFWF	UC Berkeley	SCWA/ CDFW	Applicant	Total
Personnel Services	422,069						422,069
Operating Expenses	169,342						169,342
Contract(s)	367,101						367,101
Total Cost Share		306,488	100,000	76,832	329,103		812,423
Indirect						24,211	24,211
<i>Totals</i>	<i>\$958,512</i>	<i>\$306,488</i>	<i>\$100,000</i>	<i>\$76,832</i>	<i>\$329,103</i>	<i>\$24,211</i>	<i>\$1,466,043</i>

Project costs will include; staff salaries, field and monitoring equipment, data collection supplies, and subcontractor expenses. Leveraged state funds totaling \$405,935 will be provided to this project by UC Berkeley and CDFW (via the Sonoma County Water Agency). Non-state cost-share funds totaling \$406,488 will be provided to this project from NOAA and Trout Unlimited. Contractual work will contribute to data collection, analyses, modeling, and dissemination of results.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$958,512.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

10. Sierra Meadow Hydrology Monitoring Project

Multiple Counties

\$763,771

This proposal is to consider the allocation for a planning grant to the Plumas Corporation for a cooperative project with the Department of Water Resources, California State University, Sacramento, and the United State Forest Service to implement a long term monitoring program that accurately quantifies the flow of water from mountain meadow landscapes to document the effectiveness of restoration efforts within Tulare, Fresno, Calaveras, El Dorado, Sierra, Plumas, and Lassen counties.

LOCATION

The properties (Properties) are located in eight mountain meadows throughout the Sierra Nevada: (1) Bull Run Creek (Dry Meadow), in the North Fork Kern River watershed, Tulare County (2) Big Meadows Creek, in the South Fork Kings River watershed, Fresno County, (3) Mattley Creek, in the North Fork Mokelumne River watershed, Calaveras County, (4) Middle Fork Consumnes River (Foster Meadow), in the Middle Fork Consumnes River watershed, El Dorado County, (5) Davies Creek, in the Little Truckee River watershed, Sierra County, (6) Goodrich Creek, in the North Fork Feather River watershed, Lassen County, (7) Red Clover Creek and (8) Last Chance Creek, both of which are in the East Branch North Fork Feather River watershed, Plumas County.

PROJECT DESCRIPTION

The project seeks to monitor and characterize the baseline conditions of stream flows and water temperatures at eight locations throughout the Sierra Nevada (Project). Five of the eight Properties identified above are degraded meadow systems and will be restored during the next two to three years through other funding sources. The remaining three sites have previously been restored and will provide post-restoration data, as well as baseline data for future planned projects in the respective watersheds.

Challenge:

Quantifying improvement in hydrologic function from restoration of degraded meadows, onsite and downstream, has been elusive. Numerous studies on individual restored meadows in short time frames (2-5 years) have shown a wide range of outcomes. As a consequence, estimates of potential water retention and release from restored meadows in the Sierra Nevada vary by an order of magnitude, approximately 50,000 to 500,000 acre-feet annually. This Project will address the difficulty of linking the causality of meadow floodplain restoration to changes in the timing of instream flows. For the five Properties where restoration projects are in the planning phase, there is an incised channel in each meadow that has lowered the water table, resulting in a conversion of wet to moist vegetation to dry vegetation communities. Average channel incision depths vary from four to ten feet, with water overtopping the channel banks every 5 to 50 years, versus every 1.5 years, in a pre-degraded condition. The riparian area in each meadow has been reduced from the width of the historic meadow floodplain (roughly 600 feet), to gully bottom width (roughly 20 feet).

Objective:

The Project will collect baseline pre-restoration and post-restoration hydrologic data on a suite of meadow restoration projects representing a range of watershed characteristics. All the meadow systems will be restored in the next 2-3 years, or have already been restored. Providing one or more years of pre-restoration data and extended post-restoration data, the Project will assess the effectiveness of, and demonstrate the link between meadow hydrologic conditions and enhanced stream flows emanating from restoration of degraded meadows. Previous experience within the Feather River basin indicates that given inter-annual variability, watershed/project sizes, and climate change, stream flow monitoring alone can be insufficient to capture restoration benefits. The addition of extensive oxygen isotope and electrical conductivity measurements which, can be used to identify the sources of surface flow in the landscape, and should help pinpoint change related to water residency time from restoration.

Project data will be used to quantify how the benefits of meadow restoration develop over time. Data from the project will inform entities to better quantify the potential benefits to water supply from restoration projects, which may be used to help prioritize future projects for restoration and/or funding. The data will also help improve long-term statewide water planning efforts by increasing the accuracy of water retention and release estimates from upper watersheds across a range of hydrogeomorphic basin types.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	Plumas Corp	CSUS	USFS	CDWR	Total
Personnel Services	241,806					241,806
Operating Expenses	126,706					126,706
Contract(s)	393,603					393,603
Contingency	1,656					1,656
Total Share Cost		29,874*	51,996	200,000	85,200	367,070
<i>Totals</i>	<i>\$763,771</i>	<i>\$29,874</i>	<i>\$51,996</i>	<i>\$200,000</i>	<i>\$85,200</i>	<i>\$1,130,841</i>

*\$27,040 of funds is pending via the Rose Foundation.

Project costs will be for project administration, monitoring equipment and operation, data collection and analysis, and reporting.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$763,771.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

11. Green Gulch Creek Water Conservation

Marin County

\$214,000

This proposal is to consider the allocation for a planning grant to the San Francisco Zen Center to perform a water use efficiency analysis on Green Gulch Farm, evaluate alternative water supplies and management strategies and their impacts on streamflow in Green Gulch Creek, develop a conceptual design for recommended alternative(s), all of which should ultimately result in future implementation of both short-term and long-term measures that will result in more reliable summer streamflow to mitigate changing climate conditions and the possibility of prolonged and future droughts on Green Gulch Creek, in Marin County.

LOCATION

Green Gulch Farm (the Farm) is located approximately 15 miles northwest of the City of San Francisco, along Green Gulch Creek, which is a tributary of Redwood Creek. Redwood Creek in Marin County has one of the few remaining native coastal Coho populations in the North Bay area.

PROJECT DESCRIPTION

Challenge:

Sufficient streamflow is needed throughout the spring and summer months to provide rearing habitat for juvenile Coho and steelhead. The salmonid populations have been negatively impacted by the drought, with typically viable summer rearing locations drying up or becoming uninhabitable due to high temperature and low dissolved oxygen conditions. Lower Green Gulch Creek is considered to be high value rearing habitat in the Redwood Creek watershed, and a potential refugia for salmonids during drought years when the upper watershed conditions become inhospitable.

The Farm uses stored water (on- and off-channel ponds) and riparian diversions to irrigate its organic vegetable fields and gardens. These fields and diversions are located just upstream of a recently restored reach and likely reduce streamflows during the spring and summer. Currently the Farm is meeting its irrigation needs by the use of three storage reservoirs. When storage supplies get low, the Farm uses its well and surface water diversions.

Objective:

The proposed project will produce a plan which will guide the Farm in taking the steps needed to reduce its use of summer diversions, maintain its farming operation, and create greater streamflow resiliency in lower Green Gulch Creek. The San Francisco Zen Center is committed to improving habitat for salmonids, but seeks sound information prior to selecting and investing in improvements. The Farm collected water use and management data for at least 20 years in various formats. One of the first steps of the proposed project is to compile and analyze the water use data and map the Farm's current water management system. A detailed water budget for the Farm will be produced and opportunities to reduce dry season withdrawals from Green Gulch Creek will be evaluated. The long term goal of the project is to produce a plan which can be implemented to increase spring and summer streamflows to lower Green Gulch Creek and Redwood Creek lagoon. It is anticipated that the plan will identify a method for achieving flow enhancement through modifications to the operation of an instream pond and a shallow near-channel well benefiting late spring and summer flow

rates in Green Gulch Creek during average and dry years. These increases would likely provide substantial improvements to juvenile salmonid summer rearing habitat.

PROJECT COST

The proposed funding breakdown for the project is as follows:

Item	WCB	Applicant	Totals
Personnel Services	15,235	6,923	22,158
Operating Expenses	3,088	1,385	4,473
Contract(s)	195,677		195,677
<i>Totals</i>	<i>\$214,000</i>	<i>\$8,308</i>	<i>\$222,308</i>

Project costs will be for site analysis and water budget preparation, water supply and conservation feasibility analysis and alternative supply plan, and conceptual site designs.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$214,000.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

12. Lagunitas Creek Floodplain Activation Flow Assessment

Marin County

\$157,742

This proposal is to consider the allocation for a planning grant to the Salmon Protection and Watershed Network (SPAWN), for a cooperative project with University of California, Berkeley, to contribute to the implementation of increased overbank floodplain flows for Lagunitas Creek, which supports roughly 20 percent of the remaining population of critically endangered central California coast Coho salmon, located in the Lagunitas Creek Watershed in Marin County.

LOCATION

The project area is located approximately 14 miles southwest of Novato and two miles east of Point Reyes Station on Lagunitas Creek, within the Lagunitas Creek Watershed in Marin County. The current streamflow regime for Lagunitas Creek is based on water releases from Peters Dam which were set in 1995 under Water Board Order: WR 95-17.

PROJECT DESCRIPTION

Challenge:

Recent watershed studies have found that floodplain inundation by overbank flows provides critical winter rearing habitat for juvenile Coho and represents the limiting factor for Coho survival in the Lagunitas Creek Watershed. Current water releases from Peters Dam were set under Water Board Order: WR 95-17 and are now 21 years old (the flow regime). The current water releases do not account for the new knowledge of habitat needs, limiting factors analysis, and instream flow requirements for salmonids. In order to solve the outdated shortcomings of the current flow regime set 21 years ago, NOAA's California Central Coast Coho Salmon Recovery Plan calls for the optimization of instream flows for salmonids and their ecological processes. NOAA recommends actions to manage reservoirs and dam releases to maintain suitable off-channel rearing habitat with the identification of a "floodplain activation flow."

Objective:

This project will enhance stream flows by studying and developing a plan which will provide water managers, regulators, and biological practitioners with the information necessary to implement the floodplain activation flow into the flow regime. A flow regime which incorporates floodplain activation flows would optimize overbank flows for endangered anadromous salmonids and facilitate important ecological processes, such as overbank flow food-web production, point bar development, vegetation germination, woody material recruitment, channel accretion and avulsion, all of which are not accounted for in the current flow regime. The floodplain activation flow assessment will identify the magnitude, frequency, duration, timing, rate of change, and intensity of stream discharges needed for a long-term flood event that produces characteristic ecological benefits for salmonids as needed for rearing, spawning, food-web productivity, and other ecological processes. Under the scope of the project, SPAWN and UC Berkeley personnel will determine the optimal floodplain activation flow through topographic mapping, 2D hydraulic modeling, real-time hydrologic measurements, salmonid habitat suitability index determination, and comparisons to the floodplain activation flow discharges with the current hydrograph to identify how often, and to what degree, the floodplain activation flow is being met under the current flow regime. The assessment will also identify methods and tools which can be used to improve the flow regime with the floodplain activation flow. This project will also identify stream reaches of

lower Lagunitas Creek that can benefit from restoration to facilitate floodplain enhancement and connection under the determined flow changes. Using this new knowledge SPAWN will collaborate with water managers and regulators to adapt the current flow regime to incorporate the floodplain activation flow into the flow regime. Following the identification of the floodplain activation flow, if changes to water rights are needed to improve flows based, then filing a petition pursuant to Water Code 1707 will be planned. SPAWN is committed to working with water managers and regulators in the future to hopefully to implement the recommendations in the assessment to improve the flows for endangered salmonids.

PROJECT COST

The proposed funding breakdown for the project is as follows:

Item	WCB	Applicant	UC Berkeley	Total
Personnel Services	91,650			91,650
Operating Expenses	25,417			25,417
Contract(s)	40,675			40,675
Total Cost Share		60,210	11,200	71,410
<i>Totals</i>	<i>\$157,742</i>	<i>\$60,210</i>	<i>\$11,200</i>	<i>\$229,152</i>

Project costs will be for geomorphic and habitat assessments and data review, topographic and bathymetric surveys, flow measurements, hydraulic modeling, generation of weighted usable area (WUA) and floodplain activation flow, analysis of current flow regime, and outreach.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3) Section 15262, Planning and Feasibility Studies for possible future actions that have not been approved, adopted, or funded. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$157,742.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

13. San Lorenzo Watershed Conjunctive Use Plan

Santa Cruz County

\$330,451

This proposal is to consider the allocation for a planning grant to the County of Santa Cruz for a cooperative project with the San Lorenzo Valley Water District to develop an enhancement plan to improve water resource efficiency (Plan). The Plan will provide guidance for diverting excess winter surface flow in the San Lorenzo River Watershed to meet water supply needs, resting groundwater wells, and also providing active groundwater recharge. The Plan will be based on system modeling, operational procedures, and environmental analysis necessary to select the optimal management alternatives.

LOCATION

The project area is approximately 10 miles northwest of the city of Santa Cruz, and the project will benefit the southern portions of the San Lorenzo River Watershed, including Fall Creek, Bull Creek, Bennett Creek, Boulder Creek, Bean Creek and Zayante Creek, in Santa Cruz County. The San Lorenzo River Watershed provides water for the San Lorenzo Valley Water District (SLWWD), the Scotts Valley Water District (SVWD), the City of Santa Cruz (City), and multiple property owners with private wells and diversions. SVWD and most private property owners rely entirely on groundwater extracted from the Santa Margarita Groundwater Basin. The City relies almost exclusively on surface water, most of which comes directly from diversions in the San Lorenzo Watershed, or from Loch Lomond Reservoir on Newell Creek, a tributary to the San Lorenzo River. SLWWD uses both surface diversions from tributaries to the San Lorenzo River and groundwater from the Santa Margarita Basin.

PROJECT DESCRIPTION

Challenge:

The San Lorenzo River plays an essential role in steelhead recovery on the Central Coast. The *NOAA Fisheries Coastal Multispecies Recovery Plan Public Draft Vol. IV, Central California Coast Steelhead* identifies the San Lorenzo River as one of eight populations of steelhead in the Santa Cruz Mountains Diversity Stratum. Currently, the summer baseflow is considered “poor” for juvenile rearing as a result of the number and magnitude of water diversions. Water diversions and impoundments are also considered a “very high” threat to the population. The last four years of drought has exacerbated the stresses on fish.

Objective:

This project will seek to enhance stream flow in two ways:

- 1) *By utilizing more groundwater during the dry season, less surface water will be diverted from streams.*
- 2) *By allowing the Santa Margarita Groundwater Basin to rest and recharge, conjunctive use will contribute to increased basin storage, recovery, and sustainability.*

The Plan will be based on system modelling, operational procedures and environmental analysis necessary to select the optimal management alternatives. If the modelling shows that the current wells, water diversions, and/or treatment facilities are not sufficient to meet conjunctive use needs, new infrastructure requirements will be identified as well. The final product will be the Plan with accompanying CEQA review and water rights filings, as well as a list of recommended infrastructure upgrades. Once completed, the primary entity taking action to implement the Plan will be the San Lorenzo Valley Water District.

The Plan will identify ways to enhance dry season stream flows through increased water resource management efficiency. By using existing infrastructure to implement routine exchanges of water, the water districts will be able to increase surface water diversions during the winter when the San Lorenzo watershed has excess flow. This will enable the over-drafted Santa Margarita Basin to rest providing an opportunity to recharge. Further research provided by this funding will determine whether active recharge of treated surface water into the groundwater basin is possible. After the rainy season ends, the water districts can utilize groundwater resources, thereby reducing surface water diversions from the streams when steelhead are present.

PROJECT COST

The proposed funding breakdown for the project is as follows:

Item	WCB	San Lorenzo Valley Water District	Totals
Personnel Services	61,511		61,511
Operating Expenses	15,640		15,640
Contract(s)	253,300	284,700	538,000
<i>Totals</i>	<i>\$330,451</i>	<i>\$284,700</i>	<i>\$615,151</i>

Project costs will include: staff salaries, permitting and CEQA processing fees, operating expenses for different subcontractors, and gauging equipment installation as needed. The SLVWD is contributing \$100,000 to the Groundwater Sustainability Agency that will help support this work, \$180,000 to infrastructure improvements necessary to implement conjunctive use, and \$4,700 in staff time.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$330,451.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

14. Scotts Creek Lagoon and Marsh Restoration Project

Santa Cruz County

\$435,000

This proposal is to consider the allocation for a planning grant to the Resource Conservation District of Santa Cruz County for a cooperative project with California State Coastal Conservancy and Caltrans to develop scientifically supported decision making tools and create an ecological restoration design to optimize new transportation infrastructure that maximizes the resilience and ecological capacity of the system, and anticipates impacts of climate change, located in the Scotts Creek Watershed in Santa Cruz County.

LOCATION

The project area is located approximately 15 miles northwest of the city of Santa Cruz in Santa Cruz County. The 2012 National Marine Fisheries Service Coho Recovery plan regards Scotts Creek as being the most important stream for supporting a sustained run of Coho, and for regional recovery. The creek, its marsh plain, and lagoon have been significantly impacted and functionally degraded by historic activities, most notably construction of Highway 1.

PROJECT DESCRIPTION

Coastal lagoons are critical nursery habitat for salmonids, and studies have demonstrated that juveniles reared in lagoon habitats are substantially larger than those reared in stream reaches and have better survival rates once they enter the ocean. Water balance analyses produced for Caltrans in 2012, analysis of historical maps and aerial photos, as well as evolving understanding of bar-built estuaries across California, highlight the significant impact that hydrological modifications can have on systems that are governed by the complex interplay of freshwater inputs (groundwater and surface water) and tidal dynamics.

Challenge:

Three major limiting factors have been identified for the Scotts Creek estuary and they are all linked to the current infrastructure associated with the Highway 1 crossing. These factors are: (1) a lack of hydrologic connectivity between the channel and the marshplain, (2) a lack of complexity in the main channel, and (3) changes to the natural timing and duration of lagoon breaching. In combination, these three limiting factors result in a significant loss in the effective area and quality of habitat available for threatened and endangered (T&E) species within the estuary system. Scotts Creek runs in a straight channel controlled by levees. Because of this straight channel, the water flows directly through the small opening below the Highway 1 bridge which severely reduces the ability of the Scotts Creek system to provide critical refugia and rearing habitat for listed salmonids and tidewater goby, provide slack water breeding habitat for California red-legged frogs, and provide dynamic dune habitat to support nesting snowy plovers. Moreover, the road fill and small bridge opening do not allow for beach migration and concurrent inland migration of key estuarine habitats. Additionally, increase sediment transport and peak flows suggested by downscaled climate models would further exacerbate this lack of resilience as watershed sediments would be trapped behind the road fill and could lead to rapid accretion of the marshplain and further disconnection during all by the highest storm events or highest lagoon stands.

Objective:

This project seeks to remedy these limiting factors through the development of: (1) quantitative tools to support scientific and consensus based decision-making, (2) restoration designs that restore ecological dynamism and connectivity, and (3) the design of new Highway 1 transportation infrastructure that maximizes the resilience and ecological capacity of the system and anticipates impacts of climate change. This project will develop restoration and infrastructure designs for the system that maximize the ecological value of the existing surface and groundwater inputs to re-establish a dynamic and complex lagoon and marsh system for the benefit of multiple T&E species. The project will design a plan to restore the lagoon and marsh system so that more, higher quality water is available to T&E species during their critical life stages. In particular, the technical work will help Caltrans and the Technical Advisory Committee design a system that will not only be resilient to climate change, but will result in a two-fold (or more) increase in channel length through the marsh, a 50-100% increase in the area of deep, slack water environments in the marshplain, backwaters/alcoves, and the mainstem creek, and will also restore a more natural breaching regime by removing infrastructure that impedes the fluvial-tidal dynamics that control breaching and lagoon formation. These changes will enable the Scotts Creek system to maximize use of existing flows (winter and summer) to enable salmonids to enter and exit the system during critical migration periods and provide the local salmonid, red-legged frog, and goby population's with habitat to exploit and expand.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	State Coastal Conservancy	Caltrans	Totals
Personnel Services	79,820			79,820
Operating Expenses	15,970			15,970
Contract(s)	339,210			339,210
Total Cost Share		77,000*	84,000	161,000
<i>Totals</i>	<i>\$435,000</i>	<i>\$77,000</i>	<i>\$84,000</i>	<i>\$596,000</i>

Project costs will be for: project management and outreach, data collection and synthesis, Technical Analysis, TAC Workshop and Design Alternatives, integration and analysis of bridge design alternatives, and design plans. *\$77,000 pending from SCC.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies for possible future actions. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$435,000.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the Department of Fish and Wildlife to proceed substantially as planned.

**15. Integrated Water Strategies to Enhance Flows
in Santa Barbara and Ventura Counties
\$581,141**

This proposal is to consider the allocation for a planning grant to Central Coast Salmon Enhancement (CCSE) for a cooperative project with the United States Forest Service, National Forest Foundation and Hick Law to assess, geographically identify, and prioritize water conservation and reduced consumptive use opportunities that promote the highest potential for instream flow contributions in five different watersheds in Santa Barbara and Ventura Counties. The study will assess a variety of acquisition and implementation project types that, in the aggregate, present a unique non-regulatory strategy to reduce surface and/or groundwater diversions and enhance flows for the long-term persistence of viable, self-sustaining, populations of anadromous steelhead.

LOCATION

The creeks to be evaluated include: (1) Thacher Creek to San Antonio Creek to Ventura River to Pacific Ocean, in Ventura County, and (2) Carpinteria Creek to Pacific Ocean, (3) Hot Springs Creek to Montecito Creek to Pacific Ocean, (4) Cold Springs Creek to Montecito Creek to Pacific Ocean, (5) San Ysidro Creek to Pacific Ocean, (6) Tajiguas Creek (Gaviota Coast) to Pacific Ocean, and (7) El Jaro Creek to Salsipuedes Creek to Santa Ynez River to Pacific Ocean, in Santa Barbara County.

PROJECT DESCRIPTION

Challenge:

Water storage, withdrawal, conveyance, and diversions for agriculture and municipal purposes have greatly reduced or eliminated historically accessible steelhead habitat in both Santa Barbara and Ventura Counties. Modification of natural flow regimes has resulted in depleted flows necessary for migration, spawning and rearing, increased water temperatures, changes in fish community structures, flushing of sediments from spawning gravels, and reduced gravel recruitment. Across both counties, adequate stream flow is a significant barrier to the recovery of steelhead.

Objective:

This project will frame, geographically identify and prioritize water conservation and reduced consumptive use opportunities that promote the highest potential for instream flow contributions in five different watersheds in Santa Barbara and Ventura Counties. The project will assess a variety of acquisition and implementation project types that, in the aggregate, present a unique non-regulatory strategy to reduce surface and/or groundwater diversions and enhance flows for the long-term persistence of viable, self-sustaining, populations of anadromous steelhead in Santa Barbara and Ventura Counties. The project will scope and measure individual and cumulative potential for geographically significant conservation projects. Projects will be assessed and rated by their local instream flow benefits such as on site recycled water opportunities, ornamental and agricultural irrigation best management strategies, Low Impact Development storm water infiltration, Water Conservation Management Best Management Practices, and voluntary water right transactions such as acquisition, lease, and donations. Consultants will quantify the opportunity in water savings to the user as well as multiple benefits to watershed processes and landowners.

This project incorporates various innovative technologies and practices. Technologies include incorporating remote spatial sensing and evaporative transpiration analysis for gross

water consumptive identification. In combination with an evapotranspiration analysis, innovative practices such as integrated water management assessments will be applied to gross areas to ascertain the potential of reduced consumptive use. Outreach strategies will be incentive-based to focus on innovative tool kits, and data evaluation will further refine study results. In total, all of the components and processing steps will be encapsulated into an interactive, scalable model for prioritizing enhancement flow opportunities in other statewide watersheds.

PROJECT FUNDING

Item	WCB	CCSE	USFS	South Coast Habitat Restoration	Hicks Law	National Forest Foundation*	Total
Personnel Services	15,644						15,644
Operating Expenses	15,312						15,312
Contract(s)	550,185						550,185
Total Cost Share		1,022	10,000	3,200	12,000	225,000	251,222
<i>Totals</i>	<i>\$581,141</i>	<i>\$1,022</i>	<i>\$10,000</i>	<i>\$3,200</i>	<i>\$12,000</i>	<i>\$225,000</i>	<i>\$832,363</i>

**Pending*

Project costs will be for project management, watershed assessments, data collection and analysis, monitoring, design, and outreach.

CEQA

The Project is statutorily exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15262, Planning and Feasibility Studies). Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$581,141.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

16. Hart Ranch Instream Flow Enhancement

Siskiyou County

\$2,181,282

This proposal is to consider the allocation for an implementation grant to California Trout (CalTrout) for a cooperative project with United States Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), The Nature Conservancy (TNC), and UC Davis Center for Watershed Sciences to dedicate instream, through a California Water Code section 1707 transfer, 1.5 cubic feet per second (cfs) of cold water to the Little Shasta River through a combination of on-farm efficiency savings and voluntary flow contributions, located on privately-owned land six miles east of Montague in Siskiyou County.

LOCATION

The property (Property), known as the Hart Ranch, is approximately 17 miles east of Yreka in Siskiyou County, which is located in the North Central portion of California adjacent to the California-Oregon border. The Property is situated within the Little Shasta sub-basin of the Shasta River Watershed within the Klamath River Basin. Hart Ranch holds the water rights to the 1.5 cfs proposed for instream dedication.

PROJECT DESCRIPTION

The Hart Ranch Instream Flow Enhancement Project will result in 1.5 cfs of cold water dedicated instream to the Little Shasta River. This water will enhance year-round flows starting in the foothills reach at the Hart Ranch diversion structure, located at river kilometer (RK) 18.6, and specifically target the outmigration of juvenile Coho salmon from April 1 through June 30. This dedication will be achieved through a combination of on-farm water efficiency savings and voluntary flow contributions from existing priority water rights. Proposed on-farm efficiency and water management improvements include 1) construction of new stock watering facilities including piping, troughs, riparian fencing, and planting 2) replacement of the ranch's failing main pipeline 3) and movement and modification of the Hart diversion structure. The project will remove a concrete flash board dam at Hart Ranch and construct 105-feet of roughened channel with inset large boulders. By removal of this dam and construction of a roughened channel, the project will allow juvenile and adult Coho salmon to access to seven kilometers of habitat in the Little Shasta River that was previously blocked.

Challenge:

The Shasta River was historically one of the most productive salmon streams in California. Groundwater from cold, nutrient-rich springs provided nearly ideal aquatic habitat conditions that supported large Chinook and Coho salmon populations. More than a century of aquatic and riparian habitat degradation along the Shasta River and its tributaries (including the Little Shasta River) has resulted in dramatic declines in wild salmon populations, in particular the federally threatened Coho salmon. The observed decline of Coho in the Shasta River coincided with the development of both surface and groundwater sources in support of irrigated agricultural activities throughout the Shasta Basin including the Little Shasta River. Water development led to reductions in the quantity and quality of cold-water habitats for rearing Coho salmon. Historic adjudication of water rights did not consider the water needs of native fish species and, as a result, surface water supplies are managed to prioritize agricultural and other water use.

The Little Shasta River is over-appropriated for agricultural use. Historical data indicates that summertime streamflows approximately 10 RK upstream from the Hart Ranch are often less

than the cumulative water rights of the first priority water right holders in the Little Shasta River Valley. During the current drought, this led to “zero-flow” conditions throughout most of the lower reaches though the valley from mid-June through mid-November of 2015. “Zero flow” conditions are when the river loses connectivity and flow, oftentimes resulting in isolated ponds of water. Lack of connectivity contributes to passage limitations for adult and juvenile salmonids, reductions in structurally complex aquatic habitat, and degraded water temperature conditions during juvenile Coho over-summering. According to National Oceanic and Atmospheric Administration Fisheries’ (NOAA) Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon, “Altered Hydrological Function” is classified as a very high stress for fry, juvenile, and smolt Coho in the Shasta River. When the irrigation season begins, there is a decrease in summer rearing habitat and juveniles are forced to move upstream to tributaries or downstream to the mainstem of the Klamath prematurely, where they face poor water quality and elevated water temperatures. Lack of flow from RK 20 to RK 0 on the Little Shasta River is a critical limiting factor during the juvenile out-migration period from April to June and is also inadequate to encourage upstream migration, particularly early in the fall for Chinook salmon.

Objective:

Given the over-appropriation of water rights in the Little Shasta River, and the severity of seasonal zero-flow conditions throughout the bottomlands reach, this project takes a realistic incremental step in providing a meaningful enhancement of 1.5 cfs to the stream at targeted times of the year, while also building a foundation for future enhancements through greatly improved overall water management flexibility at Hart Ranch, additional permissive dedications of Hart water rights, and an agreement with the Montague Water Conservation District (MWCD) to explore options for lining the MWCD Canal that currently crosses the Hart Property.

Based on an experimental flow analysis, UC Davis inferred that 1.5 cfs of enhanced flow starting at the Hart Diversion Structure would have an approximate zone of influence of at least two kilometers and would significantly improve connectivity for out-migrating salmon while supporting access to high quality spawning and rearing habitat that already exists above RK 18.6.

Combined with the removal of the Hart’s flashboard dam and re-profiling of the stream channel below the diversion structure, the project will provide access to seven additional kilometers of ideal, cold-water juvenile rearing salmonid habitat.

MANAGEMENT OBJECTIVES AND NEEDS

The benefits of this project will be maintained for 20+ years through the Hart’s 1707 Compliance Monitoring Plan, their NOAA Safe Harbor Agreement (multiple 10 year terms), existing 20 Year Ranch Management Plan, the UC Davis 3 Year Hart Monitoring and Reporting Plan, and renewed by CalTrout for additional three year terms thereafter. This

project represents phase one of a long-term effort to restore flows in the Little Shasta River. The Hart Ranch, CalTrout, and partners commit to building on the success of this project for years to come by engaging additional landowners and irrigation districts in future flow enhancement projects.

The Hart Instream Flow Enhancement Project will be managed, maintained and monitored for more than 20 years through a collaborative effort between CalTrout, NOAA, California Department of Fish and Wildlife, UC Davis, the Shasta-Scott Water Master District, and the Hart Ranch. Pre-implementation and post-implementation project conditions will be assessed by UCD to determine project success using quantifiable measures. This monitoring program will leverage and augment existing efforts to comprehensively quantify baseline conditions of streamflow, physical habitat, water quality, and ecological function. This baseline data will be used as the foundation from which post-project implementation success is measured, using post-implementation data collected as part of the monitoring and assessment plan. Additional compliance monitoring will be covered by the terms of the Hart Ranch 1707 Compliance Plan for Instream Petitions, the Hart Safe Harbor Agreement terms and conditions, the Shasta-Scott Watermaster Service, and the 20 Year Hart Ranch Management Plan.

PROJECT FUNDING

Item	WCB	CalTrout	USFWS	NRCS	TNC	UC Davis Center for Watershed Sciences	Total
Personnel Services	130,967	113,576					244,543
Operating Expenses	36,499	22,715					59,214
Contract(s)	2,013,816	151,752					2,165,568
Total Cost Share			50,000	204,855	159,638	311,167	725,660
<i>Totals</i>	<i>\$2,181,282</i>	<i>\$288,043</i>	<i>\$50,000</i>	<i>\$204,855</i>	<i>\$159,638</i>	<i>\$311,167</i>	<i>\$3,194,985</i>

Project costs will be for: personnel services, project design and engineering, permitting, monitoring and assessment, construction supervision and administration.

CEQA

The California Department of Fish and Wildlife, as lead agency, prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff considered the MND and has prepared proposed, written findings documenting WCB’s compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$2,181,282.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

17. Hat Creek Enhancement Project

Shasta County

\$196,564

This proposal is to consider the allocation for an implementation grant to the Fall River Resource Conservation District (RCD) for a project to enhance the natural hydrologic and biologic function of a 4000' segment of Hat Creek and restore approximately 27 acres of emergent riparian wetland in Shasta County. This restoration project will enhance Hat Creek's late-season streamflows.

LOCATION

The project will occur on portions of three privately owned ranches in and along a 4000' segment of Hat Creek, a tributary to Rising River, within the Pit River watershed. The project area is approximately one mile south of the city of Cassel in Shasta County, and approximately 50 miles southeast of the city of Mt. Shasta.

PROJECT DESCRIPTION

The Hat Creek Enhancement Project has been developed over the past two years with the goal of restoring a 4000' segment of Hat Creek. The objectives of this project are to restore and enhance natural hydrologic and biologic function within this reach of Hat Creek and the surrounding riparian ecosystem, using the "pond and plug" technique. The technique involves the excavation of the degraded channel ("ponds") to construct "plugs" to fill the channel to historic elevation. The ponds then fill with surface and groundwater and also spread large flows across the floodplain. This project will restore a Cascade Range stream and meadow system, increasing water storage associated with wetlands and reducing and delaying peak flow through the use of the "pond and plug" technique. Water quality will be improved with the sediment filtration capability associated with floodplain access. Native trout habitat will be improved and expanded with improved channel geometry including pools and riffles and gravel stream bed segments. Potential spawning, brooding and refugia habitats will be provided for all life cycle stages of trout and other resident fish species. Stream temperatures within the project reach will be reduced with improved riparian vegetation conditions and stream shading, providing some increased degree of climate refugia.

Challenge:

This portion of the Hat Creek channel was channelized in the 1950s by the U.S. Soil Conservation Service (SCS), resulting in severely diminished hydrological and ecological function. The project reach is separated from the flood plain and historic wetland by a native soil levee structure associated with the SCS channelization. Inspection of Hat Creek in this 4000' reach confirms that the channelized stream exhibits degraded habitat values for native trout, other fish species, and other species only found in riparian habitats. The channel bed is shallow in most areas, with fine sediment bed material. Some small gravel is seen at only a few reaches with moderate flow velocity. Most other areas are soft muck beds with little cover for fish. While willow is prolific along the ditch banks, it must be periodically cleared to allow peak runoff flows to pass to the confluence with Rising River. While this reach of Hat Creek is inhabited by trout, which migrate through it to better habitat upstream, it currently provides poor habitat value due to its ditch-like morphology, and is prone to late season low flows.

Objective:

By utilizing the “pond and plug” technique the Project will enhance late-season streamflows in Hat Creek and downstream beyond its confluence with Rising River. This will be accomplished by raising Hat Creek out of its incised, artificially straightened, hydrologically-disconnected channel, and reconnecting it to the floodplain, resulting in a more natural shallow meandering channel. The design channel will follow existing remnant channel locations in the upstream half of the project area and the topographic low point of the valley though the lower natural pasture area, before joining the Rising River slightly upstream of its current confluence. In short, this project will reshape the hydrograph of this portion of Hat Creek to enhance late-season streamflows, and will create enhanced water quality and other habitat benefits for trout. The project will also enhance and restore habitat suitable for native bird species and migratory waterfowl that depend on wetlands and intact montane meadows within the Pacific Flyway, where this project is situated.

MANAGEMENT OBJECTIVES AND NEEDS

The project will be located on portions of three privately owned ranches, and management of the restored channel and riparian area will be incorporated into landowner agreements between the RCD and each landowner. The grant agreement will require the RCD to maintain the project for a minimum of 20-years after completion.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	H&M Rising River Ranch	Total
Personnel Services	8,190		8,190
Operating Expenses	3,590		3,590
Contract(s)	184,784		184,784
Total Cost Share		10,000	10,000
<i>Totals</i>	<i>\$196,564</i>	<i>\$10,000</i>	<i>\$206,564</i>

Project costs will be for project management, monitoring, environmental compliance, construction, travel, and operating expenses.

CEQA

The Fall River Resource Conservation District, as lead agency, prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff considered the MND and has prepared proposed, written findings documenting WCB’s compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$196,564.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

**18. McKee Creek Bedrock and Insert Floodplain Streamflow Enhancement
Humboldt County
\$135,720**

This proposal is to consider the allocation for an implementation grant to Sanctuary Forest Incorporated (SFI) for a cooperative project with the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service to restore geomorphic, hydrologic, and ecological processes in a 2,100 ft. reach of McKee Creek that will address the key constraints of low-to-no dry season streamflow, channel incision, disconnected floodplain, lack of off-channel habitat, and absence of instream wood..

LOCATION

The property (Property) is located in Humboldt County, approximately five miles north of the city of Whitehorn. The project area is within the Mattole River Watershed and seeks to directly enhance McKee Creek and the mainstem Mattole River. The project reach spans 2,100 feet of McKee Creek, on privately owned land, located 740 feet upstream of the confluence of McKee Creek and the Mattole mainstem. McKee Creek is primarily a low gradient tributary to the Mattole River headwaters that has high cool water refugia potential and capacity to support rearing juvenile Coho salmon (Intrinsic Potential) according to the National Marine Fisheries Service's Southern Oregon Northern California Coast (SONCC) Coho Recovery Plan.

PROJECT DESCRIPTION

Historically McKee Creek supported abundant native runs of Coho, chinook, and steelhead populations. Within the Mattole River and Range Partnership's Mattole Coho Recovery Strategy, McKee Creek is rated as a Priority 1 tributary. Coho spawning and rearing has been documented within the past 10 years here. McKee Creek supports steelhead spawning every year and rearing in normal precipitation years.

Challenge:

Historic timber harvest in the McKee Creek watershed and the Mattole headwaters have resulted in regrowth of young, dense, hardwood dominated stands. Overstocked young forests do not contribute any trees to the stream, or trees that are recruited are of insufficient size to have an impact on instream habitat. The current wood deficit is likely the dominant cause of the incised condition of McKee Creek. Instream wood increases instream channel roughness which dissipates the unit stream power of peak flows and prevents channel incision through providing locations for the accumulation of instream sediment. Channel incision is a widespread problem throughout the Mattole River watershed, including McKee Creek and is responsible for a variety of physical and biological problems including; disconnected floodplains, lowering of the water table, reduced groundwater storage, reduced magnitude and duration of baseflows, and reduced quality and extent of riparian vegetation and aquatic habitat.

Objective:

The project will address the key limiting stresses of low-to-no dry season streamflow, lack of floodplain and channel structure and altered hydrologic function. This will be accomplished by raising the streambed through a series of 18 instream structures planned at 13 sites in the reach including 8 pool habitat and scour structures, 4 log weir structures, 3 boulder weir structures and 3 unanchored structures. These structures will mimic the natural accumulation of large wood jams and will be strategically placed to cause the inundation of

the floodplain and adjoining toe of the hillslope during winter streamflow conditions. This will increase groundwater recharge, storage, and corresponding instream flow, as well as create much needed winter and summer rearing habitat for anadromous salmonids. With this project's proposed pool enhancement, the increased pool depth and area will provide greater resilience to drought. The project will also increase channel connectivity to inset floodplains improving winter habitat for juvenile salmonids.

The log and boulder weirs will serve as grade control points halting further incision and increase sediment accumulation rates; provide greater groundwater recharge and storage capacity leading to increased instream flows downstream. Additionally, the structures will increase the system roughness which, will dissipate stream energy during high flows, and introduce enough structural elements to approximate historic wood loading rates. Channel spanning dams will function like natural accumulations of large wood but will be constructed to be less permeable than natural large woody debris jams, which will increase the groundwater storage behind the structures. The project will test the effectiveness of using a high density of check dams in the upper Mattole headwaters to enhance groundwater levels within a confined valley setting, measurably increase downstream surface flows, and increase the duration and magnitude of base flows.

MANAGEMENT OBJECTIVES AND NEEDS

Sanctuary Forest is committed to adaptive management of the project during the first 5 years. The provisions to maintain the enhancement include robust monitoring and adaptive management in the first 2 years post project including input from the collaborative technical team currently working with Sanctuary Forest on a similar project in Baker Creek in the Mattole Headwaters. Implementation funding for adaptive management in the first 2 years is included in the budget. Long term monitoring will occur at least once every three years and adaptive management while expected to be minimal, will be implemented by Sanctuary Forest as needed with funding raised by Sanctuary Forest and the McKee Creek community. The long term management plan includes post project monitoring along with adaptive management for 20 years following implementation with a scaled approach based on anticipated outcomes from experience with similar projects and scientific models.

PROJECT FUNDING

Item	WCB	SFI	CDFW	USFWS	CCC	Total
Personnel Services	19,380	3,700	16,290			39,370
Operating Expenses	27,155	370	45,421			72,946
Contract(s)	89,185		130,724	33,891	3,754	257,554
<i>Totals</i>	<i>\$135,720</i>	<i>\$4,070</i>	<i>\$192,435</i>	<i>\$33,891</i>	<i>\$3,754</i>	<i>\$369,870</i>

CEQA

A Mitigated Negative Declaration (MND) was prepared for the project pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff considered the MND and has prepared proposed, written findings documenting WCB's compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$135,720.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

**19. McKee Creek Enhancement Project
Humboldt County
\$139,377**

This proposal is to consider the allocation for an implementation grant to Sanctuary Forest Inc. (SFI) for a cooperative project with the California Department of Fish and Wildlife and private foundations to enhance streamflows in McKee Creek. This project is on the McKee Creek and proposes to inundate an inset floodplain and adjoining hillslope during winter streamflows to enhance groundwater levels and summer streamflows which should enhance juvenile salmon rearing habitat. In addition, the project will enhance salmonid habitat by raising the streambed through a series of log and boulder step pools and by utilizing check dam techniques.

LOCATION

The property (Property) is owned by Sanctuary Forest and is located within Humboldt County, approximately four miles north of the city of Whitehorn. The project area is within the Mattole River Watershed, and seeks to directly enhance 1.2 miles of McKee Creek. McKee Creek is primarily a low gradient tributary to the Mattole River headwaters that has been identified as having cool water refugia potential and high Intrinsic Potential in the Final Southern Oregon Northern California Coast (SONCC) Coho Recovery Plan.

PROJECT DESCRIPTION

Historically, McKee Creek supported abundant runs of Coho, chinook, and steelhead. It has been rated as a Priority 1 tributary for Coho recovery in the Mattole Coho Recovery Strategy with Coho spawning and rearing documented within the past 10 years. Currently, McKee Creek supports steelhead spawning every year and rearing in normal years.

Challenge:

As with many other tributaries to the headwaters of the Mattole, McKee Creek is characterized by simplified incised channels, disconnected floodplains, lack of off-channel habitat, limited or absence of cover and velocity refuge for endangered salmonids, absence of instream wood, and low nutrient retention and food availability. These conditions are largely due to the loss of functional instream wood from pre-Forest Practices Act (1975) timber harvest in riparian zones throughout much of the watershed, coupled with widespread removal of wood from stream channels during the 1950s-1980s. Consequently in the Mattole there is a substantial instream wood deficit. In addition, past logging of mature riparian forest has left a wood "recruitment gap" throughout the watershed. This gap is evident in the lack of primary pools and key pieces of wood documented in habitat surveys conducted in 21 stream reaches in the Mattole's Southern Sub-basin in 2005. Compared to target habitat values from the SONCC Coho Recovery Plan, a majority of these reaches rate poor in average pool depth (57% of the reaches) and the frequency of key pieces of wood (67% of the reaches). Only three out of the 21 reaches contained sufficient large wood to be rated good or very good for large wood frequency, and of these, two achieved this satisfactory rating due to past wood placement projects. Due to lack of instream wood, the pools in McKee Creek are shallow and do not withstand summer drought conditions.

The current wood deficit is likely the dominant cause of the incised condition of McKee Creek. Instream wood increases instream channel roughness which dissipates the unit stream power of peak flows and prevents channel incision by providing locations for the

accumulation of instream sediment. Channel incision is a widespread problem throughout the Mattole and is responsible for a variety of physical and biological problems including: disconnected floodplains, lowering of the water table, reduced groundwater storage, reduced magnitude and duration of base flows, and reduced quality and extent of riparian vegetation and aquatic habitat.

Objective:

This project will raise the streambed through a series of log and boulder step pools in the mainstem of McKee Creek and by utilizing check dam techniques in an intermittent tributary to McKee Creek, above the point where fish can migrate. The mainstem step pools will mimic the natural accumulation of large wood jams and will be strategically placed to cause the inundation of the inset floodplain and adjoining toe of the hillslope during winter streamflow conditions. This project will increase groundwater recharge, storage, and corresponding instream flow, as well as create much needed winter and summer rearing habitat for anadromous salmonids. All of this will contribute to the implementation of the McKee Creek Conservation Strategy. The project may also increase channel connectivity to inset floodplains improving winter habitat for juvenile salmonids.

The post-assisted check dams will serve many of the same functions that naturally occurring mainstem log weirs would, in that they will serve as grade control to help increase the rate of recovery from channel incision leading to enhanced stream flows downstream. The dams will increase the system roughness and introduce enough structural elements to rival background, historic wood loading rates on a pilot level. Channel spanning dams will function like natural accumulations of large wood but will be constructed to be less permeable than natural large woody debris jams. The check dams will elevate the bed elevation by trapping sediment which will create pools, increasing groundwater recharge in the channel bed alluvium and in the toe of the hillslopes in a steep intermittent tributary.

Implementation of this project will result in a measurable improvement to the stream hydrograph. During the dry season, the hydrograph is predicted to show flows persisting for a longer period of time and pool habitat remaining present throughout the summer. During the wet season, peak flows will occur further from the time of peak rainfall, and will be lower while sustaining flows for a longer period of time due to more water inundating the flood plain.

MANAGEMENT OBJECTIVES AND NEEDS

Sanctuary Forest is committed to regular monitoring and adaptive management if needed over the project life. The long-term management plan includes post-project monitoring, along with adaptive management, for 20 years following implementation with a scaled approach based on anticipated outcomes from experience with similar projects and scientific models. Monitoring in the first two years following project implementation will be robust and designed to determine if the project objectives are being met and if the structures are functioning as intended. If it is determined that the project objectives are not being met, Sanctuary Forest will work with collaborating technical partners and WCB to implement adaptive management measures. Funding for minimal structure modifications over the first 2 years post-project is included in the budget. Monitoring in the post project years 3-5 will be limited to annual project assessments by Sanctuary Forest and will include photo documentation and a summary report. In years 6-20, monitoring will occur at least once every 3 years as part of Sanctuary Forest's land management protocols.

Regular monitoring of all Sanctuary Forest properties is performed once every 3 years and includes monitoring of all restoration/ stewardship projects. Stewardship issues are identified and addressed with funding derived via community fundraisers, donors, and grants. These stewardship standard practices will assure the entire project’s sustainability beyond the term of the grant agreement.

PROJECT FUNDING

Item	WCB	Cost Share	Total
Project Costs	139,377	44,122	183,499
<i>Totals</i>	<i>\$139,377</i>	<i>\$44,122</i>	<i>\$183,499</i>

Cost share contributors include California Department of Fish and Wildlife, the Redwood Community Action Agency, Patagonia, Grace Us Foundation and the Bella Vista Foundation. Project costs are for personnel services, operating expenses and construction contracts.

CEQA

The project is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines California Code of Regulations, Title 14, Chapter 3, Section 15304, Minor Alterations to Land, as a minor alteration to the condition of land that does not involve removal of healthy, mature, scenic trees, and Section 15333, Small Habitat Restoration Project,, as a project not exceeding five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, and wildlife. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project on the condition that SFI enters into a collaborative monitoring agreement with the California Department of Fish and Wildlife; allocate \$139,377.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the Department of Fish and Wildlife to proceed substantially as planned.

20. Deer Creek Streamflow Enhancement and Restoration

Nevada County

\$137,940

This proposal is to consider the allocation for an implementation grant to Sierra Streams Institute (SSI) for a cooperative project with Lake Wildwood Association (LWA), a homeowner's association, and the Sierra Nevada Alliance to enhance stream water quality and flows in Deer Creek by employing innovative practices to support integrated resource management.

LOCATION

The property (Property) is located in Nevada County which is in the central portion of California's Sierra Nevada range east of the Sacramento Metropolitan Area. The Property is situated within the Yuba River Watershed along Deer Creek and is generally twenty three miles north east of Yuba City and six miles west of Grass Valley. Deer Creek is the most upstream tributary of the Yuba River that is still accessible by Chinook salmon and steelhead and provides more than five miles of habitat for those salmonids.

PROJECT DESCRIPTION

Challenge: The presence of Lake Wildwood dam and waste water treatment plant 4.25 miles upstream from Deer Creek's confluence with the Yuba has impacted water quality, particularly in regards to pH and nutrient loads. Lake Wildwood reservoir causes temperature elevations by historically releasing water from the epilimnion, or surface layer as well as the warm water pool during summer low flow periods. Upstream water management by Nevada Irrigation District ends at Lake Wildwood, with minimal water diverted into lower Deer Creek downstream of the dam, whose flow is consequently lower than the natural flow regime would indicate. Additionally, gravel size is a major factor in a productive anadromous fish spawning habitat. Anadromous fish spawn successfully when habitat in the gravel is suitable for redd nest construction, incubation and emergence. The presence of Lake Wildwood dam alters natural sediment supply downstream rendering gravels immobile and unsuitable for spawning.

Objective: The Deer Creek Streamflow Enhancement and Restoration Project consist of actions to meet three objectives. The first objective is a Low Flow Release (LFR) to improve streamflow during the spawning seasons for anadromous fish. Typically, flows are too low for salmon and steelhead to migrate into the creek and, if they are able to, the water quality is not suitable. SSI, in collaboration with LWA, will use low flow release structures on the dam to implement the appropriate hydrograph depending on water management and drought conditions. The LFR is designed to provide additional water, beginning in September or early October, downstream of the reservoir to improve streamflow quality and quantity for spawning. Flows are typically less than 5 cubic feet/second (cfs) at the onset of spawning season and sometimes as low as 1 cfs, with a portion of the water in these flows being effluent return flow from the Lake Wildwood Waste Water Treatment Plant.

The LFR provides the opportunity to double or triple the stream flows in Deer Creek during spawning season. Furthermore, the low flow release water consists of cold water from deep within the reservoir's bottom layer (35' – 40' deep; 9°C). It is also lower pH water (6.5-7) than what is typically in Deer Creek in September and October. Colder water that is lower in pH is better for spawning salmonids. SSI will implement different low flow scenarios each

year based on water management, drought conditions, and the timing of the salmon and steelhead migration.

The second objective will address drawdown release that occur three out of every four years on average since 1980 which are done in order to dredge trapped sediments from behind the dam. In the past, these drawdown releases have been far outside the natural hydrograph. These spiked releases have devastating effects on the biota downstream; furthermore, these large flows can contribute to the stream becoming incised, resulting in suitable gravels being washed out below the dam and limiting the health of ecosystems within the watershed. Although LWA has worked to manage a low flow release schedule for the health of downstream habitat, it still needed to dredge the lake on an annual to biennial basis. SSI will plan with LWA to use these drawdown releases to enhance flows in Deer Creek, acting like a fall storm event to trigger the migration or provide enhanced flows for fish that have migrated into Deer Creek to spawn. Additionally, the drawdown release will tie in to the LFR to reduce the overall magnitude of flows associated with the drawdown release and to more closely mimic the natural flow regime. This should result in implementation of a longer low flow release in years of lake lowering and dredging.

The third objective is to reconnect spawning gravels from the upper reach to the lower reach where critical spawning habitat exists. The dredging of the lake has afforded a unique opportunity to release suitable spawning gravels from Upper Deer Creek, trapped behind the dam, with Lower Deer Creek where there is critical spawning habitat that is need of gravel replenishment. The lack of gravel transport began with construction of the dam in 1970. This project would take the coarse dredged material from behind the dam, consisting of spawning sized gravels and cobbles, and place it downstream of the dam to allow for a continual migration of gravels down Lower Deer Creek to the critical spawning habitat. This effort would add suitable substrate to the streambed while continuing to replenish gravels to the Lower Deer Creek habitat as part of LWA management of the reservoir.

MANAGEMENT OBJECTIVES AND NEEDS

The infrastructure for this project as well as the relationship with key partners is established. LWA Public Works Department employees and LWA construction subcontractors will implement the long-term maintenance tasks, with in-kind support from Lake Wildwood Committee volunteers and funding by Lake Wildwood community members as part of their membership dues, to ensure the project is maintained over the long-term (minimum of 20 years).

The project is intended to be durable for a minimum of 20 years and Lake Wildwood is committed to providing stream flow enhancement as part of its ongoing maintenance activities. The need for Lake Wildwood to implement projects such as the drawdown release and sediment removal will make sure management practices formalized during the funded project continue into the future. Without these ongoing maintenance activities, residents of Lake Wildwood would not be able to use the lake, one of the primary attractions and reasons people move to the Lake Wildwood community. This commitment will be formalized with a Memorandum of Understanding (MOU) between the Lake Wildwood Association and the Sierra Streams Institute for the project and for long-term maintenance of the implementation tasks to ensure permanency of the stream flow enhancement. The provisions will be finalized in the MOU, and will be valid for a minimum of 20 years. Lake Wildwood has implemented stream flow releases in three out of every four years on average

since 1980 in order to dredge materials from the reservoir, and is actively pursuing a long-term agreement of 10 or 20 years with CDFW in lieu of the typical five year agreement requirements for Lake and Streambed Alteration Agreements.

In addition to a formalized agreement with LWA, SSI will continue to meet with the Lake Wildwood Lake Committee and Public Works Department as part of its ongoing collaboration with Lake Wildwood on projects in Deer Creek. A representative from the Lake Committee and the Public Works Director meet with the LWA Board of Directors each month to provide updates on lake management. Regular meetings with the project partners and LWA staff will make sure the management objectives are achieved and the project is maintained over the long-term.

PROJECT FUNDING

Item	WCB	SSI	Lake Wildwood Association	Sierra Nevada Alliance	Total
Personnel Services	105,070	94,533			199,603
Operating Expenses	32,870	12,107			44,977
Total Cost Share			185,365	10,300	195,665
<i>Totals</i>	<i>\$137,940</i>	<i>\$106,640*</i>	<i>\$185,365</i>	<i>\$10,300</i>	<i>\$440,245</i>

**\$17,658 funds are pending*

Project costs will be for personnel services and operating expenses.

CEQA

The project is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3) Section 15304, Class 4, as a minor alteration of land and water which does not involve the removal of healthy, mature, scenic trees and Section 15333, Class 33, as small habitat restoration projects less than five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife. Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project on the condition that the grantee enters into an agreement with Nevada Irrigation District to leave the water instream to meet the objectives of the LFR; allocate \$137,940.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned; authorize staff to enter into appropriate agreements necessary to accomplish this project.

21. Rancheria Creek Flow Enhancement and Restoration

Sonoma County

\$3,467,000

This proposal is to consider the allocation for a grant to the Dry Creek Rancheria Band of Pomo Indians (Tribe) for a cooperative project with the Federal Highway Administration, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Bureau of Indian Affairs to implement 16 restoration actions. These actions, designed to enhance flows and improve ecological conditions and geomorphic processes, span a project area of 91± acres within the Dry Creek Rancheria, and will improve and restore habitat for endangered steelhead and Coho salmon in Rancheria Creek.

LOCATION

The property, known as the Dry Creek Rancheria (DCR), was established on June 1, 1915. DCR is located in Alexander Valley, approximately seven miles north of Healdsburg and 25 miles northwest of Santa Rosa, in Sonoma County. Restoration efforts are focused on Rancheria Creek, a tributary to the Russian River.

PROJECT DESCRIPTION

DCR was positioned along Rancheria Creek due to the abundant populations of steelhead and Coho salmon available as a food resource for the Tribe. Today, primarily due to land use changes, portions of the creek are in a degraded state. However, Rancheria Creek plays an important role in Pomo culture and heritage and the Tribe, along with multiple stakeholders, is working to restore Rancheria Creek and enhance its salmonid habitat. Over the past decade the Tribe has worked to restore a portion of Rancheria Creek affected by a massive land slide that has been a chronic source of sediment to Rancheria Creek and the sediment-impaired Russian River. The California Department of Fish and Wildlife assisted Dry Creek Rancheria in the late summer of 2015 to relocate steelhead from pools that were drying to spring fed pools in the upper watershed of Rancheria Creek.

Challenge: Diversions occurring upstream of DCR have reduced surface flows in the creek and the volume of cool water beneficial to steelhead. Additionally, DCR recently purchased 306 acres of vineyard along Rancheria Creek and the Russian River but, previous management of the vineyard have significantly reduced riparian cover resulting in decreased thermal refugia. Limiting factors negatively impacting steelhead and salmon in the project area include limited instream flows, impaired passage, high sediment load, contaminated runoff from roadways and agriculture; high stream temperature; and lack of complex habitat, cover, and high flow refugia.

Objective: The project includes ecological improvements, riparian restoration, flow enhancement actions and expansion of a detention basin. Ecological improvements include excavation of floodplain benches in an existing incised channel to restore floodplain function and hydrology conditions; channel realignment to restore habitat complexity in the channelized reach of the creek; replacement of culverts that restrict fish passage; planting of riparian vegetation along the channelized portion of the creek to create cover to shade the creek and create a riparian buffer from the existing vineyard operations; and bank stabilization along the Russian River. Riparian restoration along the creek will remove invasive species and re-vegetate with native shade and cover producing plants and trees. Flow enhancement actions include installation of an off-stream storage tank fed by the onsite waste water treatment plant to supplement flow in Rancheria Creek during the critical

summer period for steelhead and Coho. A detention basin will also be expanded and will contribute to flow enhancement by capturing and storing storm runoff for controlled release to the creek. Both the tank and the detention basin will discharge to the creek through vegetated and rocked swales to reduce erosion. Invasive, non-native *Arundo* will be removed and replaced with native riparian vegetation to increase the water in the creek and Russian River.

The ecological benefits of the project related to improved instream water quality and quantity will be realized via: (1) strategic releases of treated wastewater from a new off channel storage tank to increase instream flows during critical dry periods; (2) floodplain reconnection to reduce sediment from bed and bank incision; (3) excavation of a multi-stage channel to reduce erosion resulting from bed and bank incision; and (4) riparian vegetation planting along the vineyard reach to provide shade and reduce stream temperature and reduce pollutants by filtering agricultural runoff.

MANAGEMENT OBJECTIVES AND NEEDS

Dry Creek Rancheria will maintain the project in perpetuity. The Tribe is committed to the preservation of natural resources and to that end employs several Tribal members as a permanent maintenance crew for the property. Key components of this project are designed to be self-sustaining and not require annual maintenance. The DCR feels that by restoring physical processes that develop complex habitat for salmonids, the benefits of the project will extend far into the future. Specifically, the channel and bank restoration, riparian floodplain revegetation, and storm water detention basins proposed as part of this project restore geomorphic processes and floodplain function that will enhance habitat conditions long past the period of this project.

Monitoring will be conducted to ensure that restoration actions perform as expected and adaptive management will be implemented if needed. The DCR currently has a U.S. Environmental Protection Agency (USEPA) Clean Water Act (CWA) 106 Grant and has been tracking water quality on DCR since 2005. The CWA 106 Grant has provided the DCR and USEPA with multiple years' worth of baseline and background water quality data. Stream gauges will be integrated into this monitoring program and further enhance the dataset. The DCR intends to use this data as the baseline water quality and to continue this monitoring with continued funding from USEPA to track project contributions to improving water quality and flow conditions in Rancheria Creek. With regards to flow augmentation, maintenance of infrastructure will be included in the maintenance activities related the wastewater treatment plant that is part of Dry Creek Rancheria's facilities maintenance operations. Additionally, the operational flexibility of using the million gallon storage increases the potential benefits of locally managed water resources on DCR lands.

PROJECT FUNDING

The proposed funding breakdown for this project is as follows:

Item	WCB	Tribe	Federal Highway Admin.	USEPA*	USFWS	BIA Climate Adaptation Plan	Total
Personnel Services	263,200	100,000					363,200
Operating Expenses	130,000						130,000
Contract(s)	3,073,800	375,000	400,000	1,180,000	15,000	175,000	5,218,800
<i>Totals</i>	<i>\$3,467,000</i>	<i>\$475,000</i>	<i>\$400,000</i>	<i>\$1,180,000</i>	<i>\$15,000</i>	<i>\$175,000</i>	<i>\$5,712,000</i>

*USEPA funding includes: Clean Water Act (CWA), Section 319 Nonpoint Source Management Program, CWA Section 106 Water Pollution Control Grants, and the Indian Environmental General Assistance Program (GAP) funding. \$250,000 of the USEPA total is pending on funds from USEPA Data Exchange Network.

Project costs will be for staff time, travel, design and construction, monitoring equipment, water quality lab work and permitting.

CEQA

Sonoma County, as lead agency, prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff considered the MND's and has prepared proposed, written findings documenting WCB's compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$3,467,000.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

22. Pine Gulch Water Rights and Instream Flow Enhancement

Marin County

\$406,917

This proposal is to consider the allocation for an implementation grant to the Marin Resource Conservation District for a cooperative project to assist three farms to modify storage ponds in order to enhance summer instream flows on Pine Gulch Creek (PGC). The four ponds are designed to store a total of 61.4 acre-feet by direct rainfall, sheet flow, and strict creek diversions limited to the winter months. These ponds will allow the farmers to completely relinquish their summer riparian water rights and dedicate them to instream flows under Section 1707 of the California Water Code. In return, the farmers have secured appropriative water rights for the winter months and limiting their riparian diversions in the spring.

LOCATION

The project location (Property) is approximately 25 miles northwest of the city of San Francisco and two miles north of the City of Bolinas, in the Pine Gulch Creek Watershed in Marin County. The project proposes to directly enhance PGC, which is a tributary to Bolinas Lagoon and the Pacific Ocean. The streamflow enhancement is proposed along the lower three kilometers of the 11.7 km long creek. Upstream, the National Park Service (NPS) manages 85% of the watershed without any diversions, while the private lands, accounting for only 15% of the watershed area, include nearly 30% of the mainstem aquatic habitat known to support Coho salmon and steelhead trout.

PROJECT DESCRIPTION

A National Park Service habitat assessment revealed that water quantity on PGC was being impacted by agricultural water use. The short-term irrigation demands on the creek exceed base flows, which reduces rearing habitat for salmonids. This information led NPS to propose that the three farms develop off-site water storage to reduce agricultural summer demands upon the creek. After 17 years of planning, permitting and funding from the CA State Coastal Conservancy, California Department of Fish and Wildlife (CDFW) and others, four ponds were constructed in 2015.

Challenge:

Historically on PGC, water diversions were made from pools augmented by seasonal gravel dams. This facilitated the opportunity for pumps to divert all of the surface flow, resulting in dewatered conditions downstream. Agricultural operators discontinued use of this practice in the early 1990s. The farmers then moved to a coordinated system which included staggering their diversions and pumping at low rates in order to decrease their impact on the stream. In 2005, baseline information in the National Park Service Pine Gulch Creek Watershed Water Availability & Cumulative Instream Impact Analysis indicated approximately 90 acre-feet was being diverted from PGC on an annual basis for agriculture. Approximately 56.91 acre-feet was diverted during the summer period of July-November. The estimated average monthly summer agricultural demand on PGC was estimated to be 0.15 cubic feet per second (cfs), about a third of the estimated 0.5 cfs summer stream flow of PGC. The NPS's analysis determined it was likely that the short-term irrigation demands

on the creek exceeded base flows for short periods, reducing rearing habitat for salmonids. Redd counts and summer snorkel surveys conducted by NPS fisheries biologists indicated the regular presence of Coho from 1998 until 2007/08, and again in 2011/12 and 2015/16. Steelhead population numbers were relatively consistent from year to year.

With the NPS habitat assessment revealing that the short-term irrigation demands exceed the creek's base flows and reduce rearing habitat for salmonids, led NPS to propose the farms develop off-site water storage to reduce agricultural summer demands upon the creek. Four ponds were constructed in 2015; however, two of the ponds require modification to include a partial liner and a layer of bentonite to prevent seepage. A test run during the winter season revealed that these two ponds were losing in excess of 4 acre-feet per month due to seepage. The ponds were not originally lined due to budget constraints, and due to the lack of water storage, two farms cannot fully relinquish their summer riparian water rights until modifications are made to stop the seepage.

Objective:

The project aims to protect summer surface flow on PGC for the benefit of Coho salmon and steelhead trout while still practicing organic farming. Four ponds have been built to store approximately 61.4 acre-feet of water (pond volumes changed slightly during construction due to site limitations). The storage volumes allow each farmer to exercise appropriate water rights and cease commercial agricultural riparian diversions beginning July 1 of each year. The cessation of commercial riparian diversions will increase summer instream flows thus improving juvenile salmon habitat benefiting the entire salmon population. However, since two ponds were not originally lined, the project seeks to fund the completion of the two ponds to stop seepage. The farmers have secured their water rights permits to dedicate their commercial agricultural riparian diversions between July 1 and December 15 of each year to instream flows under CA Water Code §1707. The ponds will fill by direct rainfall, sheet flow and creek diversions. From December 15-March 31, when PGC is flowing above 25 cfs, appropriate water can be diverted at 2 cfs. Then from April-June, the farms can continue commercial agriculture diversions at reduced rates. The project commercial riparian diversion in spring (April - June) will not exceed 10% of average monthly production, nor will it exceed minimum bypass rates to protect instream flows. Summer agricultural diversions will be completely eliminated.

This project will restore instream flows and nearly eliminate a limiting factor to salmonid habitat in PGC. This project is expected to reduce the rate of diversion by ten-fold, thus increasing streamflow rates by 15 - 45%. Increased stream flows will improve summer rearing habitat value by providing multiple benefits: wildlife habitat improvement by increasing pool area and riffle connectivity, and water quality improvements by lowering water temperatures and maintaining beneficial dissolved oxygen levels. The 2015/16 winter season was the first test of the project. Two of the four ponds were able to store water and significantly reduce impacts. Subsequently, two juvenile Coho were identified in this reach by NPS staff.

MANAGEMENT OBJECTIVES AND NEEDS

Long-term management will be assured beyond the term of the grant agreement with a Landowner Authorization Agreements containing Maintenance and Monitoring Responsibilities, a thirty year Safe Harbor Agreement (SHA) with Maintenance and Monitoring Responsibilities, and a permanent agricultural and conservation easement. The farmers have signed Landowner Authorization Agreements committing them to the maintenance of the ponds, the diversion regimen, and the habitat requirements for the project. The agreements contain maintenance and monitoring responsibilities that are designed to ensure longevity of benefits for agricultural operations and wildlife. Both farms signed a SHA in cooperation with Marin County and the USFWS in order to create additional habitat for California red-legged frogs. For thirty years, the farms must maintain the ponds and report to the County.

PROJECT FUNDING

The proposed funding breakdown for the project is as follows:

Item	WCB	Applicant	In-kind*	Total
Personnel Services	18,840	1,125		19,965
Operating Expenses	3,768			3,768
Contract(s)	384,309			409,819
<i>Totals</i>	<i>\$406,917</i>	<i>\$1,125</i>	<i>\$25,510</i>	<i>\$433,552</i>

** In-kind includes landowner participation in the draining of ponds, and re-design/repair and inspection of the ponds from the civil engineer.*

Contractual agreements will allow for biological work, civil/geotechnical engineers, and pond construction work.

CEQA

As lead agency, the County of Marin has prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff considered the MND and has prepared proposed, written findings documenting WCB’s compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$406,917.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

23. Addressing Limiting Factors in the San Lorenzo River Lagoon

Santa Cruz County

\$458,750

This proposal is to consider the allocation for an implementation grant to the City of Santa Cruz (City) for a cooperative project to address limiting factors in the San Lorenzo River estuary. Limiting factors will be addressed through the installation of a water level control structure, dedication of 0.5 cubic feet per second (cfs) of summer instream flows, and the installation of large wood structures to increase habitat complexity for steelhead, adjacent to the Santa Cruz Beach Boardwalk, within the San Lorenzo River in the City of Santa Cruz, Santa Cruz County.

LOCATION

The property (Property) is located at the mouth, or estuary, of the San Lorenzo River, adjacent to the Santa Cruz Beach Boardwalk. It lies within the City limits in Santa Cruz County (County) along the Pacific Coast of California, south of the San Francisco Bay Area and north of Monterey. The San Lorenzo River historically was one of the largest Coho salmon and steelhead fisheries south of San Francisco. Its watershed drains 138 square miles. This watershed was once a logging industry center, home to millions of redwood trees, and provided the lumber to rebuild much of San Francisco after the 1906 earthquake.

PROJECT DESCRIPTION

The San Lorenzo River and its tributaries have been listed by NOAA Fisheries Service (NOAA) as critical habitat for the recovery of Central California Coast steelhead which is federally listed as threatened, and for Coho salmon which is federally listed as endangered. In 1954, the San Lorenzo River was considered the best winter steelhead stream south of San Francisco Bay; however, steelhead production has declined dramatically due to impacts of urbanization. The California Department of Fish and Game estimated that 20,000 adult steelhead were present in the San Lorenzo River prior to 1965, while estimates by NOAA in 1996 put the number of adult steelhead spawning in the San Lorenzo River at 500. In 2013 Pacific States Marine Fisheries Commission found steelhead numbers similar to those found in 1996. Coho salmon are critically endangered in the County and are nearly extirpated in the San Lorenzo River watershed. NOAA considers the re-establishment of a Coho population in the San Lorenzo River watershed to be vital to recovering the species south of San Francisco Bay.

Flow from the San Lorenzo River watershed, along with groundwater resources, provides 60 to 80 percent of the water supply for the communities of the San Lorenzo Valley. The watershed has been designated as a fully appropriated stream during the summer months. Salmonid habitat conditions are adversely affected by water diversions, and in response the City is currently leaving 8 cfs of flows instream (depending on the water year) to benefit salmonids. While these bypass flows produce important instream benefits, they produce equally important benefits for the San Lorenzo River estuary/lagoon. The San Lorenzo River estuary/lagoon serves a critical function for summer and early fall rearing of steelhead trout, particularly during dry years.

A lagoon is most productive when it is either entirely freshwater or when the water column is a well-mixed combination of salt and fresh water. The lagoon habitat is not productive if it is static and stratified (with a dense layer of salt water underlying a less dense layer of freshwater). Stratification occurs either in early summer shortly after closure of the river

mouth, but prior to conversion to freshwater, or when the lagoon has been artificially opened by breaching. When the lagoon is stratified and static, the bottom saltwater layer acts as a solar collector that traps heat, raising water temperatures to a range that is lethal to both steelhead and their food source. The City's bypass flows are intended to benefit the functioning of the San Lorenzo River lagoon by enabling the closed lagoon to convert to a mixed freshwater system in late spring and summer, which is necessary to produce the habitat conditions needed for rearing of juvenile steelhead.

Challenge:

The San Lorenzo River upstream of the estuary is a constricted flood control channel which, in the lower San Lorenzo River, has resulted in increased susceptibility to flooding for low-lying public and private infrastructure when the closed lagoon water elevation reaches about 7.0' National Geodetic Vertical Datum (NGVD29). The lagoon closes as a result of the formation of a natural sandbar. Unauthorized and illegal breaching frequently occurs in response to the flooding of the beach and low lying properties. Freshwater bypass flows are lost to the ocean whenever breaching occurs. This "re-sets" the time necessary for conversion to freshwater; and in dry years with repeated breaching, the lagoon remains stratified. Stratified conditions, as described above, create poor habitat conditions for steelhead and impact the productivity of steelhead throughout the entire watershed. In addition, unauthorized breaching of the sandbar can catastrophically flush steelhead and tidewater goby into the ocean prematurely, resulting in death of an unknown percentage of the population.

Objective:

This project will directly address limiting factors in the San Lorenzo River estuary/lagoon by installing a water level control structure in the San Lorenzo River lagoon that will provide a stabilized water elevation to provide habitat for salmonids and tidewater goby, and lessen localized flooding while maintaining a closed lagoon for fisheries habitat.

As in-kind match for this grant, the City will dedicate approximately 0.5 cfs of summer instream flows in two important cold-water tributaries in the lower watershed to benefit anadromous salmonid habitat during the critical low flow time of the year. The tributaries are Pogonip Creek and Redwood Creek. This dedication will involve the City's riparian water rights and will be formalized via a forbearance agreement. As further in-kind match for this grant, the City of Santa Cruz will install large woody material in the San Lorenzo River estuary to provide protective cover and temperature refuge for juvenile steelhead. The structures will be in the form of large woody debris, submerged brush bundles, or similar features designed to provide underwater refugia for young fish.

MANAGEMENT OBJECTIVES AND NEEDS

The City of Santa Cruz will be responsible for funding the project's long-term monitoring and management. Ongoing maintenance and operation of the lagoon water level control structure will be conducted by City of Santa Cruz Department of Public Works, with funding from the City's General Funds. Long-term monitoring of instream flows, along with water quantity/quality and fisheries monitoring in the estuary/lagoon, will be conducted by the City's Water Department and will come from the City's Enterprise Funds. Funding for salmonid monitoring in the entire San Lorenzo River and its tributaries will come from the seven partner agencies that participate in the countywide Juvenile Salmonid and Stream Monitoring Program.

PROJECT FUNDING

Item	WCB	City	Total
Personnel Services		277,574	277,574
Operating Expenses		7,500	7,500
Construction	458,750	363,606	822,356
<i>Totals</i>	<i>\$458,750</i>	<i>\$648,680</i>	<i>\$1,107,430</i>

Project costs will be for: project design and engineering, monitoring and assessment, construction supervision and administration.

CEQA

The City of Santa Cruz prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA). Staff considered the MND and has prepared proposed, written findings documenting WCB's compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$458,750.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the Department of Fish and Wildlife to proceed substantially as planned.

24. San Ysidro Flow Enhancement and Water Conservation

Santa Barbara County

\$940,601

This proposal is to consider the allocation for a grant to the Immaculate Heart Community/La Casa de Maria (LCDM) Retreat and Conference Center for a cooperative project with the National Oceanic and Atmospheric Administration (NOAA), American Tanks & Loomis Tanks, and the California Conservation Corps (CCC) to offset existing agricultural irrigation, landscaping, and non-potable domestic use through capture and reuse of up to 800,000 gallons of water through onsite rainwater reuse, storm water management and irrigation conservation. This will allow LCDM to forgo seasonal diversion and use of a riparian water right and dedicate approximately 7 million gallons of water annually to instream flow, thereby enhancing creek base flows and steelhead trout habitat on the San Ysidro Creek.

LOCATION

The property (Property) is a non-profit, interfaith retreat and conference center based on 26 acres in Montecito, approximately five miles northeast of Santa Barbara, in Santa Barbara County. The project is proposing to directly enhance 0.24 miles of the San Ysidro Creek, which flows directly to the Pacific Ocean and serves as habitat for spawning and juvenile steelhead trout. The Immaculate Heart Community has been the property owner since the 1940's and its LCDM Retreat Center has been in operation since the 1950's. The Property is located immediately downstream from, and adjacent to, the San Ysidro Ranch, the uppermost diverter in the watershed.

PROJECT DESCRIPTION

The project objectives are to decrease pollutant loading, slow and reuse nuisance floodwaters for irrigation and watershed rehydration, and enhance flows and wildlife riparian corridors (Project). Additionally, the Project will serve as a model for the entire San Ysidro Creek corridor and landowner community. LCDM is committed to local and regional outreach and education on the anticipated success and lessons learned from the monitoring of the Project. La Casa de Maria will specially host six outreach events on location for both the immediate local community as well as the broader South-Central Coast community (San Luis Obispo, Santa Barbara, and Ventura Counties). These workshops will highlight a blend of water conservation best practices and promote California Water Code (CWC) § 1707 and instream flow tools that benefit steelhead and other species of concern. In addition, LCDM will develop on-site interpretive signage, which will further educate the 12,000+ retreat visitors each year.

Challenge:

The San Ysidro Creek reach is channelized from local property density and high storm intensity inputs. Channelization and scouring from peak storm events has reduced the available habitat for spawning and juvenile steelhead trout. The creek also has irregular summer surface flows due to cumulative diversions for summer irrigation, which impacts total flow and the water quality and temperature. The limiting factors include poor water quantity and quality, poor spawning and rearing requirements, poor fish passages, excessive storm water erosion, and excessive nutrient loading.

Objective:

The Project will reduce the magnitude of the peak storm events through the use of rainwater capture and storm water management. The Project will also improve summer base flows by not diverting from San Ysidro Creek during the low flow period from June to December, thereby allowing the stream to return to a more natural cycle and improve the quality and quantity of fish habitat. Supplemental base flows will also be improved through groundwater recharge. The implementation of storm water management systems will enhance summer stream flows by reducing hydromodification, which leads to channelization and degraded water quality. Enhancing infiltration will help bring streamflow and the geomorphology of the reach back into a more natural state of equilibrium. This will improve groundwater recharge and increase both the instream surface and subsurface base flows of the San Ysidro Creek. The implementation of rainwater collection systems will provide an increased alternate water supply available for reuse for outdoor, non-potable needs and indoor, non-potable needs. This will supplant the demand to divert water from San Ysidro Creek during low summer flows, as well as allow water from precipitation events to be held onsite reducing hydromodification. Additionally, a portion of rainwater reuse will be allocated to infiltration, thereby allowing for groundwater recharge, as well as supplementing irrigation in localized riparian corridor habitats severely impacted by drought conditions. Through integrated water conservation practices, the Project will:

- (1) Increase summer base flows through direct offset of stream diversions;*
- (2) Dedicate this offset to instream flow;*
- (3) Decrease peak storm event discharge and contribution of rainwater tank capture;*
- (4) Increase summer base flows through groundwater infiltration; and*
- (5) Model successful best practices through active local community and regional outreach.*

MANAGEMENT OBJECTIVES AND NEEDS

Implementation of these onsite water conservation efforts will help ensure that LCDM operates in a sustainable fashion for the next 70+ years. LCDM has a record of embarking on and installing large capital and programmatic projects, performing maintenance, implementing monitoring, and providing community outreach on the added value of their installations. Additionally, the forbearance agreement for non-diversion will be in effect for 20 years from initiation of the Project, during which time the dedicated instream flow enhancement will be in effect. The rainwater capture and storage system will be in place for a minimum of 20 years as well.

PROJECT FUNDING

The proposed funding breakdown for the Project is as follows:

Item	WCB	LCDM	American Tanks & Loomis Tanks	CCC	SWP	Hicks Law	NOAA Vet Corp	Total
Personnel Services	66,665	99,578						166,243
Operating Expenses	598,488	49,694	25,880	18,733	741			681,796
Contract(s)	275,448	109,717		20,342	8,097	3,000	11,339	427,943
<i>Totals</i>	<i>\$940,601</i>	<i>\$258,989</i>	<i>\$25,880</i>	<i>\$39,075</i>	<i>\$8,838</i>	<i>\$3,000</i>	<i>\$11,339</i>	<i>\$1,287,722</i>

Project costs will be for staff time, project materials, and contracts with construction, technical, and environmental contractors and consultants, and engineers.

CEQA

The project is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15304, minor alterations to land) as the project does not propose to remove healthy, mature, scenic trees except for forestry or agricultural purposes. The project is also categorically exempt from CEQA pursuant to the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15303, new construction or conversion of small structures) as the project proposes to consist of “construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure.” Subject to approval of this proposal by the WCB, the appropriate Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project on the condition that the grantee agrees to install a gauge at the intake pump and collaborate to develop an appropriate monitoring plan; allocate \$940,601.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project ; and authorize staff and the Department of Fish and Wildlife to proceed substantially as planned.

**25. Southern California Coastal Watersheds Arundo Eradication
Orange and San Diego Counties
\$2,307,585**

This proposal is to consider the allocation for an implementation grant to the Mission Resource Conservation District (MRCDD) for a cooperative project with the La Pata Mitigation Project, Integrated Regional Water Management, US Army Corps of Engineers (ACOE), and local agencies to control 98 acres of the invasive, non-native plant *Arundo donax* (Arundo) on 17.8 river miles over four watersheds in Southern California: San Juan, Santa Margarita, San Luis Rey, and San Diego watersheds in both Orange and San Diego Counties. This WCB project will fund activities that are part of watershed programs that already exist, and so will have benefits in terms of long-term success/follow-up, outreach, and a large-scale watershed based approach.

LOCATION

The project area spans two counties, Orange and San Diego, and four watersheds: San Juan, Santa Margarita, San Luis Rey and San Diego. San Diego County shares its southern border with Mexico and its northern border with Orange County.

PROJECT DESCRIPTION

Challenge:

Arundo is a non-native grass growing up to 30-feet tall and forming extremely dense stands. The rhizomatous Arundo stands grow to immense size, covering acres of riparian habitat. As documented in literature and the Cal-Invasive Plant Council Arundo impact report, Arundo stands have numerous significant impacts negatively affecting both abiotic and biotic processes within river systems. The greatest impacts are to fluvial and hydrologic processes that shape the riparian ecosystem. Arundo stands modify fluvial processes by changing the magnitude and direction of flows, which in turn change the structure of the habitat. Essentially, Arundo stands convert the riverine system from a braided, laterally unstable channel form, to a single, stable channel position. This has significant impacts on the native species that inhabit these systems, particularly species dependent on pools, sand deposition bars, and a range of serial riparian habitat stages that support numerous listed species in the impacted riverine systems.

Arundo consumes enormous amounts of water. Per acre, Arundo consumes 24 acre feet per year, far more than native vegetation that typically occupies similar habitat. In contrast, native vegetation consumes about 4 acre feet per year, per acre. This extreme water use through plant transpiration uses significant water resources, resulting in both lower in-channel stream flows and flows occurring less frequently. Parts of the rivers and streams on all four project watersheds are typically dry for a portion of the year (summer-fall), and Arundo's water consumption shortens the duration of flows. Arundo stands along the channel banks provide little shading in comparison with native woody vegetation structure. This modification of vegetation structure can increase water temperature and reduce dissolved oxygen in pools and stream reaches, negatively impacting habitat quality.

These impacts from Arundo degrade the habitat for multiple federal and state listed species occurring in the Project watersheds, including the South coast steelhead, which has been observed in the San Juan and San Luis Rey Watersheds.

Objective:

The Project will eradicate 98 acres of Arundo from the San Juan, Santa Margarita, San Luis

Rey, and San Diego watersheds. Eliminating these Arundo stands will save significant water resources, estimated at 1,960 acre feet per year, for the 98 acres of Arundo controlled with grant funding. An additional 45 acres of concurrent Arundo control is occurring in these watersheds, providing an additional 900 acre-feet per year of water savings. Removing Arundo will leave more water in the riverine system, increase the amount and duration of in-channel flows, as well as the persistence of pools and depressions which are critical resources for listed species.

The project's four coastal watersheds were all once in the top ten most invaded coastal watersheds from Mexico to the San Francisco Bay before systematic Arundo control began. The giant reed once covered 2,400 acres within the four watersheds. Today, after significant progress, only about 165 acres of Arundo remain, of which most will be treated by funding from this grant proposal and the other funding partners. Removing Arundo from the river system will help restore fluvial/hydrologic functions, save significant water resources thereby enhancing stream flows, normalize sedimentation transport, reduce flood and fire risk, and restore native vegetation cover and successional processes. All of these benefits will assist native flora and fauna.

MANAGEMENT OBJECTIVES AND NEEDS

The Arundo eradication program's long-term goal is to achieve eradication on the entire length of each watershed over a 20-year period. The program is generally working in a top-down (headwaters to ocean) manner to achieve long-term success and minimize the spread of Arundo propagules onto sites that have already been treated.

WCB project areas will be treated for 5 years with project funding. Following the initial work, MRCD and its partners (County of Orange and San Diego River Conservancy) will coordinate re-treatments in those areas as needed on a rotational basis for 10-15 years until control is achieved. Re-treatments will typically occur every two to three years depending on the level of infestation. MRCD and partners will maintain general communication with participating properties to provide guidance and assistance for maintaining control of stands treated under the WCB grant.

All project activities on private properties require that a Right of Entry Agreement (ROE) be obtained. Property owners are very motivated to both participate and maintain the benefits of Arundo control on their property as it reduces flood and fire risks on both their property and all properties downstream. MRCD and watershed partners expect to continue providing assistance in coordinating and tracking right of entry permissions, participating in the maintenance program, as well as maintaining active environmental permits. Through this partnership between program leads and property owners complete control of Arundo in these watersheds is feasible, which will provide a sustainable long term benefit.

PROJECT FUNDING

Item	WCB	OC Watershed Management	Local Agencies ¹	La Pata Mitigation Project	Integrated Regional Water Management	ACOE	TOTAL
Personnel Services	135,300						135,300
Operating Expenses	35,060						35,060
Contract(s)	2,137,225	6,750	798,210	250,000	150,000	350,000	3,692,185
<i>Totals</i>	<i>\$2,307,585</i>	<i>\$6,750</i>	<i>\$798,210</i>	<i>\$250,000</i>	<i>\$150,000</i>	<i>\$350,000</i>	<i>\$3,862,545</i>

¹Local Agencies Include: City of Aliso, Orange County Public Works, Orange County Parks, Mitigation City of San Diego, Mitigation Alton Parkway City of Aliso, San Diego Association of Governments (SANDAG) TransNet Environmental Mitigation (EMP) Program

Project costs will be for; personnel services, operating expenses and contracts for project coordination and planning, and all Arundo removal efforts (initial treatments, mowing, cutting and chipping, retreatments, and monitoring).

CEQA

All three project areas have completed CEQA. Within the San Juan Hydrologic Unit, the City of Orange, as lead agency, prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA).

Within the San Luis Rey/Santa Margarita Watersheds, the Mission RCD, as lead agency, prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA).

Within the San Diego Watershed, the San Diego River Conservancy, as lead agency, prepared a Mitigated Negative Declaration (MND) for the project pursuant to the provisions of the California Environmental Quality Act (CEQA).

Staff considered these MND's and has prepared proposed, written findings documenting WCB's compliance with CEQA. Subject to approval of this proposal by the WCB, the appropriate Notice of Determination will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board adopt the written findings and approve this project as proposed; allocate \$2,307,585.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

26. Rancho Cañada Carmel River Flow Enhancement

Monterey County

\$4,520,000

This proposal is to consider the allocation for a grant to Monterey Peninsula Regional Parks District (MPRPD) for a cooperative project with the California Department of Fish and Wildlife, California State Coastal Conservancy, California Natural Resources Agency, Trust for Public Land, and California American Water Company, to acquire between 185± acres of private land and its associated water rights, located along the Carmel River approximately one mile east of Carmel-by-the-Sea in Monterey County.

LOCATION

The property (Property), known as the Rancho Cañada Golf Club, is located in the Carmel Valley in Monterey County, approximately five miles south of the City of Monterey. The Property is situated within the Carmel River watershed.

The Carmel River watershed encompasses 255 square miles with the main stem of the Carmel River flowing 36 miles from its headwaters in the Ventana Wilderness through the Carmel River Valley into the Pacific Ocean at Carmel River State Beach. The lower 16 miles of the river contain the greatest amount of development in the river system. The Carmel River suffers from a dramatically altered state due in large part to a long history of surface and groundwater extraction. Over 60% of the potable water used on the Monterey Peninsula is extracted from the Carmel River Watershed. The largest diverter of Carmel River water is the California American Water Company (Cal-Am), a water utility serving thousands of customers on the Monterey Peninsula. The second-largest is Rancho Cañada de la Segunda, Inc., for the private Rancho Cañada Golf Club.

The Property is located on the valley floor in the lower stretch of the river less than two miles from the Pacific Ocean. It offers wildlife connectivity between the coast and interior valleys as well as a diversity of wetland types that link sub-tidal to upland transition areas. The Carmel River runs through the center of the Property, providing unique future opportunities to restore the floodplain on both sides of the river and accommodate public access for recreation and education activities. A mature riparian forest lines the river banks and includes: cottonwood, coast live oak and western sycamore. The Property also permanently protects significant acreage within the FEMA 100-year floodplain, providing a floodplain buffer for communities downstream.

PROJECT DESCRIPTION

Under the Rancho Cañada Carmel River Flow Enhancement Project, the MPRPD will acquire two parcels of the Property, totaling 185± acres of land along the Carmel River, and its associated water rights. MPRPD will permanently protect this land as open space and petition the State Water Resources Control Board to permanently dedicate 185± acres feet of water to instream flow annually.

Challenge:

The Property has been used for over 40 years as a 36-hole golf course. As a result of the Project, this water-intensive land use will be permanently retired. Acquisition of the Property by MPRPD would allow MPRPD to permanently eliminate 185± acre-feet of water pumped annually from shallow wells on the Property proximate to the Carmel River. As the golf course is the second-largest diverter of water on the Carmel River, the effect of the cessation of golf course irrigation is expected to be significant. On-site ponds, nearly a mile of the Carmel River, and a mature riparian forest on the Property are habitat for a number of state and federally listed species, including the California red-legged frog, tricolored blackbird, and the South-Central California Coast Steelhead, the subject of a significant recovery effort by the state and the National Marine Fisheries Service. Increased instream flow combined with potential future floodplain and wetland restoration on the Property position this project to improve on-site and adjacent habitat for these species. Given the project site's location less than two miles from the mouth of the Carmel River at the Monterey Bay National Marine Sanctuary, public ownership of the river channel along with associated aquatic and riparian habitat on the Property provide resiliency as ocean waters advance via sea-level rise, and intense storm events threaten to flood the lower Carmel River.

Objective:

This project aims to address several threats and achieve multiple benefits for the Carmel River through an unprecedented land and water acquisition project. The MPRPD envisions the overall project as four phases: i) land acquisition and ii) Section 1707 dedication, potentially followed by iii) environmental education and public use, and iv) restoration. The current proposal addresses phases i and ii. The proposed land acquisition includes two adjacent properties that comprise 70% of the 36-hole Rancho Cañada Golf Club in the Carmel Valley. One property, encompassing 140± acres, is referred to here as the "Hatton property." The other, directly adjacent, property is the "Iceberg property" and encompasses 50 acres. Collectively the Hatton and Iceberg properties cover 190± acres and contain nearly one linear mile of the Carmel River. Based on the water use reports submitted by the golf club managing the Rancho Cañada golf course, Rancho Cañada de la Segunda, Inc. and prior agreements between current landowners, the Hatton and Iceberg properties are entitled to use 201 acre feet of Carmel River water annually.

WCB's support for acquisition of the Hatton and Iceberg properties would allow for public protection of 185± acres of the golf course, and permanently reduced water diversion by the second largest water diverter in the Carmel River system. The Project will deliver the additional benefit of instream water dedication to the river—a paramount conservation outcome at a scale unattainable through any other project in the Carmel River system.

MANAGEMENT OBJECTIVES AND NEEDS

Following acquisition, MPRPD will operate and maintain the Property in perpetuity. MPRPD anticipates incorporating management of the Property into their park management plan for the adjacent Palo Corona Regional Park, allowing for coordinated and adaptive management across approximately 4,500 acres. Further, Santa Lucia Conservancy and MPRPD will work together to develop and implement a restoration plan for the properties once acquired, identifying and prioritizing restoration opportunities.

PROJECT FUNDING

The proposed funding breakdown for this project is as follows:

Wildlife Conservation Board	\$4,500,000
California Department of Fish and Wildlife	\$950,000
California State Coastal Conservancy	\$2,000,000
California Natural Resources Agency	\$1,500,000
California American Water Company	\$1,300,000
<i>Total Purchase Price</i>	<i>\$10,250,000</i>
Other Project Related Administrative Costs	\$20,000
<i>Total WCB Allocation</i>	<i>\$4,520,000</i>

It is estimated that an additional \$20,000 will be needed to cover project related administrative costs, including DGS appraisal review.

CEQA

The acquisition has been reviewed for compliance with the California Environmental Quality Act (CEQA) requirements and is proposed as exempt under CEQA Guidelines Section 15313, Class 13, as an acquisition of land for wildlife conservation purposes, and Section 15325, Class 25, as a transfer of an ownership interest in land to preserve open space. Subject to authorization by the WCB, a Notice of Exemption will be filed with the State Clearinghouse.

STAFF RECOMMENDATION

Staff recommends that the Board approve this project as proposed; allocate \$4,520,000.00 from the Water Quality, Supply and Infrastructure Improvement Fund of 2014 (Proposition 1), Water Code Section 79733; authorize staff to enter into appropriate agreements necessary to accomplish this project; and authorize staff and the California Department of Fish and Wildlife to proceed substantially as planned.

WCB PROGRAM

The proposed projects will be funded through the California Stream Flow Enhancement Program and these projects meet the goal of providing enhanced stream flow benefiting fish and wildlife.

Projects are consistent with the following goals outlined in the WCB Strategic Plan:

Goal A.1 – Fund projects and landscapes that provide resilience for native wildlife and plant species in the face of climate change.

Goal A.2 – Fund projects and landscape area that conserve, protect, or enhance water resources for fish and wildlife.

Goal A.3 – Fund projects that support the implementation of Natural Community Conservation Plans, Habitat Conservation Plans and recovery of listed species.

As outlined in the PSN, WCB will allocate SFEP funds to projects that enhance stream flows and are consistent with the objectives and actions outlined in the CWAP, with the primary focus of enhancing flow in streams that support anadromous fish, special status, threatened, endangered or at risk species. All projects recommended for funding meet these objectives.

Goal B.1 – Invest in projects and landscape areas that help provide resilience in the face of climate change, enhance water resources for fish and wildlife and enhance habitats on working lands.

In addition, the proposed projects address the following priorities outlined in the WCB Strategic Plan:

- Provide species strongholds or refugia and improve habitat for threatened or endangered species.
- Provide or enhance habitat connectivity and corridors:

As outlined in the PSN, every proposal must reflect the PSN's priorities and must enhance or lead to enhanced flows that benefit native species. In addition, proposal scoring criteria include: climate change considerations, community support and collaboration, disadvantaged communities, and project outcomes – diversity and significance of the benefits. Furthermore, one of the three goals of the SFEP is to “support projects that lead to meaningful increases in the availability and/or quality of water in streams, particularly by protecting and restoring functional ecological flows for stream identified as priority for fish and wildlife”. All projects recommended for funding meet these objectives.

PERSONS WITH DISABILITIES

Persons with disabilities needing reasonable accommodation to participate in public meetings or other CDFW activities are invited to contact the Department's Reasonable Accommodation Coordinator Melissa Carlin at (916) 651-1214 or Melissa.Carlin@wildlife.ca.gov. Reasonable Accommodation requests for facility and/or meeting accessibility should be received March 2, 2017. Requests for American Sign Language Interpreters should be submitted at least two weeks prior to the event, and requests for Real-Time Captioners at least four weeks prior to the event. These timeframes are to help ensure that the requested accommodation is met. If a request for an accommodation has been submitted but is no longer needed, please contact the Reasonable Accommodation Coordinator immediately.